

**Jobs, Jobs, Jobs**

The SBE youth effort begins to pay off. Sharon Rae reports.

See Page 7

**Focus on News Services**

Suppliers are standing by with audio and text news services for your station.

See Page 29

# Radio World

The Newspaper for Radio Managers and Engineers



April 28, 1999

**INSIDE**

**NEWS**

▼ PR&E looks toward 1999 after showing a loss in '98 and announcing plans to restate past results.

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▼ Like a lot of broadcasters, Bill Ashley is unhappy about EAS and the Quad Dimension royalty matter.

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**ENGINEERING**



▼ This reformed pirate is a radio engineer with strong views on low-power.

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**GM JOURNAL**

▼ The Internet is a gold mine of information about prospective advertisers.



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**STUDIO SESSIONS**



▼ Ty Ford takes a close look at the Symetrix 628 Digital Mic Processor.

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Readers Forum is now found on page 62

## RDS Making Gains in Radio?

by Lynn Meadows

**ARLINGTON, Va.** Is the radio data system glass half empty or half full? The Consumer Electronics Manufacturers Association is upbeat about a recent survey that it says shows growing station acceptance of RDS technology. At the same time, FM station engineers offer mixed views on whether they believe RDS can add to stations' revenues or whether consumers accept the technology.

Twenty-three percent of respondents to a CEMA survey who do not own RDS hardware said that they were at

least "somewhat likely" to begin to transmit an RDS signal in the next 12 months.

Although 73 percent of respondents said they were "somewhat unlikely" and "not at all likely" to do anything with RDS this year, a



The 2000 Model Year Pontiac Uplevel RDS Receiver

Credit: Delphi-Delco Electronics Systems

CEMA spokesperson was upbeat about the

survey results.

Lisa Fasold said she had expected the survey to come back and the results kept quiet because of low numbers. She said the survey shows people are interested in RDS.

Manufacturers will have to review the results and determine what they mean.

CEMA conducted the survey to fulfill a promise to its members to find out how stations are using RDS technology, which enables stations to transmit text and other data on the 57 kHz subcarrier. The association mailed surveys to every FM station in the country — roughly 7,700 stations — and received 603 back. Of the 124 stations that said they had the hardware needed to broadcast an RDS signal, 69 percent were transmitting an RDS signal.

Most stations likely received their equipment during the former Electronic Industries Association campaign (now re-

See RDS, page 8 ▶

## Mendenhall to Receive NAB Engineering Award

by Randy J. Stine

**QUINCY, Ill.** Geoffrey Mendenhall, vice president for advanced project development for Harris Broadcast Systems Division, has received the 1999 NAB Radio Engineering Achievement Award.

Mendenhall's work throughout his 35-year career has made him one of the leading experts on FM transmission. At Harris, he oversees product

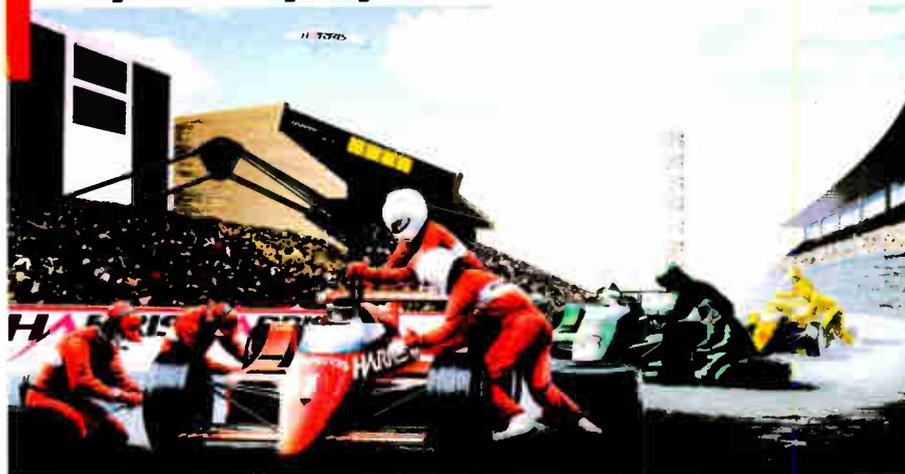
development for the Broadcast Systems Division.

Mendenhall, 52, began his broadcast career in 1963 while still in high school as a part-time broadcast technician. He helped pay his way through college by working for several Atlanta broadcasters before graduating from the Georgia Institute of Technology in 1970.

He has been at the forefront of development work on a number of important

See MENDENHALL, page 10 ▶

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# ◆ NEWSWATCH ◆

## Injunction Granted Against NYC Pirates

A U.S. district court in New York issued an injunction against an unlicensed radio station that called itself "Steal This Radio." The FCC said the station had been operating at 88.7 MHz without a license since 1995 and continued to do so despite warnings from the agency. Four disc jockeys and two listeners challenged the FCC's licensing regulations and filed a complaint in U.S. District Court that sought an injunction

against the FCC. The case was unusual because the judge allowed the DJ's to use pseudonyms rather than their real names.

The court rejected the station's arguments. The court said the regulatory framework for licensing radio stations is constitutional because it specifies procedures which the FCC must follow and provides for judicial review of any FCC ruling granting or denying a license.

On March 12, Judge Michael Mukasey for the U.S. District Court for the Southern District of New York, granted the United States' request for an injunction which became effective on March 18. The FCC said the station went off the air and then the plaintiffs in the suit asked the

court to stay the decision. The court had not ruled on the stay by press time.

## WJNT Fine Cut

**WASHINGTON** The FCC reduced an \$18,000 fine to \$10,000 after Buchanan Broadcasting Company Inc., licensee of WJNT(AM), Jackson, Miss., documented that the station's gross revenues are not enough to pay a high penalty. After investigating a complaint, the FCC fined the station for not reducing its nighttime power or directional mode, keeping inaccurate station logs and lacking an effective fence around the antennas.

In response, Buchanan said it had corrected the logging system and the transmission monitoring system and had purchased a low-power transmitter for nighttime operation. "Extreme flooding" of the area, stated Buchanan, prevented repair crews from fixing the fence around the antenna towers.

The FCC disputed this, stating that a commission field agent was able to get to the location, and that meant that a repair crew and unauthorized individuals would have been able to as well. The commission said the violation was willful because Buchanan failed to repair the fence and it upheld that portion of the fine.

## FCC Requests \$230 Million

**WASHINGTON** The FCC is asking Congress to approve a fiscal year 2000 budget of more than \$230 million, a nearly \$39 million increase over the commission's fiscal 1999 funding level. Most of the increase would cover the agency's move to

See NEWSWATCH, page 3 ▶



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# Pacific Research Declares Losses

by Leslie Stimson

**CARLSBAD, Calif.** Pacific Research & Engineering sought to assure customers about its outlook, following news that the publicly held company reported a net loss of \$4 million last year.

As a result of the losses, PR&E has fallen below the listing guidelines for the American Stock Exchange, where it continued to trade under the symbol PXE.

The company also announced in March that it was in violation of its bank loan covenants, and said it would restate financial results from earlier years, to show losses.

PR&E blamed several factors for these results, including an error in how it had capitalized software development costs.

PR&E executives said results for the first quarter of 1999 would look promising, but could not divulge them in advance.

They said PR&E is viable and that long-term customers were continuing to place orders, including deposit checks. The company did not release the names of specific customers.

The company makes consoles and studio furniture, and supplies systems to broadcast clients. It was founded in 1969 and went public in 1996.

Watching the numbers released by the company, executives at firms that do not compete directly with PR&E said the restatements raised questions about its financial status and accounting practices. More than one executive said the public information appeared "grave."

PR&E President and Chief Operating Officer Don Naab said company officials first "identified some accounts that seemed out of line" in the interim period between the departures of the previous chief financial officer and vice president of finance, Larry Eyler, and an assistant controller, and the hiring of new CFO Blake Clark in February.

PR&E officials said both employees left for other opportunities, but could not recall where they had gone to work.

Michael Dosch, a PR&E employee for 14 years and the chief operating officer when he left the company, declined to comment on PR&E's financial situation. He subsequently joined manufacturer Telos/Cutting Edge.

PR&E said the restatements have no effect on its recent agreement with Audio Broadcast Group to distribute its products (RW, Feb. 3).

PR&E has 130 employees, and officials said no changes are planned in light of the recent financial news. PR&E has been making staff changes since Naab arrived in the middle of last year.

After the initial questions were raised in-house, three groups of observers began poring over the company's accounts: internal financial management, the existing independent accountants, Harlan & Boettger LLP, and the accounting firm Arthur Anderson LLP, working as advisors to PR&E's audit committee, which is made up of three board members.

The primary cause of the financial review and the subsequent financial restatements is the way PR&E capitalized software development expenses over a three-year period, said Chief Financial Officer Blake Clark.

Asked if poor accounting practices were to blame, Blake said, "You don't restate financial statements as a public company unless there is an error discovered in the accounting practices that's material in amount. The conclusion was made that the way the company capitalized the software development costs over the three-year period of 1996 through the current year was not appropriate."

"It was basically an error in the application. I wouldn't go so far to say that there were poor accounting practices."

He said the misinterpretation revolved around which costs were eligible to be capitalized as opposed to being expensed, in products that contained both hardware and software components.

PR&E Chairman and founder Jack Williams said, "We were doing software development as part of new products, and hardware development that we were going to put the software in. Both the R&D on the hardware and the writing of the software were bundled together on our balance sheet as an asset. And only what was specifically software belonged there."

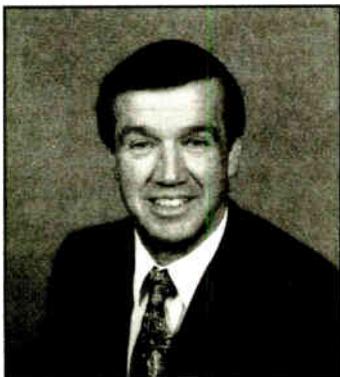
Company officials said they could not discuss which products the software was used for. They said no products would be dropped because of the restatements.

## Seeking suitors?

They also would not comment on whether the company is seeking suitors, to provide an influx of cash for a partnership or sale. When asked if PR&E was contemplating declaring bankruptcy, Williams emphatically said "no."

When asked for comment, Arthur Anderson issued only a statement that read, "We're engaged as advisors to the audit committee on matters related to the company's restated financial statements. We have not been and are not currently the company's auditors."

See PR&E, page 11 ▶



PR&E's Jack Williams



PR&E's Don Naab

## ◆ NEWSWATCH ◆

▶ NEWSWATCH, continued from page 2  
a new location, higher rent, more guards and mandatory salary and benefit increases. About \$11 million of that increase is for automation enhancements so that the agency can streamline the process by which it awards licenses. The FCC plans to offset that \$11 million by increasing the annual regulatory fees it charges all of the industries it regulates by \$13 million, for a total of more than \$185 million in fiscal 2000. Regulatory fees for fiscal 1999, due this fall, total about \$172.5 million. Fees for AM and FM stations already on the air would range from \$430 to \$4,400 under the proposed schedule. Comments were due April 19 and reply comments on April 28.

### FCC to Re-Focus

**WASHINGTON** FCC Chairman Bill Kennard plans to submit a report to congress by this summer that will be made public on his plans to streamline the commission as Congress prepares to re-authorize and re-fund the FCC. "We are re-focusing and consolidating our enforcement and consumer information functions, as well as automating and streamlining our licensing processes across the agency," stated Kennard to a Senate appropriations subcommittee.

The FCC is asking Congress for the authority to buy out some permanent employees and replace them with other employees "who have the appropriate mix of skills to handle our changing workloads," stated Kennard.

Along with streamlining efforts, Kennard said the FCC is on track for making its internal application software systems, networks and hardware Y2K compliant. He said the commission expects to achieve more than 90 percent Y2K compliance by the end of this month.

### NAB Woos Press On LPFM

To underscore NAB's position that it opposes the creation of a new low-power FM service due to interference concerns, the association sent packets of trade press clippings on the issue to various reporters. LPFM proponents say one reason the new service is needed is to counteract what they say is bland programming on the nation's larger group-owned stations. The NAB material contained this statement from Senior Vice President, Corporate Communications, Dennis Wharton: "We strongly believe that programming diversity has never been greater. ... The average listener tunes in more than three hours a day."

RW was not among the clippings, all of which opposed the issue.

LPFM supporters have garnered some congressional support in a letter sent to FCC Chairman Bill Kennard. Of the 28 congressional representatives who signed the letter, two are on the House Telecom Subcommittee: Rep. Anna Eshoo, D-Calif., and Rep. Al Wynn, D-Md.

## WHAT COMES AFTER DIGITAL?

In the beginning, there were stone axes. Then came fire, the wheel, and the steam engine. Then came analog audio and then digital audio. What comes next?

Certainly the stone wheel must have looked to the caveman to be the greatest discovery that ever could be. And to the simple farmer of the 1800's, the steam engine was the most modern contrivance that his mind could imagine. But neither was a terminal technology. Both have been replaced as time marches on.

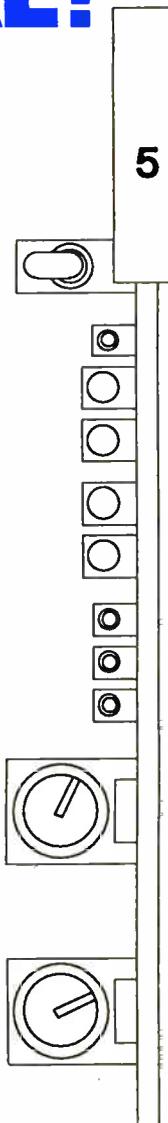
Digital audio is also not a terminal technology. It is simply where we are now.

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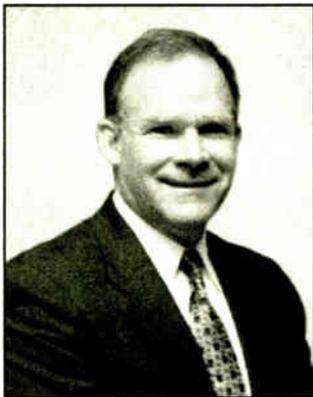
## Pedlow Confident in BE's Future

The new president of Broadcast Electronics says its owners remain interested in active acquisitions and growth.

John W. Pedlow is the president and CEO of BE, which is watched closely thanks to its size, radio focus and success as a supplier of transmitters and audio storage systems. He is the former vice president and general manager of U.S. operations for Alpha Technologies, a manufacturer of powering products for cable TV and telecommunications.

Pedlow replaced Doug Davis, who worked as interim president after the departure of Jack Nevin. Davis has returned to his job as vice president of BEI Holding Corp.

BEI, the parent company of BE, is owned by Hoak Communications Partners, which purchased BE in 1997.



John Pedlow

### Changes

The company has seen change in the past year, as the management team, put into place by the new owners, implemented its strategies. Pedlow said BE is trying to focus its efforts, rather than expand beyond radio.

"BE is focused on being able to stay with our core technology and selling capabilities, and looking for ways to build around that," he said. "At this point that's a radio focus. I don't want to rule anything out later. But the radio industry has been very good to BE, and we think we've been good to it."

But the company continues to look for suitable acquisitions, either for BE or within the broader BEI umbrella.

Based in Quincy, Ill., BE has about 225 workers. In the closing months of 1998, the company laid off about 10 percent of its staff and reversed an earlier purchase of manufacturer Audiotronics, subsequently resold to Wheatstone.

What do those moves indicate for BE?

"We were injured, as the rest of the electronics world was, by the Asian mar-

ket last year," Pedlow said. "But BE is alive and well, going forward. It's a very healthy business.

"Yes, they went through a turbulent year," he said. "When the market hiccups, that's tough. But if we get in here and collectively put a firm hand on the helm, this business is fine."

Pedlow sees interesting parallels between radio and cable TV. "Both industries were affected by the Telecom Act," he said. Like radio, cable has been going through consolidation of its own.

Does he see any lessons for radio? How were cable equipment buyers?

"There were changes in the selling model," Pedlow said, "a trend toward more centralized influence in equipment selection and the engineering side. That created an opportunity to increase the central selling concept a bit."

But Pedlow said successful suppliers must take a multi-tiered approach to sales. This

may offer some idea of how BE will proceed under his management.

In any event, Pedlow is confident of the outlook for radio and his new employer.

"BE has a tremendous reputation in this marketplace," he said. "It's a respected supplier in this market, with a good share and great opportunity to grow.

"There are good people here, and I'm amazed at the body of knowledge here about the radio industry."

★ ★ ★

Just a reminder that *Readers Forum* has moved to the inside last page of each *Radio World*. This is your newspaper, and your letters and opinions are a vital part of it. The popular opinion page is a better fit at the end of each *RW* — closing out each issue with thoughts from our editorial staff and those of our readers.

Lately the *RW* "In Box" has been scorching hot with opinions about low-power radio. Get a taste on page 5.

I find that you cannot predict who will favor or oppose the LPFM concept. For instance, on page 22 we profile Paul Shinn, who began his career in radio as a pre-teen pirate. But he's gone legit, now working as a radio engineer. Consider what he has to say:

"Nobody wins with LPFM," Shinn said. "The only people who would benefit from LPFM are the wackos with minimal investment who put some LP station on the air and make their \$1,500 investment back in revenue, then get bored with it and walk away from it like an outgrown toy."

Shinn is no easier on unlicensed operators.

"The truth is, not one of the pirates I

It's time again for the annual Midwest Radio Theatre Workshop, which promotes itself as the only national organization that celebrates, teaches and practices contemporary audio theater.

The workshop will take place June 6 to 12 at William Woods University in

## From the Editor



Paul J. McLane

have heard over the years has had anything but hate, violence or profanity to offer."

Perhaps it's true: The most vocal anti-smokers are former smokers themselves.

speaker Yuri Rasovsky, winner of George Foster Peabody Awards. Of late, Rasovsky received \$400,000 to produce audio dramas for National Public Radio.

Trainers scheduled to be present are Brian Smith of the Sci-Fi Channel's "Seeing Eye Theatre," and David



Director Joel Pierson (far left) rehearses for "Camping With Joe," an original MRTW play from 1998.

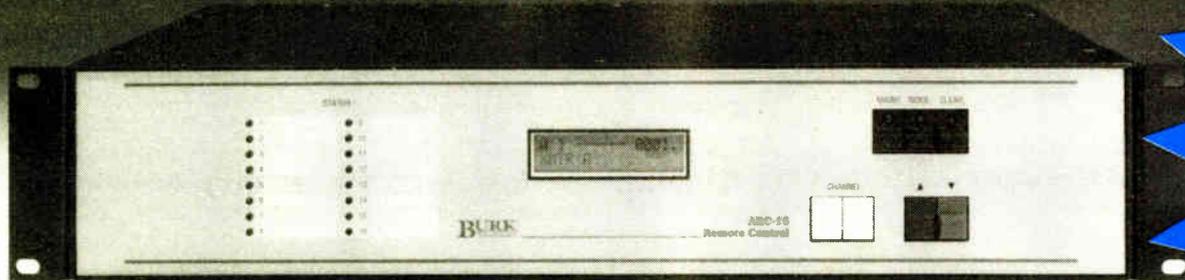
Fulton, Mo. A special project of public radio station KOPN-FM in Columbia, Mo., MRTW is partially funded by the National Endowment for the Arts and the Missouri Arts Council.

Among the notables who will appear at this year's workshop is keynote

Ossman, a 1998 Grammy nominee for the Firesign Theatre album "Give Me Immortality Or Give Me Death."

The early registration deadline is April 30, though late registration is held until June 7. For information, contact Executive Director Sue Zizza at (516) 483-8321.

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# Readers Speak Up on Low Power

The FCC is taking comments on proposals to create new low-power radio stations in the United States.

Recent RW articles and editorial pieces on this issue have resulted in many letters and e-mails. Here is a sampling.

Dear RW,

During the recent LPFM debate, I discovered that there actually is one unused and "available" FM frequency nationwide.

The frequency is 87.9 MHz, nestled between TV Channel 6 aural and the first non-commercial FM channel. It can be tuned in on every FM receiver made in the last 10 years. Let's give it to LPFM, vertically polarized only.

We still should protect the existing second- and third-adjacent interference standards, as the FCC does not require minimum standards on consumer receivers.

If the FCC relaxes the interference standards, then I propose eliminating the existing TV Channel 6 interference standards imposed on non-commercial broadcasters.

A related plan: The FCC expects an

flame-throwers hurled agricultural reports to Dust Bowl farmers in 37 states.

For the new century, we are looking toward a technology closer to the cell phone, where deliberately limited power and coverage per "cell" let a single precious frequency be used and reused.

Even the 1 kW-at-60-meters proposed "local" signal is anachronistic overkill. Please support true low-power FM in the local public interest.

Kevin McKeown  
City Council Member  
Santa Monica, Calif.

Dear RW,

As a small-town radio operator who was forced to go through the full correct rules and regulations set forth by the FCC in order to put a regulated broadcast FM facility on the air, many radio broadcast owners — myself included — should stand up and shout ... *no!*

Consider all the paperwork to obtain a license — not to mention paying for the license, paying the engineers, the attorneys and others to make sure we do it correctly. Then there are the annual spectrum fees, music unions, payroll, bank

although the expressed purpose of the expansion was to relieve the interference on the AM band.

Class C stations (1230, 1240, 1340, 1400, 1450, 1490), according to their FCC license, must accept interference.

I've included broadcast maps from 1945 and the present showing how our signal

**'The proposal ... would severely hurt the small-business AM owner who would be unable to compete on the FM band.'**

strength has eroded even though our power has quadrupled. I am in a five-county reporting area with a signal that effectively covers one county.

- We are looked upon as full-timers but in reality, we're on the high end of the dial with low power in markets that have outgrown our signals.

- There are some daytimers in this market with post-sunset authority that have better coverage than we do at night. Class C owners' hands are tied. 1,000 watts is all we'll ever get although daytimers get the opportunity to raise their daytime power.

**Readers Forum  
has moved!  
Find reader letters on  
the last inside page.**

With a relatively small investment, low-power FMs would get better coverage than long-standing Class C AMs that have served the community for genera-

tions. I am not opposed to low-power FM stations because it would allow people to participate in radio, but under the proposed guidelines, I would not be allowed to purchase one.

I have substantial investment in this station as do many Class C sole owners. This is a family business with a long history of community service. As Rep. Billy Tauzin (R-La.) points out, these low-power FMs would easily erode advertising revenue for older local AMs.

Although the media reports that the  
See LOW POWER, page 12 ▶

**'The FCC is about to make a big mistake and create a "CB band."'**

overwhelming number of license applications for LPFM. I have an interesting solution that I cannot take credit for.

I recently read where many non-commercial broadcasters in Australia are required to share the same frequency. The newsgroup posting I read said that three stations each had 30 days to use the frequency and then they went dark for 60 days while the other licensees were allowed to broadcast.

What a novel idea for us civilized Westerners! I think this idea has merit and is appropriate for LPFM.

Glenn Finney  
Chief Engineer  
Good News Network  
Augusta, Ga.

Dear RW,

To focus on possible interference from the largest proposed 1 kW "low-power" stations ("FCC Faces LPFM Interference Concerns," RW, March 17) is to miss the point of this new service.

Communities like Santa Monica, Calif., are clamoring for signals of 10 watts or less, reaching residents in geographically limited areas.

Abandon the old clear-channel paradigm, born in the days when 50 kW

payments and many other expenses.

Will the new so-called micro-stations be forced to buy the correct now-called "EAS" equipment and run the proper tests? Will they have to pay the government to file for an FCC license? Can already existing radio stations have the opportunity to file against them?

Broadcasters who follow the rules and regulations set forth should wake up. We now have enough competition with the 80-90 stations, cable television, newspapers, the Internet, satellite-delivered television, regular television, tabloids, the newly proposed digital broadcast band and many others.

We simply do not need or cannot stand this new headache! Micro-radio? Let's get real in the real world.

S. Kent Lankford  
Owner  
WIKK(FM)  
Newton, Ill.

The following is an open letter to FCC Chairman Bill Kennard:

Dear Mr. Kennard,

For the past 11 years, I have been the sole owner of WJLD radio (1400 AM) in Birmingham, Ala., serving the Birmingham market for 57 years.

Thanks to relaxation of monopoly restrictions by the FCC, I now have to compete with conglomerates like Cox Radio, Dick Broadcasting and Capstar, which collectively own or operate 16 stations in this market. I am writing to protest the planned initiation of low-power FMs into this and other U.S. markets.

Now, please consider the plight of the lowest on the totem pole, the Class C (Old Class IV) AM station:

Being a Class C, I could not participate in the expanded-band lottery

## Corrections

In the March 17 issue, the incorrect Web site address was printed for Syntrillium Software. The actual address is [www.syntrillium.com](http://www.syntrillium.com)

The Digigram PCX11 card shown on page 49 of the March 3 issue is no longer available. It has been succeeded by the PCX11+.

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## GUEST COMMENTARY

# Ashley: QDI Should Explain Itself

*The EAS Royalty Dispute Also Raises Bigger Questions About The Entire EAS System*

Dear RW,

Thank you for your continuing coverage of the EAS story. Those of us out here in the trenches are grateful for the effort you put forth to keep us informed.

In a previous article, your writer quoted Quad Dimension Inc. as saying they were asking stations, not manufacturers, for patent royalty payments because the EAS units that we all bought did not encompass the complete system without the broadcast station.

This makes no sense whatever. The input and output of every EAS unit on the market is audio. The only things in the system outside of the unit are a station's console, STL, processor and transmitter, all of which are covered by patents, existing or expired, of others.

On the receiving end, patents for radio receivers fall in the same category. Indeed, it is quite possible for my EAS system at WABS(AM) in Arlington, Va., to function perfectly if I have installed a direct wire connection between WTOP(AM) and WABS. No radio signal involved.

What would QDI say about that?

Clearly, they owe us all an explanation that makes some sense.

Each day I drive to work and back in an automobile that has many components covered by patents. When I bought the car, any royalty payments for those covered items were included in the purchase price of the car. They were paid by the

**QDI needs to provide a believable explanation of why it thinks such a high royalty is justified.**

manufacturer before the car ever went to the dealer who sold it to me, and they covered the life of the car. No annual payments were required of the manufacturer, the dealer, or me.

Too, the costs of such patent royalties were nowhere near the cost of the car.

QDI, on the other hand, is asking the end user, not the manufacturer, to pay a royalty that involves a dollar amount

approximating the cost of the item involved, whether as a one-time payment or as annual payments. QDI needs to provide a believable explanation of why they think such a high royalty is justified.

The timing and tactics of QDI may also be questioned. Why, if they truly believed they would prevail upon re-examination, did they not ask a federal court to issue an injunction delaying implementation of the EAS system until the patent issues were resolved?

Or did they see an opportunity, by waiting until now, to seek an unrealistic (relative to the price of the unit) price for patent royalties? Once again, they owe us an explanation of their motives.

Maybe the time has come to re-examine the validity of the entire concept of the EAS system.

In the several years leading up to implementation of the EAS system, I don't recall ever seeing any indication that anyone in the FCC, FEMA, NAB or anywhere else ever made serious inquiry of the listening audience to determine if they A) wanted the EAS system, B) needed the EAS system, or C) would use the EAS system. The only thing relative to the listener I remember was the agreement that most people did not like the long DTMF tones associated with EBS.

The biggest claim to fame of the EAS system is that it can target specific geographic areas for specific emergencies. This very claim, however, is what makes the system unworkable and useless!

Consider this, please: I leave my house in western Fairfax County, Va., every morning and, after a quick stop for breakfast at McDonalds, head out Route 50 into Loudoun County. By the time I'm five miles or so into Loudoun, I've heard a full cycle of news, including three traffic/weather reports, on WTOP-FM, licensed to Warrenton in Fauquier County.

#### No station alerts

At this point, I usually push the button for 780 kHz to check on WABS, then push a cassette into the dash to continue my efforts to learn Spanish. After a 45-minute side of the language tape, I once again check to make sure everything is okay at WABS, then turn the whole thing off and enjoy the Frederick County, Md., scenery. Shortly thereafter, I arrive at Bradley Broadcast.

Notice that nowhere during my drive has my radio been tuned to a station that would provide alerts for either Loudoun or Frederick, the two counties through which I travel for most of my commute. My experience is not unusual.

I know a number of people living in Prince William and Fauquier Counties in Virginia who listen to WMZQ-FM in Washington, D.C. Every several weeks, I stop at the Hair Cuttery in Fair Lakes Center and can't help but notice that they like to listen to WINC-FM in Winchester,

Va., 50 miles west of here!

Anyone who listens to fund-raising week on WAMU(FM) in Washington knows the number of calls they get from listeners in south-central Pennsylvania, eastern West Virginia and other places well removed from Washington. This could go on, but you get the point.

The only way such an area-specific system as EAS could work is for every radio to have the ability to automatically tune to a station licensed to the geographic area in which the radio is at the moment located. As pointed out above, this frequently is not the station to which the radio's owner is listening at the moment.

How could this ability be achieved? A second front end in every radio? Built-in GPS to determine where the radio is? Obviously, such a system is impractical. As long as the public's listening tastes do not coincide with the geographic location of radio stations, EAS cannot work as intended.

Perhaps the best way out of this whole EAS mess would be for the FCC to simply delete Part 11 from the rules. If they are worried about the public's ability to receive emergency information, a one-sentence Part 11 would be quite adequate.

It could say, for example, "All licensees shall endeavor to provide such emergency information as may be needed by the public within the licensee's protected contour."

You may be assured that the listener will receive no less information than now. Those stations from which the listener is accustomed to receiving lots of information (e.g., WTOP) will continue to provide lots of information.

#### Little information

Those stations from which the listener is accustomed to receiving little, if any, information (e.g., those with satellite-automated programming that already just pass through the minimum required tests and national information) will continue to provide just that: little information.

Most listeners, believe it or not, have enough brains to know which station to tune in if they sense something important going on that could affect them.

You would think that as an equipment salesman, I would have loved EAS. It was a chance to sell more equipment, right? Wrong!

Most stations that bought EAS equipment had that much less to spend on other equipment that would have benefited them. And, they didn't hesitate to let the sales people in this industry know of their unhappiness about it, either!

As a station engineer, I was also less than pleased with the money I spent. An Instant Replay to replace my aging cart machines at WABS would have been a much better utilization of the station's resources.

Before I have to spend even more money on a system that cannot work, let's put a stop to the whole thing!

■ ■ ■

*Bill Ashley has been in broadcasting since he started at WPAQ(AM), Mayberry, RFD (Mount Airy, N.C.) in 1957 as a high school student. He is a sales rep for Bradley Broadcast Sales, engineer for WABS(AM), and minority stockholder and product designer for Excalibur Electronics Inc.*

*The opinions expressed do not necessarily represent the views of Bradley Broadcast Sales or WABS. RW welcomes other points of view.*

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**RADIO EMPLOYMENT**

# SBE Stirs Up Student Interest

by Sharon Rae

Are broadcast engineers disappearing? Are broadcast engineering *staff positions* disappearing?

According to Society of Broadcast Engineers Executive Director John Poray, interest in the field does seem to be waning.

"It appears that the number of people going into broadcast engineering is shrinking," he said. "We generally feel there is a shortage of people coming into broadcast engineering, and we feel that we have to reach them at an earlier age before they get diverted off into other fields."

**Career path**

Turning high school kids on to careers in broadcast engineering is the focus of the new SBE Youth Membership Program, which has now been in place for six months.

"You don't see a large percentage of people under 30 in the field," said Poray. "The long-term goal of the program is to open the eyes of some high school students to careers in broadcast engineering."



Students get hands-on experience in the production room at KASB.

In its first half-year, 37 youth members from schools around the country joined.

"We view this as a beginning number," said Poray. "We'd like to think that will grow the second year around. Hopefully that number will grow to 100 participants next year or the year after."

There are several facets to the Youth Membership Program. One is a newsletter called "The Connector," which is sent to members three times during the school year.

"In each newsletter we try to do two things," said Poray. "We try to give the student an article on a basic technical topic. We also have an article on internships or continuing education after high school highlighting a technical school or college that has programs for people interested in broadcast engineering. The third item in each newsletter features a student-run station."

KASB(FM) is one such student-run station — a part of the Bellevue, Wash., high school vocational program.

Juris Jansons is the instructor of the radio/TV broadcast class at the school. He said the SBE operator test booklet

essentially is used as a part of his class curriculum.

"The first two weeks in the class we spend on the subjects covered in the SBE operator test booklet," he said. "We operate a radio station, so we want students to know the rules and procedures that the SBE wants operators to know. We encourage students to take part in the SBE Youth Membership Program."

Jansons said while his program emphasizes performance and production — what he calls the "sexy" side of radio — the reality is that many people are not going to be stars in the broadcast field.

"One entry point is that of an operator," he said. "There are many kids who find that to be interesting and rewarding. We've had students graduate from here that have gone on into radio engineering."

Jansons said the SBE has been a valuable resource for his class.

"We are a vocational program," he said. "One of the things that's required of us is to make sure that what we teach is somehow related to the standards that people in the real world expect. The SBE gives us an objective standard. This is what those guys out there want you to know, not just a test from your nasty old teacher."



What better way for a student to get a "real-world" experience than participation in a local SBE chapter meeting?

See YOUTH, page 14 ▶

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# RDS Slowly Gaining Use

► RDS, continued from page 1

named the Electronics Industries Alliance) conducted in 1995-1996 to introduce RDS to the major markets. CEMA was created in 1996 as a sector of EIA. RE America took part in the campaign in which its encoders were given to stations in the top 50 markets. Forty percent of the respondents with RDS equipment said they had RE America RDS encoders. RE America no longer manufactures RDS equipment.

Until recently, the U.S.-based makers of RDS encoder equipment included Inovonics, Modulation Sciences and Circuit Research Labs. CRL sold its SC-100 RDS encoder to Georgia-based DataFM in February. A spokesman for

DataFM said the units are not for sale now, but radio stations that become part of the company's multi-point local messaging system will be able to get the units for free.

Other RDS encoder manufacturers include Rohde & Schwartz in Germany and Aztec S.A., based in France.

Of the 442 stations that replied they did not have RDS hardware, 51 percent cited "no consumer demand for RDS" as one of the primary reasons for not transmitting an RDS signal. Twenty-one percent considered the cost of RDS hardware an obstacle to using RDS. Costs vary depending on the flexibility desired by the user from about \$400 for the 701 RDS/RBDS Generator from Inovonics to more than \$2,000.



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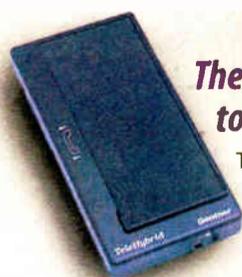
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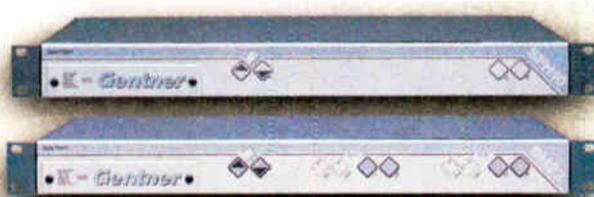
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Several Hefel Broadcasting Corp. stations received encoders during the CEMA RDS campaign. David Stewart, director of engineering for Hefel Broadcasting Corp., said he had a message on one RDS encoder in one city that said "If you see this message, call in and win a CD." He remembers only one call and that was to say the clock time was wrong.

"I'd love to tell you we've tripled our profits on these," Stewart said of the encoders. He said one third of the Hefel FM stations have RE America encoders received during the campaign. Another third, he said, have RDS capability thanks to subcarrier tenants.

"We really don't see it as a money maker," said Stewart. "Just because you invent it and you can do something, doesn't make everyone want it."

Bob Eddy, co-owner and general manager of WRRR-FM in St. Marys, W.Va., agreed that being able to generate revenue would convince him to use RDS. He said if the station could make a little money or at least break even, he would consider using RDS. But he said his station is buying other new equipment now and RDS "is not a priority for us."

Non-commercial KALW-FM, San Francisco had a proponent of RDS in engineering manager Dave Evans. Although Evans died last year, his computer program still drives the RDS text display to change with the time of day and day of week displaying the name of the current public radio program.

Bill Helgeson, KALW operations manager, said the station gets a call about RDS about once every six months or so. He said it seems like a technology that is almost non-existent in the mind of the public.

Kevin Kidd, owner of KK Broadcast Engineering in Lawrenceburg, Tenn., recently had to become more knowledgeable about RDS when one of his clients decided he wanted to use it.

Kidd said the main reason the top-40 station owner wanted RDS on his station was that a lot of the new higher-end vehicles actually have RDS receivers. Volvo, Mazda, Jaguar and Cadillac all offer RDS radios. General Motors recently revealed that some of its more modestly priced cars like the 2000 Bonneville will offer RDS.

After looking at the Inovonics models and a selection of European encoders, Kidd installed the RDS-SC100 from Circuit Research Labs because it is a stand-alone unit and offers the flexibility his client wanted.

Kidd said from his listening point in Lawrenceburg, only four stations are running RDS. Kidd said he thinks he will probably install two or three more RDS encoders in the next year.

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World Radio History

# Engineering Award for Mendenhall

► MENDENHALL, continued from page 1 radio innovations. In 1976, for example, he led the team that developed the first of a series of FM exciter at Harris.

"I was a lover of music and what was called high fidelity in those days. And I was never satisfied with the sound of FM radio. That got me particularly interested in how FM sound and the performance of the system could be improved," he said.

At that point in time, most FM exciters still used vacuum tubes with signal-to-noise ratios of 65dB with audio distortion running around 0.5 percent.

Out of his development work, Harris released the MS-15 FM exciter.

"It was a big breakthrough at the time. The exciter is the part of the transmitter that determines all of the sound and audio quality and is where we could make the biggest impact the fastest," Mendenhall said.

In 1978, Mendenhall went to work for Broadcast Electronics as RF section manager. He was later named vice president of engineering and then vice president of research and product development before leaving in 1993.

During his 15 years at BE, Mendenhall continued his work on FM exciters with BE's FX-30 and later, the FX-50.

To the BE exciter he added a new user interface with front-panel composite test checks and balanced composite inputs to

eliminate hum.

Mendenhall worked a great deal on high-power FM transmitters and solid-

to perfect the Digit all-digital FM exciter.

"When I came back to Harris, the Digit still had an analog input and I could imme-



Geoff Mendenhall stands with a Harris digital transmitter. In the foreground is a digital FM exciter.

state transmitters while at BE. He also managed the development of the original AudioVault digital audio storage system.

Mendenhall returned to Harris in 1993

diately see that there wasn't much advantage to someone paying extra for something that still had analog inputs," he said.

So Mendenhall went to work on defining a digital input, a digital stereo generator and a digital composite limiter for the Digit.

Mendenhall estimates that 10,000 FM radio stations around the world have transmitters with his exciter innovations operating within them. His work has led to improved signal-to-noise ratios of

"Once they buy into it, I think it'll be 10 years before it's a reality where consumers are actually receiving digital sound. Then you'll still see analog FM broadcasting around for another 20 years," Mendenhall said.

Of course, he could not predict which IBOC DAB system (or parts of the systems) being developed will be used in the future, but said, "This is the last link in the digital process. The actual output of the transmitter to the receiver. It's a very interesting and exciting time."

Mendenhall is known as a writer and educator in the field of FM transmission. He has published more than 30 technical articles and written the chapter on FM transmitters in three versions of the NAB Broadcast Engineering Handbook.

"The one thing I've always tried to do at my lectures is to give the engineers in the field several things that they could go back to their stations and do right away that could help. Whether it was a new way to tune a transmitter or improve their facility in some way, I've always tried to be helpful," Mendenhall said.

Mendenhall credits two people with helping him get his start in the industry.

"The late Ed Westenhaver was the radio section manager at Harris in the Gates Division and he gave me my first radio job," Mendenhall said.

Robert Weirather, director of broadcast relations for Harris, was Mendenhall's first boss at that company.

"Broadcast is not a job for Geoff. It's a love," Weirather said. "I like to say that he is a great caretaker of our business."

Weirather said one of Mendenhall's many talents is his ability to grasp all phases of the broadcast business.

"He has a broad understanding of transmitters, audio, storage systems and digital.

## Mendenhall estimates that 10,000 FM radio stations around the world have transmitters with his exciter innovations.

more than 90dB and reduced audio distortion to 0.005 percent.

Maybe that is why he is known in some circles as "Mr. FM Exciter." He holds four U.S. patents for electronic circuit designs in the area. They include patents for a multichannel modulation system including automatic gain shifter, automatic phase-controlled pilot signal generator and an independent matching device for power amplifier circuits.

Making solid-state transmitters more affordable with new technologies is something Mendenhall continues to work on at Harris.

"Still today, when you double the power of a solid-state transmitter you're doubling the price. Right now a 5 kW solid-state and tube transmitter costs about the same. It's when you reach the high-power levels, say 20 kW, where the price is still nearly a 2:1 ratio. You are paying a premium for the redundancy and reliability of solid state," Mendenhall said.

The industry will not see 20 kW solid-state transmitters at the same price as tube transmitters for about five years, according to Mendenhall.

Looking into the digital future of radio, Mendenhall said the time frame for the roll-out of in-band, on-channel digital audio broadcasting will depend a great deal on the acceptance of the system by consumers and receiver manufacturers.

He remains a 'dyed-in-the-wool, loves-the-smell-of-solder' engineer," he said.

Alan Parnau, managing engineer for CBS engineering, has known Mendenhall for more than 17 years. He said he worked on USA Digital Radio's earlier versions of IBOC digital audio broadcasting technology. "Geoff was always willing to help us with all of our weird equipment requests," Parnau said. "And it's not always a money business with him. He did us favors because it was for the betterment of the industry."

Parnau tells of a time when Mendenhall canceled several management meetings at Harris to help Parnau with some modulation monitoring and testing near Chicago.

"Geoff told me, 'What's more important, meetings or a customer?' That's the way he's always been when it comes to servicing customers," Parnau said.

Milford Smith, vice president of radio engineering for Greater Media Inc., called Mendenhall "brilliant."

"Flat out, probably the smartest engineer I've ever met," Smith said. "His contributions to the broadcast industry have been remarkable. When it comes to RF transmission, exciters and the fine-tuning of FM transmitters, he's the best."

Mendenhall lives with his wife and two children in Quincy. He plans to re-locate to Cincinnati this summer as part of Harris' management consolidation.

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# PR&E Hopes for Better 1999

► PR&E, continued from page 3

The company reported a net loss of \$2.3 million for the fourth quarter and \$4 million for the 12 months ended Dec. 31, 1998.

Blake said original numbers showed fiscal 1996 as break-even for PR&E, and 1997 with a "modest" income of \$200,000 to \$300,000. The restatements will show losses of \$630,000 for 1996 and \$276,000 for 1997.

Despite its losses, PR&E sales volume has nearly doubled since the company went public in 1996. Last year, net sales were \$14 million, compared to net sales of \$12.3 million in the previous year.

On Dec. 31, 1998, PR&E's stock price was \$1 5/8. As of early April, it was \$ .75.

PR&E went public in 1996 and raised approximately \$4 million in capital. Based

on the 1998 loss and the cumulative effect of the restatements, the company said it would report an accumulated deficit of \$4.4 million and a total shareholders' deficit of \$281,000 as of Dec. 31, 1998.

Of the money raised in the 1996 public offering, Blake said, "Probably around \$2 million went to the development of the company's products that are now out in the marketplace. ... The rest went to support the growth in the business ... more people and more infrastructure."

He said Imperial Bank of Los Angeles was "working with the company" but would not specifically say whether loans were being renegotiated. As of March 25, PR&E said it owed more than \$2 million on its line of credit and \$574,000 on its term loan.

The deficit in shareholder equity is the main reason PR&E has fallen below the AMEX listing guidelines, Blake said.

According to AMEX domestic common stock listing guidelines, issuers are required to maintain \$2 million in stockholders' equity if the issuer has had losses in two of the last three years, or \$4 million if losses were incurred in three of the last four years. The "issuer" is the company whose stock is listed on the exchange.

The American Stock Exchange could not comment on PR&E. A source close to the exchange said stocks sometimes fall below guidelines for a period of time, but this does not necessarily mean the stock would be delisted.

The exchange monitors a stock that has fallen below guidelines for an unspecified amount of time. If it decides to delist the stock, the issuer has opportu-

nities to respond and appeal, according to what it calls "maintenance standards" for domestic common stock.

PR&E pointed to other factors for losing money in 1998.

Additional costs the company will restate for the first and second quarters of 1998 are related to labor and overhead. Williams also blamed delays in payments by clients not ready to take delivery on their orders for various reasons.

He said in several cases, "We would expect an order at a certain time to meet a certain shipment date, and then the order would be delayed." This might happen, he said, when stations were bought or sold.

In its restatement, the company will report a cost of approximately \$507,000 to terminate a build-to-suit lease and to write off costs associated with the potential acquisition of Graham-Patten Systems Inc. That deal was announced but not consummated; Williams said the deal is "on the back burner."

PR&E leases a 40,000-square-foot facility in Carlsbad, which it had owned at one time. It was planning to sub-lease or sell its lease and move to a building with more space. Williams said the downturn in the Asian economy helped to soften real estate prices in the Carlsbad area, and PR&E was advised not to move, to avoid the possibility of carrying

two leases at once.

Along with new CFO Blake, the company has hired a controller, Kim Best, and a new sales manager, Shirley Thom. These are the latest of several management changes under Naab, who joined the company in the middle of 1998.

PR&E traditionally has been considered a big-market supplier. According to a 1996 prospectus prepared before it went public, the company had 521 clients in Arbitron markets 1 through 50, and 171 clients in markets 51 through 100.

The company wants to expand its traditional customer base beyond large markets and provide total studio systems to stations in other size markets, Williams said.

PR&E said it would exhibit at NAB99 and demonstrate a new product, an entire studio available for purchase, complete with walls.

**PR&E said the company is viable and customers are placing orders.**

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World Radio History

# Low-Power Opinions Abound

► **LOW POWER**, continued from page 5  
move to low-power FM in response to market domination by media conglomerates, the proposal as currently constructed would severely hurt the small-business AM owner who would be unable to compete on the FM band.

Small AM stations are already at a disadvantage. Both the actions of the previous FCC administration — as well as the current proposal — hurt Class C AMs more than any other entity. If you are truly interested in reversing the trend toward monopoly, we local owners would like to participate.

It is not fair for the FCC to move ahead with low-power FM until it remedies the condition of Class C AMs. It would only be fair to allow standalone Class C AMs the first crack at low-power FM frequencies. Include us!

*Gary Richardson  
SBE, NARTE certified  
Owner/General Manager, WJLD(AM)  
Instructor in Electronic Engineering  
Technology, ITT Technical Institute,  
Birmingham, Ala.*

Dear RW,

It is my personal opinion that the FCC is about to make a big mistake and create a "CB band."

While my opposition to it is not based on programming, I would like to ask the question, "What are they going to feature?" You can only segment the music into so many types.

No, my real objection to low-power FM is based on engineering. One of my companies is in the business of broadcast engineering and as such, I am the chief engineer for four FMs, two AMs and one LPTV station. We make sure our stations are in total compliance with all FCC rules.

We are often asked to render service to

## 'Communities like Santa Monica, Calif., are clamoring for signals of 10 watts or less.'

other stations that have gone off the air. We find some lacking licenses for the microwave or RPU, and others that do not even know what the transmitter power should be to make proper ERP. There are numerous other violations, big and small.

These are stations with valuable licenses, and yet they are not in compliance. The FCC does not know this and does not have the personnel to police these stations.

Now let's toss in some jokers that the FCC has little control over. Many will run with just "a little more power" to reach that next town or revenue market. Antenna heights and other limits will be ignored or blatantly disregarded.

There is no way the FCC can police these stations to insure reasonable compliance. With the proliferation of "new stations," the FCC will have an impossible job determining which stations are supposed to be on the air in the first place.

While a "high-minded" sounding idea, the low-power radio proposal is not going to render a service to the public in general and will result in trashing the

existing services.

Look at the trouble the FCC has in getting fairly easy-to-find pirate stations off the air. Add in a couple of thousand new pirates and things will be completely out of hand.

*Don Patrick  
SBE-CPBE  
Fort Smith, Ark.*

Dear RW,

I am happy to see that **Radio World** supports this new service. Too many communities and segments of our population have little or no radio voice to serve them. This will be a way to reach them in an affordable manner.

I have been contacting and visiting communities in many parts of the country about starting LPFM stations. I am particularly interested in putting a station into a community that currently has no local service, knowing that they could benefit the most from a new station.

Recently I visited a small community in Kansas that has no local radio station. This community receives maybe eight to 10 stations while most of the FM dial is completely signal-free. The nearest stations are at least 25 miles away, which has created a real problem for this community.

This community gets ignored by the out-of-town stations because those corporate blowtorches are busy making a quick buck while ignoring most of the needs and desires of the listeners. Residents would love to hear local news, community information, local weather and music that does not fall into the categories of country or hard rock.

This community and many of similar size and scope have a real desire for a station, even a legal Part 15 station that will offer them some type of local programming.

I am planning on starting a legal Part 15 station in that town, provided it is

financially feasible. As this community is only one square mile in size, the signal should reach every resident and business. From the start, they will get local weather, community information and local news to follow shortly after. When facilities are in place, they will be able to get high school sporting events on the air.

We would create a "storm spotting" network of tornado watchers, reacting speedily to severe weather should the need arise. This station will also be a great training ground for local talent.

I have been told by the city government, small businesses and residents that if I bring them a station — even a Part 15 station — they will listen. They are tired of news from 25 to 50 miles away and want to know what is going on in their community. I will do what the full-power stations cannot: service a small community by meeting their needs and earning a small profit to boot.

This is just one more reason to legalize LPFM. We have communities that will never be able to support a small full-power station due to outrageous start-up costs and the inability to generate acceptable revenue year after year. A station

with very low power will still reach the majority of the people living and working in the trade area.

*William C. Walker  
Lee's Summit, Mo.*

(Note: The above writer now runs a Part 15 AM station in Lee's Summit.)

Dear RW,

Make no mistake: Interference problems can be effectively addressed, but the big boys use that issue to hide behind their fear of unpredictable competition from upstart, sometimes unpolished/untailed broadcasters who dare to offer something else for a bored button-pushing public.

## 'This community gets ignored by the out-of-town stations because those corporate blowtorches are busy making a quick buck.'

With low-power FM there can be more than shock jocks, several focus-group-shaped rock stations all trying to grab the same demographic, and the incessant, undemocratic agenda set by too many talk stations. The most pathetic and hypocritical aspect of this lies with enterprising broadcasters who demand government protection from a more open marketplace of ideas.

That's almost as funny as rural broadcasters using U.S. Rural Electric Association resources to power their radio stations, while lambasting the federal government at the same time.

The Feb. 17 Page 4 column is correct. Big radio will face the same "nightmare" the television networks experience from cable television. Even if low-power FM is gutted, growing audionet services and other technologies will make the NAB crowd squirm.

If low-power FM is canned, the biggest problem returns to the question of what to do with pirates who will resurface, otherwise law-abiding citizens with something else to say or play in the land of the free.

"So, why are you in the joint?"

"Oh, I was involved with a pirate radio station."

"Man, you're kidding, right?"

*Pete Simon  
Denver, Colo.*

Dear RW,

Leslie Stimson ("FCC Faces LPFM Interference Concerns" RW, March 17) did a great job in showing that 1 kW LPFM stations can create interference nightmares for the FCC as well as existing stations.

I don't believe a 1 kW station with an antenna height of 60 meters can be viewed as a low-power station.

At present, there are many licensed FM stations with ERPs less than 1,000 watts. A good deal of these stations exist in the non-commercial band and do an adequate job serving their communities. These are not low-power radio stations.

If LPFM is intended for individuals or groups that wish to serve their communities, the ERP should be just enough to

reach those communities. The transmitter should be centrally located in the community and the 1 mV/meter contour should only serve the community of interest.

Micro-radio stations, one to 10 W power levels, would probably be adequate to reach communities within a five-mile radius.

In densely populated urban and suburban areas, a 10 W transmitter can reach many homes, cars and commercial establishments.

A 1 W station would serve most high school and college campuses and public recreational areas as well as housing developments.

These micro-radio stations would cause a lot less (20 dB) interference to existing stations than the proposed 1 kW stations.

Let's not forget what the "LP" in LPFM is meant to stand for.

*Carlton Davis  
Consulting RF Engineer  
Baltimore*

Send us your opinions on this or any radio issue. Send e-mail to [radioworld@imaspub.com](mailto:radioworld@imaspub.com) or write to Radio World Readers Forum, P.O. Box 1214, Falls Church, VA 22041.

### INTERNATIONAL UPDATE

## Digigram Opens China Office

Montbonnot, France-based Digigram — maker of PCX digital audio cards — recently opened an office in Beijing to target broadcasters and audio professionals in the People's Republic of China.

Vicki Li will head the new office, joining the Singapore-based Digigram Asia team of Christopher Wu and Wallace Lau. Wu will provide customer service and technical support to original equipment manufacturers and end users in China. Lau, based in Singapore, will serve as accounts and administration manager for the China office.

"Opening the Beijing office reflects our confidence in the market and solidifies our commitment to China," said T.K. Pang, vice president of Digigram Asia Pte. Ltd.

The new office is located at Room 705, Unit C, Mei Hui Building; No. 58 Dong Zhong Jie, Dong Cheng Qu; Beijing, China; telephone/fax is +86-10-6554-3315; or e-mail [vli@digigram.com](mailto:vli@digigram.com)

Information is also available via the World Wide Web at [www.digigram.com/](http://www.digigram.com/)

— Chris Joaquim

# LISTEN

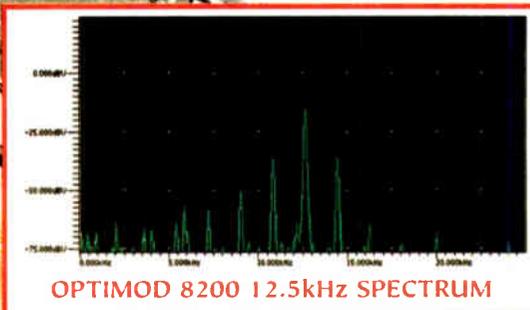
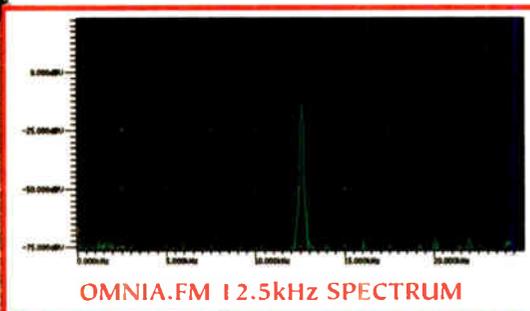
**W**hen you hear the Omnia.fm, you'll know why broadcasters the world over choose it: Sound that's as smooth and fluid as analog, with absolutely none of the digital grunge you hear in other digital processors.

So what's digital grunge? Artifacts caused by aliasing distortion in yesterday's processors that lack the Omnia's 48kHz sampling, 192kHz virtual upsampling and unique anti-aliasing final limiter. In the FFT analyses shown below, you can actually see the grunge as well as its absence in the Omnia.

To hear the difference for yourself, contact your Omnia dealer and get your risk-free, 60-day demo\*.

**Here's how:** The test results were obtained with a Hewlett-Packard Audio Test Set, Model 339A; the audio processor under test; and Rapid Systems R1200 Data Acquisition System for FFT analysis. The processors were set for 75µs pre-emphasis, and were carefully adjusted so the input levels were within the normal range of operation. The unit under test was fed a 12.5kHz test tone using the analog inputs. The discrete left channel analog output was connected to the FFT analyzer input. That's it. No tricks, no disclaimers about the test working only in our trade show booth or only in our lab, under the most arcane, non-real-world test conditions. In fact,

you can duplicate the test results yourself in your own shop. Don't have an FFT analyzer? No problem. Just use an oscillator and your ears—you can clearly hear the birdies in the old processor! Of course, this isn't about test tones; it's about music. And Fourier theory says that music—whether it's rap, oldies, urban, country, and yes, even grunge—can be represented as a combination of sine waves. Imagine what this kind of aliasing distortion can do to complex musical signals!



**Here's why:** The Omnia.fm utilizes 48kHz sampling for dynamics processing and virtual upsampling at 192kHz for the final limiter, which is a unique, anti-aliasing design. The test used version 1.02 software and the 'Cranked' preset, which is the Omnia's most aggressive stock setting. The Urban® Optimod® 8200 used for testing operates at 32kHz sampling for the dynamics processing and incorporates (4x)

128kHz upsampling for the clipping/low-pass filtering function. The test used version 3.0 software

and the 'Urban/Rap-Dense' preset, which is the Optimod's most aggressive stock setting. Aliasing will occur with input signals above 5kHz in 32kHz FM broadcast audio processors unless mechanisms that cause aliasing are eliminated.

For a complete technical report, call us for a copy of our paper entitled "Omnia.fm: An Engineering Study." Or visit our web site at: [www.nogrunge.com](http://www.nogrunge.com).



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\*Contact your dealer for details on this demo program. Demo requests must be accompanied by a purchase order so our dealers know you're really serious about some serious sound.

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Circle (202) On Reader Service Card

World Radio History

# SBE Seeks Students for Program

► YOUTH, continued from page 7

"We are encouraging one of the monthly chapter meetings to be a student night," said Poray. "The idea is to put students in contact with actual broadcast engineers."

Poray suggests the meeting be held at a radio or television station where the students can tour the facility, and perhaps a meet-and-greet session with the station general manager.

And while the days of high school kids spending the summer as a radio station gopher may seem to be a thing of the past, Poray hopes that these "open program" approaches may lead to part-time work or internships for students.

Bob Hess is the director of operations and engineering for WBZ(AM),

**'Few kids are choosing broadcast engineering as a career.'**

WODS(FM) and WBZ-TV in Boston. Hess served as the SBE national membership chair when the youth

program idea was born about two years ago. He serves on the SBE board of directors.

"There are a lot of SBE members who may have had a mentor in high school who are eager to impart their knowledge and influence kids into broadcast engineering," Hess said. "So many kids are going into the computer industry. We feel there may be lack of capable broadcast engineers in the future. Very few kids are choosing broadcast engineering when they get out of high school."

The SBE Youth Membership Program also provides support in the form of information on scholarships

## Get Better Jocks for Less Money

Decrease costs, *increase profits* and run your station more efficiently. Outside of drive time, why pay your talent to sit around *waiting* to talk? A Scott digital System can put all your songs, spots and prerecorded Voice Trax together smoothly and easily—without anybody in the air studio!

For years, Scott Studios' client stations have been successfully pre-recording incredibly live sounding fully localized 4 hour music shows in just 10-20 minutes. If you have a hub and spoke cluster of stations with similar formats and names (like Mix, Magic, Kiss or Kicker), you can sound great and save even more.

### Scott Breakthrough: Free Software!

Thanks to Scott Studios' new *free* Voice Trax Via Internet (VTVI) software, announcers can phone in shows with studio quality from anywhere. All they need is a good microphone, mic pre-amp and processor, Internet connection, any Windows® computer with sound card and Scott Studios' *free* VTVI!

Simply schedule your station's music. With the touch of a button, your log and latest local copy points are automatically e-mailed to your announcers. And Scott's VTVI works seamlessly with all music schedulers and traffic/billing programs.

Live tags, trivia and copy are displayed automatically on the screen. Announcers don't need a clumsy copy book or liner cards. They can talk as early as they want before songs fade and over intros or in the clear. VTVI is *so* simple to use: a touch of the space bar triggers the next song or the next spot. Voice Trax are recorded with the computer's regular sound card with exceptional digital quality.

Unlike live radio, any or all of the Trax can be reviewed and possibly improved by re-recording. With the VTVI's Segue Editor, announcers can fine-tune their timing of song intros, back sells and donut spots without re-recording.

### VTVI is Goof Proof!

VTVI includes Scott Studios' exclusive Voice/Music Synchronizer. Whenever the announcer mentions song title or artist, he or she turns on the link so the back sell or intro plays *only* with the correct song.

### You Can Even Do Time & Temp!

Scott's VTVI lets you record every possible time check, or do a range of alternate recordings mentioning the time in any Voice Trax. The Scott NT System picks the right one at air time. You can also record all the seasonal temperatures and let Scott's optional temperature announce equipment play the right one at air time.



Here's Scott Studios' Voice Trax Via Internet (VTVI) software, shown with the optional Segue Editor. VTVI allows a distant announcer to pre-record a 4 hour show in about 15-20 minutes with nothing more than a Windows computer with an ordinary sound card, an Internet connection and a good microphone.

### \$10,000 a Year Cheaper than WANs

When the announcer is done, a click on the VTVI Auto-Send button dials the Internet over a standard phone line and uploads the entire show to your Scott Studios digital audio system automatically. Transfer does take a long time, but your announcer can be answering e-mail, writing copy or creating promos on the VTVI computer while the show transfers.

VTVI isn't limited to music announcements. It gives high quality audio to recorded spots, remotes, weather, stock reports, news and election returns.

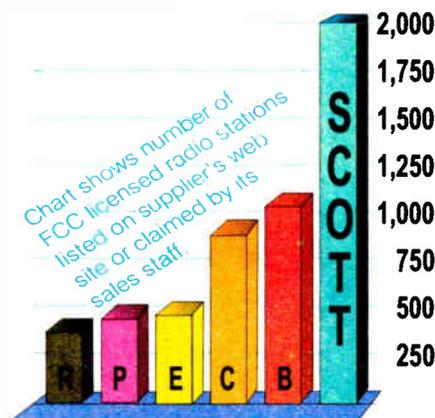
Your station will sound great with Scott VTVI! The only thing you need is an Internet connection on each end, a \$29 a month FTP transfer site and the Scott NT System with Remote Recording Router.

Voice Trax play seamlessly without anyone back at the station. And if the announcer forgets to record something, or if songs or spots get changed at the last minute, Scott's Voice/Music Synchronizer automatically substitutes a generic Voice Trax with the same voice for the day and hour of that break.

### 3 VTVI Models: Good, Better, Best

Scott Studios also offers a \$500 VTVI+ that sends your distant announcer telescoped song intros and endings via the Internet. With VTVI+, a telescoped aircheck can be previewed and fine-tuned in the context of starts and ends of songs and spots.

Or with VTVI Deluxe, your announcers record their Voice Trax *while listening to song and spot intros and endings* in context!



VTVI is just one of several ways Scott Studios digital systems can improve your sound *and* your bottom line.

It's a fact: More U.S. stations use Scott Studios than *any* other major digital audio system. 2,000 radio stations use 4,400 Scott digital workstations, including *major* groups like CBS, Chancellor, Disney/ABC, Clear Channel, Emmis, Citadel and many more. Last year, 418 U.S. stations bought new Scott Systems. That's more than chose some other "major" digital systems in several years! Call 800 SCOTT-77 to find out why Scott Studios are chosen the most.

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## Youth Membership Information and Application

Helping Prepare Tomorrow's Broadcast Engineers

for students interested in broadcast engineering careers.

"With the help of The Ennes Educational Foundation Trust, we have instituted a new scholarship just for high school students," said Poray. "The first one will be awarded this coming summer to someone who has an interest in broadcast engineering as a career."

Students in grades 9 through 12 who have an interest in the technical side of broadcasting are eligible for Youth Membership in the SBE. Dues are \$10 per year.

For more information, call (317) 253-1640 or visit the SBE Web site at [www.sbe.org](http://www.sbe.org)

Despite consolidation's apparent slimming effect on the field, Poray remains convinced that there will always be a market for "good, bright people to serve."

"So even if the number of engineers required is reduced, we're still going to need them," he said. "The need remains to attract new people to the field."

Sharon Rae is managing editor of RW.

This is one in a series of occasional articles on jobs and radio employment issues.

### NEWS WATCH

## FCC Fields Interference Calls

**WASHINGTON** The FCC handled more than 1,200 interference complaints in the past year from federal, state and local public safety and emergency officials. The Compliance and Information Bureau, which handles the complaints, provides 24-hour a day assistance to resolve interference problems, giving priority to emergency situations. Call categories include law enforcement, marine distress calls and air traffic control frequencies. The CIB also handles interference calls from the Department of Defense and National Oceanic & Atmospheric Administration for the U.S. satellite search and rescue system.

***"Tom, we bought another radio station last night."***



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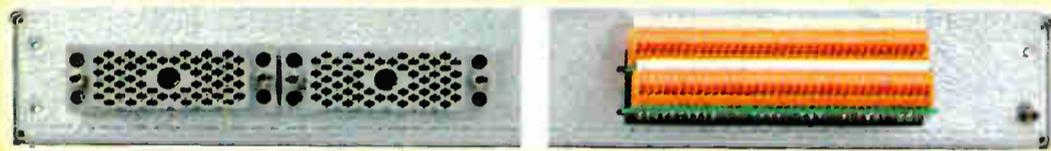
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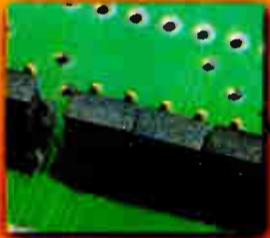


Heavy duty cable bar

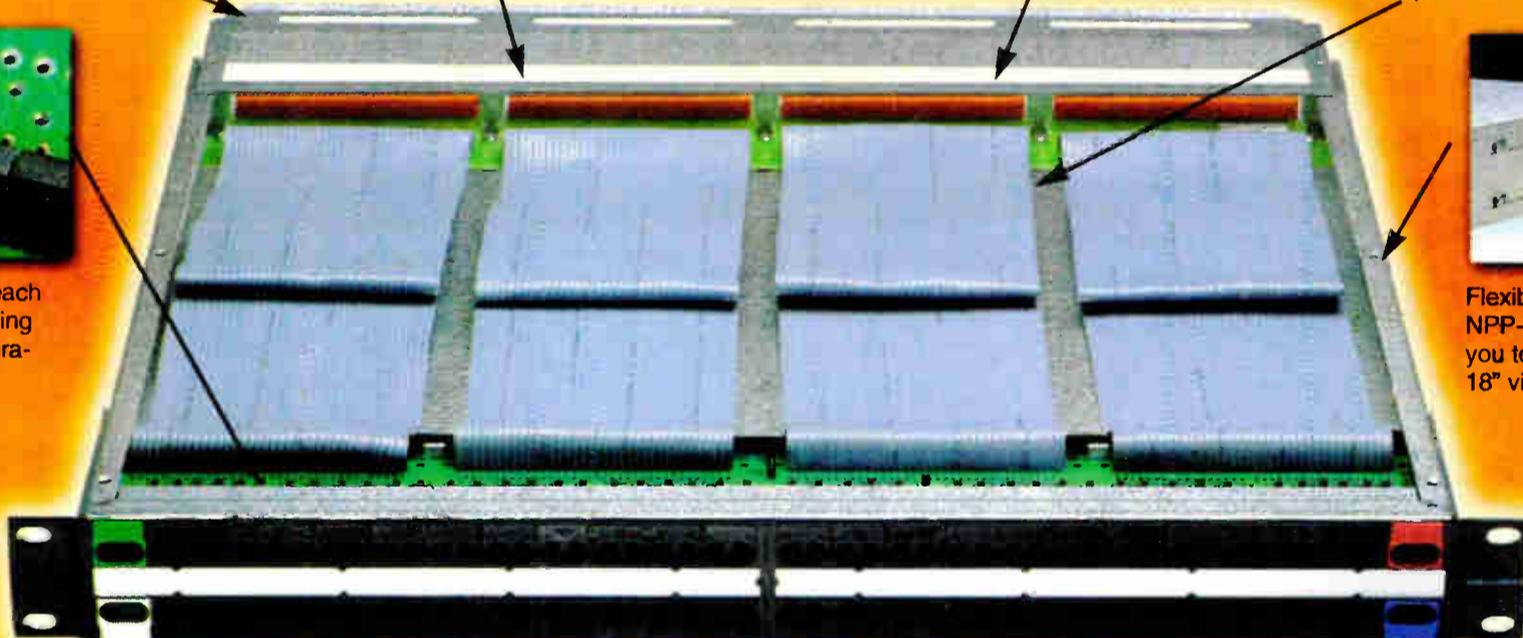
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Jumpers behind each jack allows switching into 1 of 6 configurations, even after installation.



Flexible rack depth: NPP-TT/TB-14 allows you to go from 14" to 18" via built-in slider.

The Easy Patch series of easy to use patchbays eliminates signal degradation and offers excellent crosstalk performance required in today's broadcast facilities, mobile trucks, recording studios and audio installations.

Their analog/digital signal capability, reduced wiring time and quality workmanship are unmatched by competitors' patchbays.

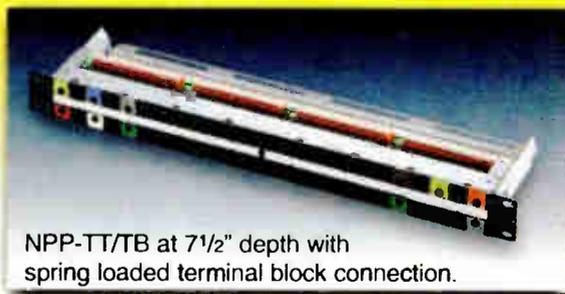
The Easy Patch gives you features and options no other patchbay provides:

- Galvanized, heavy duty metal housing.
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Circle (116) On Reader Service Card

World Radio History

# Workbench

Radio World, April 28, 1999

## Brainstorm for Simple Solutions

John Bisset

Dave Galloway of Waycross, Ga., had no idea of the avalanche of response that was generated from his request for a simple, inexpensive phone coupler!

The simplest, and cheapest, is a 600:600-

346-6873 for a catalog. As shown, the coupler is inserted between the handset and the phone, and care must be taken not to reverse the wire order on the jumper coming from the coupler to the phone.

The 1 kohm pot can trim the audio from the mixer, so it sounds nearly as loud as

WUST(AM) in Falls Church, Va., made use of the wooden mic boom blocks for headphones and a volume control. (Figure 3)

He used the lower screw hole to the volume control plate to mount the jack for the headphones. He had another clever idea, too. He screwed a little plastic wire loop into the wood below the plate, to keep the headphones from "walking."

New World Radio has a multilingual-format, with perhaps a hundred programs and performers using the studio each week. Rather than worrying about what kind of headphones the performers would be plugging into Brian's equipment, the decision was made to provide headphones for the performers to use. This little trick keeps the headphones in place in each studio.

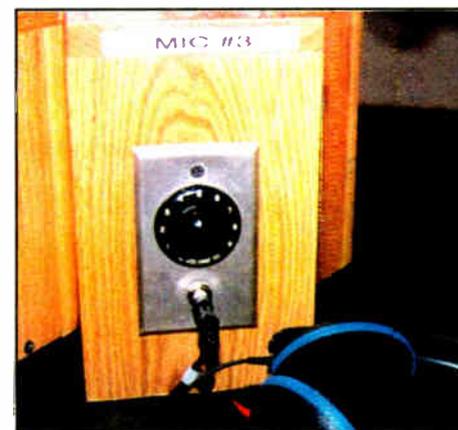


Figure 3

Submissions for this column are encouraged, and qualify for SBE recertification credit. Fax your submission to (703) 323-8044, or via e-mail at [jbisset@harris.com](mailto:jbisset@harris.com)

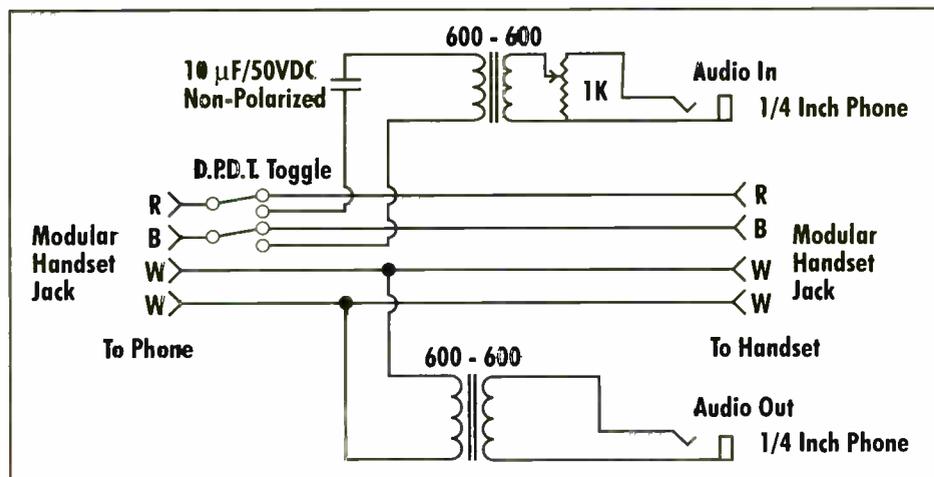


Figure 1

ohm transformer, with a 2 mF non-polarized cap. rated at 200 V and connected in series with the primary, which connects across the "tip" and "ring" of the phone line. The cap blocks the ringer voltage.

An improvement is to place a varistor in parallel with the primary winding to help absorb the ringer spikes. If you have telco "repeat" coils not being used, they work great for the transformer.

Jim Holmes of WVNO-FM in Mansfield, Ohio, was kind enough to photocopy several phone coupler articles from RW and other publications, which have been forwarded to Dave.

the audio from the handset. By drilling a small hole in the mini-box, the trimpot can be adjusted by a technically competent person, using a "greenie" screwdriver.

Of course, nothing can compare to today's digital hybrids. If your station is on a tight budget, work with the GM calculating how many remotes the station does and how long it would take to pay for a digital hybrid if the clients were charged a premium for the hybrid use. Even adding \$25 to the cost of each remote should generate enough additional revenue to justify the improved equipment.

By approaching your GM with your



Figure 2

Keep a file with clipped articles; it will serve you well. For newcomers to broadcast engineering, this material is priceless.

Lee Salter of Elizabethtown, Pa., sent the above schematic (Figure 1), which ties into the modular handset jack. Lee's version includes a switch for coupling audio into the telephone from the console, permitting spots to be played down the phone.

Lee mounted the parts on a small piece of perfboard, and enclosed it in a mini-box. Lee got his parts from Mouser; call (800)

"revenue generator" hat on, he'll be impressed that you're trying to improve his bottom line, the sound of the station, and not just spend money!

★★★

Figure 2 will bring back memories to those of us who started in this crazy business as jocks. Randy Kerbawy of WTNJ(FM) in Beckley, W.Va., has a good collection of Clevite-Brush and other headphones in his basement workshop.

Brian Edwards at New World Radio's

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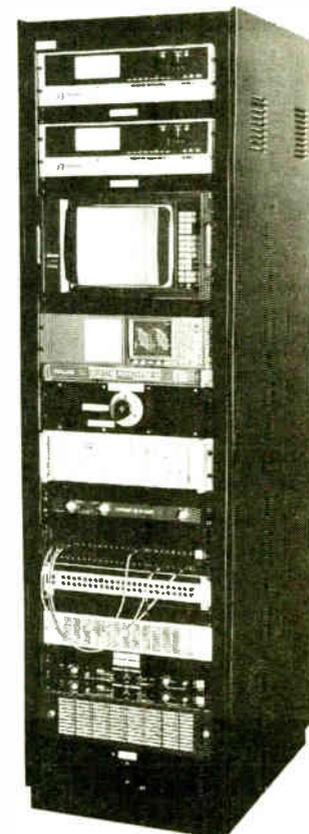
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## FEED LINE

# The Basics of AM Propagation

W.C. Alexander

At Crawford Broadcasting Co., we have found great value in having employees, from board operator to general manager, who have a good understanding of how radio signals get from our antenna to the listener.

There is also great value in having a staff that understands not only why its station is what it is (frequency, power, pattern and operating hours), but why other stations, the competition perhaps, have the facilities they do.

Most non-engineering types get by with a minimal knowledge in this area,

and much of what these people believe may well be in error. It is our job as engineers to educate these people.

In this company, we have been making a concerted effort to educate these folks by hosting a series of mandatory engineering seminars. Attendees exit with a good working knowledge of the basics of radio propagation, among other things. These seminars and the material presented in them has been so well-received it occurred to me that RW readers could benefit.

I plan to share some of this material — sort of a primer on radio. Our *Feed Line* articles usually are devoted to more tech-

nical topics, but this time I invite station managers, sales people, air talent — anyone who works in radio — to sit in and pick up on these basics.

## Everyday language

The material will be presented in everyday language. (No "Enginese." I promise.) I hope that, with a better understanding of how the signal gets from here to there, you will be better able to service your clients and audience.

We will begin with AM propagation, and in future will deal with FM issues as well.

The AM broadcast band is located in what is known as the medium wave

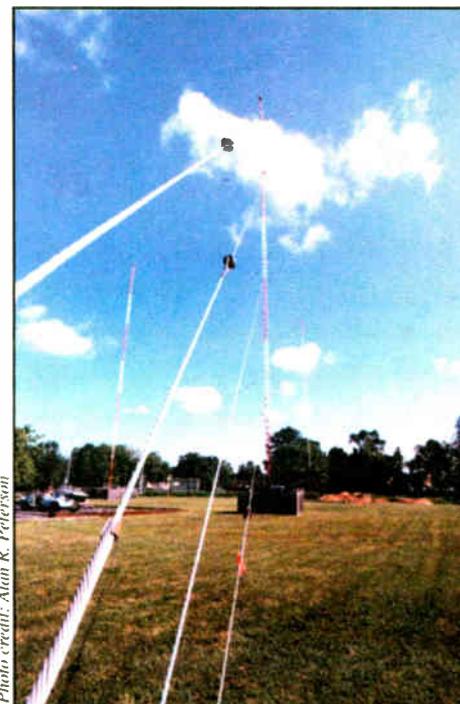


Photo credit: Alan R. Peterson

(MW) band. Signals within this band of frequencies behave differently than short-wave signals, VHF signals (such as FM broadcast frequencies) and those in higher bands.

Except in the case of special rooftop antennas, AM antennas are located on the ground, with the bottom of the antenna just a few feet from the surface of the earth. Propagation of signals takes place by means of ground waves and sky waves.

Ground waves, as the name implies, travel along the ground surface. Were

**Train your staff  
in these basics of  
radio. They — and  
you — will benefit.**

the surface of the earth a perfect conductor, the intensity of ground waves would halve every time the distance from the antenna is doubled. In other words, the signal strength at two miles would be half the value it was at one mile.

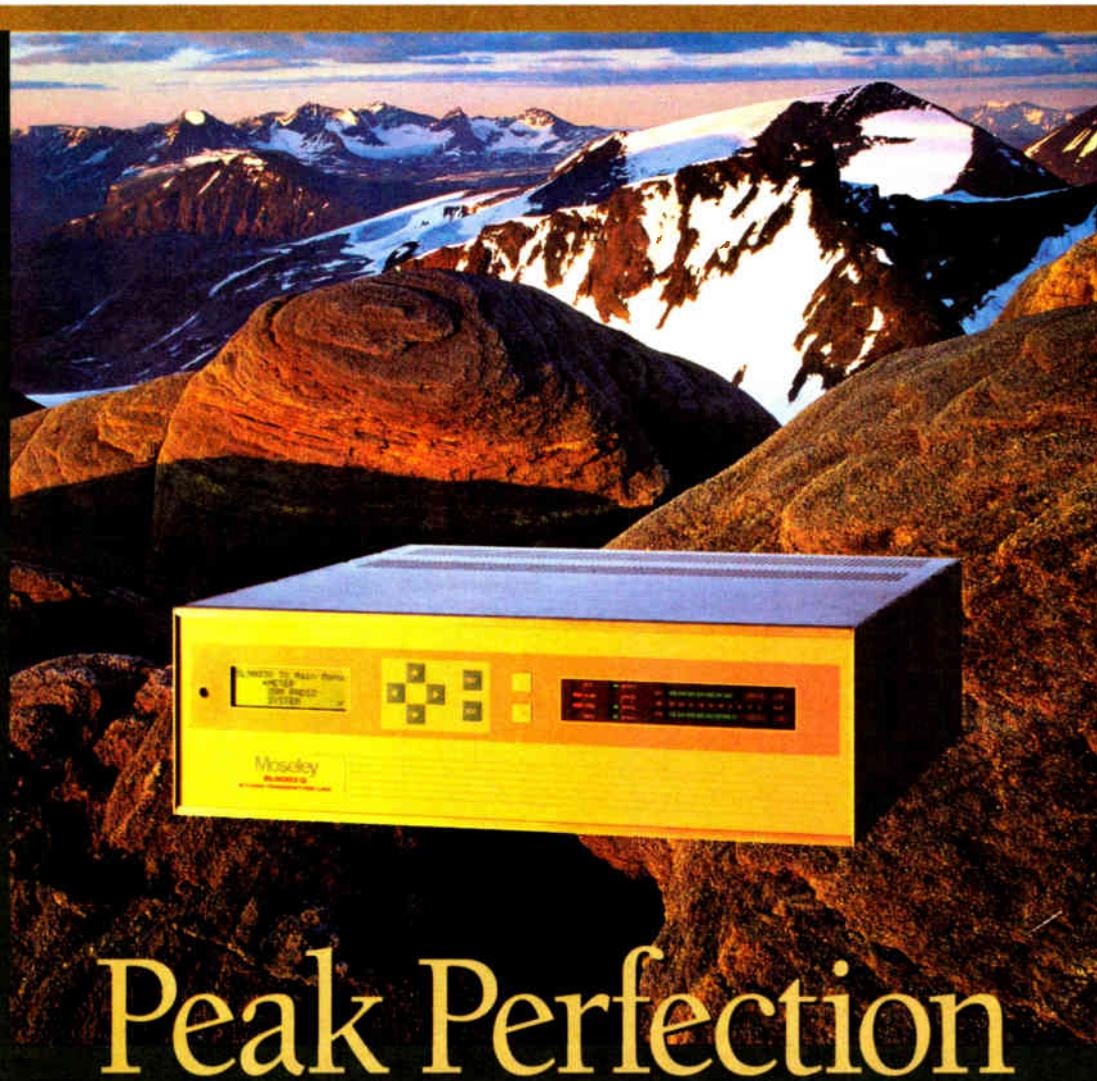
Another way to express this situation: The signal strength is inversely proportional to the distance, thus the term "inverse-distance field" that you may have heard engineers use from time to time.

## Ground wave signals

The surface of the earth is not a perfect conductor, however, so ground wave signals are attenuated to some degree. Sea water is the most conductive material commonly found on the face of the earth. Ground waves traveling over the surface of the sea suffer very little attenuation.

On the other end of the spectrum are rocky, mountainous areas. If you have worked in, say, the Appalachians, then moved to the Midwestern plains, you know that AM signals with comparable powers and dial positions are radically different. On the plains, where the ground has high conductivity, the signals are much less attenuated than in the mountains of the east, where there is a great deal of attenuation.

What is on the surface of the earth also  
See PROPAGATION, page 27 ►



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# NEC: Breakers and Panelboards

Charles S. Fitch

This is one in a series of articles about the National Electrical Code. The articles and supporting materials are available online at [www.rwonline.com](http://www.rwonline.com) in the reference section.

Unlike other documents, the National Electrical Code is somewhat organic. It grows, changes and develops to accommodate not only necessary text clarification but new techniques and materials.

In this series we have been addressing the NEC as it appears in the 1996 version. A new version appears every three years, so the 1999 version is at hand.

In this replacement cycle, the various code committees were asked to consider more than 4,260 proposals to amend the NEC. These proposals came from many different sources with many different motivations, submitted by maintenance and installation personnel, electrical inspectors, engineers, manufacturers and so forth.

There is nothing to prevent you from submitting a proposal to improve the NEC, if you feel it would precipitate a better, safer environment. You can submit right now, for the 2002 edition, and I encourage you to do so.

To submit your proposal online, go to [www.nfpa.org](http://www.nfpa.org) and click on "Codes and Standards."

## Load protection

In our previous article in the March 31 issue, we brought the electric power up to the main breaker in our radio

station's primary distribution panel. We reviewed the performance characteristics of circuit breakers (CBs) and fuses. Now let's look at panels in general and the types of breakers that will

input through lugs.

Into this breaker panel is connected the breakers that protect the "branch" circuits. There are two general categories of breakers: "push-on" and "bolt-on."

Most ordinary breakers are push-on; the breaker seems to snap into the matching panel rails. These are satisfactory for low-current supply, especially when the average circuit amperage is a low percentage of the breaker rating.

Bolt-on types usually are encountered at high current, but most major electrical manufacturers make breakers that are more screw-on than bolt-on. These are designed for applications in which the breaker supply operates close to the 80 percent level or the panel might be subject to mechanical vibration.

Ordinarily you will encounter four pedestrian types of breakers in your travels: general service breakers; Heating and Air Conditioning Rated (HACRS), which

ignore the short-term, high starting currents of air conditioning compressors and air handlers; Switch Rated breakers (SWD), found most often in lighting panels where the breaker also is used as an on/off switch for lighting and similar loads; and Ground Fault Interrupters (GFI) — in addition to normal overcurrent operation, this breaker also will trip on a small value of leakage current (the Jacuzzi in the boss' office will have one of these normally).

When selecting a breaker, specify the manufacturer series, trip amperage, the

type (HACRS, switch type, etc.), the connection thermal rating and the number of poles which is the count of overcurrent protected paths under a common trip.

The NEC view is that all wire and connections, and most devices, have a maximum design temperature for rated performance. That is its thermal rating. For instance, when you look at the wire ampacity tables, you will note that the ampacity varies for different rated temperatures. THHN wire is rated at 90 degrees Celsius for one set of ampacities, and at 75 degrees Celsius for a proportionally lower ampacity.

Similarly, breaker connections are rated at a temperature as well, which almost universally is 70/75 degrees Celsius maximum for rated performance.

What does all this mean? It means that you cannot use the ampacity of a 90-degree rated wire on a 75-degree breaker. If you must, then you need to specify a 90-degree breaker (they are rare and expensive).

There are ways around this, but they are beyond the scope of this article. However, note that it is normally the temperature ratings of connections and devices rather than the wire that sets the maximum safe ampacity of a system. We'll return to a discussion of thermal restrictions when we get to conduit and raceways.

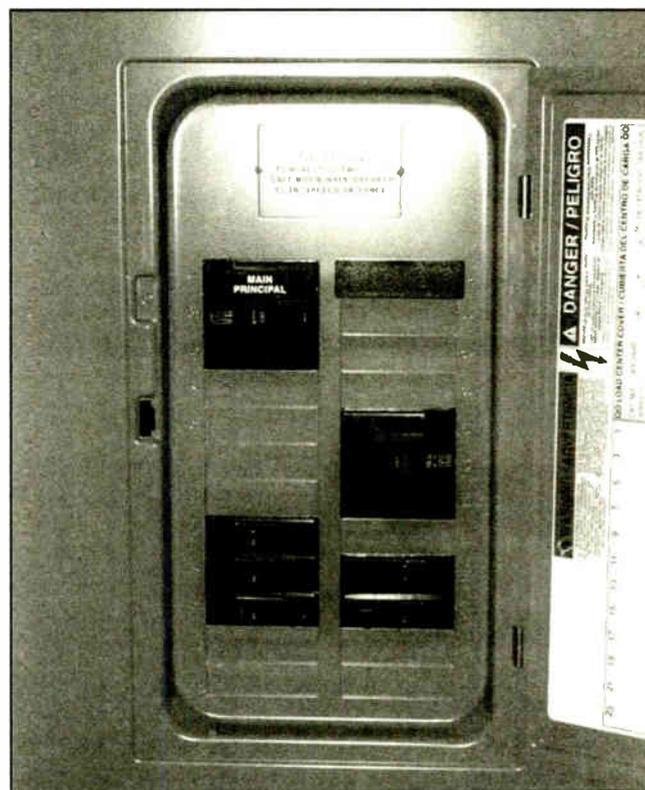
## The inside connection

Now that we have all of our breakers for all of our loads in the main panel sagaciously specified, organized and properly allotting the current to all of the racks, lights, HVAC, etc., let's look at some of the connections inside the panel.

Of all the ground connections in the station, in this panel, the main ground connection is the most important. In a modern radio station, there are four or five types of grounding defined by goal: generation grounding; electrical safety grounding; lightning grounding; RF grounding; and audio grounding.

(Note: See Cris Alexander's series on grounding, particularly the article in the

See NEC, page 23 ▶



Interior CB Layout of Surface Mounted Breaker Panel

protect your loads.

There is no such thing as a "breaker panel" in the NEC. Circuit breaker panels are "panelboards" with circuit breakers in them for overcurrent protection. (See Article 384.)

A panelboard with CBs can be:

- A panelboard with main breaker, the ubiquitous panel with a main breaker on the input supply and a collection of downstream CBs.

- A "lighting" or "appliance" panelboard, which is primarily to supply lights and similar loads wherein more than 10 percent of the loads (CB rating) are 30 A or less with a neutral connection (this connection necessity means no delta connected loads such as most transmitters).

- A "branch" panel, which is a panelboard supplied from another panel.

As mentioned last time, if your studio space is far from the point in the building where the service enters, it is not unusual to have the main breaker separate from your operations panelboard. It should be located near the point where the power enters the building.

If that is the case and the loads are small enough, you may even have a lighting panelboard in your space that has no main breaker.

It's an unusual transmitter where there is no circuit greater than 30 A. Most often you will find main breaker-type panels in these locations, as these sites ordinarily do not qualify for the "appliance board" exception.

Breaker panels have five essential specifications: maximum breaker capacity (which in no case can be higher than 42 single-pole breakers); maximum design voltage (this separates 120/208/240 from 277/480 V panels); rail rating, the maximum ampacity that the panel can distribute; mounting type, usually surface or recessed; and input type, either input through a main breaker or

## CB: DOA

One grave and sometimes deadly misconception is that electrical systems require no maintenance.

This delusion is a function of how reliable modern electrical devices and wiring have become, undoubtedly a result of the NEC minimum standards for installation. Although most systems don't need much, they are definitely not maintenance-free.

Small-value circuit breakers ordinarily are not user-serviceable, and are maintained by replacement. Why do they fail? Heat.

Recent editions of the NEC recognize this and set standards for the space for heat dissipation inside panels for breakers, wiring and interior current handling items such as the breaker rails. NEC and UL standards limit heat buildup to that which is acceptable for long-term survival.

A case history: Consider a seemingly inexplicable string of CB failures, all detected in one station panel. It seemed that we were out there just about every July night. The cause?

The panel was built into the studs on the south side of the attached garage of the station. We were having a solar heat wave and the sun, shining continuously on that wall, just baked the panel directly on the other side, driving the breakers into heat destruction.

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KEYBOARD CONNECTION

# New Shapes for Computer Users

Barry Mishkind

If you were to judge by the media hype, you might think the only thing happening in the computer industry this year is related to Y2K.

And, to be sure, there are a number of companies and Web sites that provide help for you to discover if your computer programs are at risk. One of many is found at [www.msnbc.com/news/227213.asp](http://www.msnbc.com/news/227213.asp)

Nevertheless, the rest of the computer industry continues to innovate and bring us faster computers and better software so we can focus on the job at hand. You may have noticed Pentium III-type processors are now available, with speeds around 500 MHz. Just thinking about how many times faster that is than an XT makes my head spin!

While there were some "power users" seeking the newest and fastest computer, the 235,000 computer nerds who descended upon the Comdex show in Las Vegas last fall were treated to an array of innovative products that could improve life for broadcasters.

## So, what's new?

As I wandered among the hundreds of booths, it was clear to me that upgrading the CPU speed was less important to the majority of attendees than making the "system" run better. For example, broadcasters fighting control room clutter will be interested in several new space-saving technologies.

Nokia, a maker of cellular phones, displayed its new 18-inch TFT Flat Panel Display, the 800 Xi. The viewing area (18.1 inches) is comparable to a 20-inch CRT, but in a package only 3.2 inches deep.

The 800Xi seems to answer several problems, including the need for screen visibility in crowded control rooms (the viewing angle is 170 degrees H or V), as well as reduced hum/buzz interaction with microphones, compared to standard CRT monitors.

Flat Panel displays also are popular for the new DTV and HDTV configurations. However, even accounting for the stunning pictures, I was more stunned at the \$14,000 price tag on one 52-inch screen!

Flat is also the word for some of the newest speakers. The sound is amazing, considering that speakers such as the new Benwin BW2000 (list price: \$99) are wafer-thin at 7 mm thick. Instead of piston motion, these "Distributed Mode" speakers use a transducer to generate seemingly randomized bipolar vibrations in a "non-coherent, phase-independent" manner.

Moreover, when I noticed most of that 7-mm depth was the frame, Jamie Vizor from NXT (developers of the technology),

told me the actual active element can be as thin as desired — the only limitation is needing to hold it flat. For example, they are developing transparent film that could be placed right on a computer screen. Talk about flat speakers!

If you spend any real amount of time at your computer, you know how quickly the wrists can start hurting. Manufacturers displayed hundreds of possible solutions,



A Side Profile of the Benwin BW2000 Flat Panel Speakers

from ergonomic chairs, monitors, keyboards and wrist rests to mice designed for different hand sizes (even right-hand and left-hand mice). Also very popular is the touchpad.

Cirque has taken the two input devices and developed an ergonomic keyboard with touchpad that you should check out. The SmoothCat is designed so you don't have to take your hands from the keyboard to use the pointing device. The fifth-generation touch-sensitive surface also allows panning, scrolling and even jumping back and forward to alternate browser screens.

## Ergonomics

The ergonomic keyboard takes getting used to, especially for klutzes like myself who often allow fingers to drift across the middle of the keyboard. However, the SmoothCat design, which includes some extra keys, as well as avoiding the tiny editing buttons found on most such keyboards, helps reduce motions that are not good for you.

Finding and searching for information

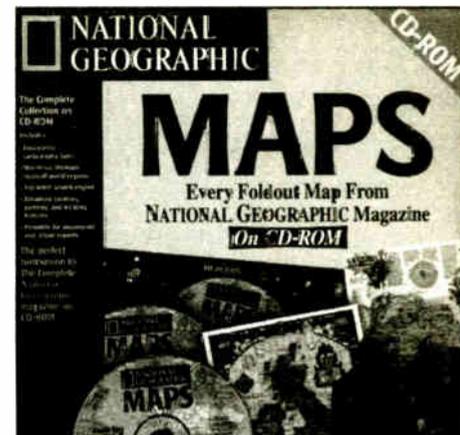
can be, by turns, fun, frustrating or downright mind-bending. Three information tools can simplify the process, depending on your needs.

If you need to preserve some Web pages for later viewing or printing offline, check out SurfSaver 1.5 from askSam Systems. In addition to building a catalog of the saved pages, you can then search for text on any of them for quick retrieval.

If you need to find something in the first place and don't know where something is, you may know how frustrating it can be to search for information on the World Wide Web: zillions of leads, many leading nowhere. Even when using Boolean terms on the meta-search engines, it still can be hard to zero in on what you are seeking. For this reason, I recommend SearchPad 1.6 from Satyam.

## Concurrent searches

SearchPad allows you to open concurrent searches and return to a search at a later time. Using multiple filters and your feedback, you can teach the program to search and categorize the results to find what you need. SearchPad can even "crawl" through a Web site and search links automatically, including HTML and text files on your hard drive.



information tracker, Enfish Tracker Pro will organize your hard drive as well as any and all incoming material from the Internet, including e-mail.

Just tell it what you are looking for, and as Tracker Pro displays the results, you can adjust your search dynamically so you can narrow in on the material you seek.

While there was a lot of other software at Comdex, there are two areas I want to touch on quickly ... we will return with more on these later.

First, Microsoft displayed the first looks at Office2000, an enhanced edition of Office97. Especially noteworthy is how the applications work with each other, so the same information can be viewed, printed or published to the Internet. There are not many applications that can't be handled by one part or another of MS Office.

The other area of growing interest is Linux, a free, open-source version of Unix. Championed by many as an alternative to Windows, there was a small section of booths devoted to the growing

## Even when using Boolean terms on the meta-search engines, it still can be hard to zero in on what you are seeking.

Finally, maybe you need to know where everything is. Have you looked in your e-mail directory lately? With larger hard drives, all you have to do is save a couple of files a day for later action, and soon find you have collected 80 MB of e-mail, not to mention your other files. The question is how to locate a file when you need it.

Windows 95/98 includes a find feature, and Microsoft Office adds an indexing capability. But wouldn't it be nice to sort your local information and Web pages from the Internet? Enfish Tracker Pro may be your salvation.

Described as the world's first infor-

interest in the different flavors of Linux and various applications made for use on this robust operating system. Look for more information on Linux, as well as Office2000 coming up soon.

## Reference

If your news or documentary department is seeking information on any location on the planet, or demographic information of any sort, a good place to turn to is National Geographic.

Using the latest in digital compression techniques, it is now possible to have the best in maps from the most populated

See SHAPES, page 23 ▶

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# Pre-Teen Pirate to Chief Engineer

**Bob Rusk**

Every kid has a dream: Some want to become a fireman, others dream of becoming an astronaut.

Paul Shinn wanted to be a disc jockey.

At the age of eight, he discovered that no radio station would put him on the air. Not willing to let that stand in his way, the youngster marched to the library and boned up on electronics. Soon after, he set out to build a small transmitter.

With money earned from mowing lawns and washing cars, he bought the necessary equipment piece by piece and launched a pirate radio station that ultimately operated 24 hours a day.

"I built an automation system out of eight-track tape decks, with foil on them to trigger the next event," Shinn, now 30, recently recalled. "Building the station was my hobby. I played around with it after school. By the time I was 12, I was running about one watt and had ground radials under the lawn."

## You're how old?

Shinn signed on at 1600 kHz with the slogan "Power 1600" and programmed 1970s and '80s disco music. To avoid interference with a station on the same frequency — KUBA(AM) in Yuba City, Calif. — about 100 miles away, he moved up the dial to 1610 kHz.

It wasn't long before an FCC inspector, accompanied by a police officer,

came knocking at the Shinn family's door. Shinn said the inspector was surprised to discover a pre-teen was operating the station.

"At the time, I didn't know I was doing anything wrong. I wasn't trying to be a pirate. I was just playing around with radio," said Shinn, who does not remember the name of the inspector. What Shinn does remember is that the inspector encouraged him to become a broadcast engineer, to which Shinn replied, "No! I want to be a disc jockey."

Shinn said the inspector did not shut the station down, but told him he could continue to broadcast only if he decreased power and complied with Part 15 of the FCC regulations that allow for unlicensed radio stations.

"I followed Part 15 for AM and covered a couple of miles and had a blast. In the process, I learned a lot," said Shinn. "I think Part 15 speaks for itself. If you want to be on the air, you can. Just follow some simple rules: for AM, 100 milliwatts to the final stage (of the transmitter) with an antenna no longer than three meters."

Shinn said, "I would support any responsible micro-broadcaster, as long as they follow the law."

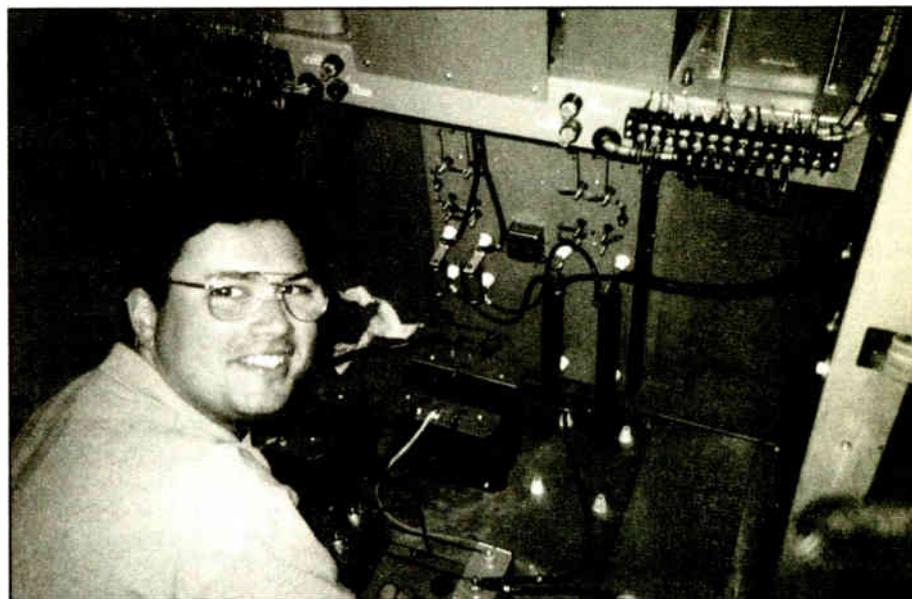
While Shinn enjoyed the experience of putting on a station, his goal was to work in "real radio." So he pulled the plug on Power 1600 and started to make the rounds at commercial stations in Stockton, Calif.

At 15, with work permit in hand, he was

hired as a board operator and assistant engineer at KWG(AM).

After graduating from high school, Shinn enrolled at Sacramento State University, where he received a bachelor's degree in electronic engineering.

Although he does fill-in shifts as a DJ, Shinn's primary responsibility is as chief engineer at KSTN-AM-FM in Stockton. It is his third tour of duty at the locally owned station, where he first worked as chief in 1987. In between, Shinn was employed by group owner



Paul Shinn at Work

Citadel Communications, which operates several stations in the nearby Modesto, Calif. market.

"I went there thinking corporate radio was cool, but I outgrew that," Shinn said. "For somebody who can operate within the corporate structure, it would probably be OK. But I like to deal directly with the station owner. I'd rather do that than have to go through channels."

## No fan of LPFM

Of recent proposals to create low-power stations, Shinn said, "The NAB and all licensed broadcasters should oppose the LP proposal with all their might.

"In some of the larger markets, there is simply no more room to 'shoehorn' in any more signals, no matter how 'low power' they may be."

A station with 1 kW power, as proposed by some LPFM advocates, is not really a low-power station, but a "full-blown" broadcaster, Shinn said.

"The FCC has provision for the average Joe to be on the air. It's called Part 15. Even though a single Part 15 transmitter has a limited coverage area, the FCC does not stop you from putting more than one transmitter on the air. Part 15 broadcasters can simulcast on more than one legal-power transmitter and enlarge the coverage area. That still will cost less money than purchasing a type-accepted LPFM transmitter and EAS gear."

"Nobody wins with LPFM," Shinn said. "Not communities, not legitimate broadcasters, and in the long run, not the LPFM hippies."

"The only people who would benefit from LPFM are the wackos with minimal investment who put some LP station on the air and make their \$1,500 investment back in revenue, then get bored with it and walk away from it like an outgrown toy."

He called the low-power idea a "fun-

gus." Nor does this former unlicensed operator have kind words for pirate stations.

"The truth is, not one of the pirates I have heard over the years has had anything but hate, violence, or profanity to offer."

Commenting on the recent push by the FCC to shut down pirate stations that do not abide by Part 15, Shinn said such operators should be prosecuted.

Shinn is unabashedly outspoken on the issues facing engineers today, particularly when, in his opinion, management does not always allocate sufficient funds for technical operations.

For example, on his personal Web site (<http://members.spreed.com/paulshinn>), Shinn said, "Any station that does not have

and maintain a good auxiliary transmitter doesn't care if they are on the air or not."

He said an auxiliary transmitter is a good investment should the main transmitter shut down, need maintenance or lack replacement parts.

"If your plate transformer goes out, you can't get one of those off the shelf at Radio Shack," Shinn said. "You have to assume that you'll be off the air for a day or two. In a small market, where you won't be hit with a \$3,000 an hour (advertising revenue) loss, it's different. But even in Modesto/Stockton, it makes no sense not to have an auxiliary transmitter."

Shinn's Web site has more than basic engineering tips.

"A Behind the Scenes Look at Radio Broadcasting" includes photos of the two transmitters and three towers at KSTN(AM). His anecdotes make for enjoyable reading, like the one about the towers: "These towers were made by Blaw-Knox company in the thirties and were shipped to KSTN and erected in 1946 by a man and his son with no crane! Apparently, the man's wife spotted for them."

In addition to his responsibilities at KSTN-AM-FM, Shinn is the contract engineer at KQEQ(AM) and KXEX(AM) in the Fresno, Calif. market. KXEX has been granted a construction permit to move to 1680 kHz on the expanded band; Shinn is overseeing that project this year.

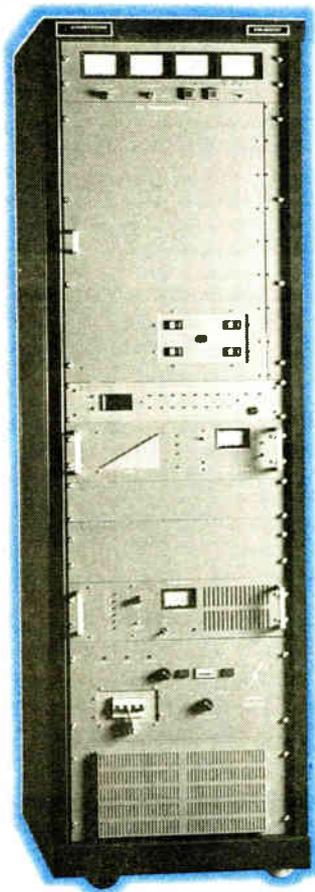
Shinn has come a long way since his pirate days, and he still has the youthful enthusiasm of the boy who "wanted to play radio."

"I love being an engineer more than anything else I could do for a living," Shinn said. "I'd do it for free if it didn't take money to survive!"

■ ■ ■

Bob Rusk profiled engineer Charles Lakaytis in our Feb. 17 issue. Paul J. McLane contributed to this story.

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# Tools for Computer Knowledge

► SHAPES, continued from page 21 cities of the world to "star maps" of Outer Space. In fact, National Geographic Maps is a complete set of every fold-out map they have issued in the past 109 years.

Mindscape compression technology packs more than 500 quality maps (some as large as 50 inches across) on eight CDs. They can be printed out in whole or part and resized to allow you to zero in on the information you need.

Macmillan Publishing continues to build on its large list of computer-oriented books with two new series of special interest to users and network administrators.



The Que "Teaches" series contains some highly readable and excellent books that help beginners and intermediate users understand the tricks and traps that prevent them from getting the work done. I found Woody Leonhard Teaches MS Office 97 to be extremely readable. Woody writes like a friend who is trying to help you solve problems. Highly recommended.

Other books in the series include Dan Gookin Teaches Windows98 and Peter Coffee Teaches PCs.

New Riders Professional Series focuses on Windows NT and how to make it work on your network and on the Internet. And Sam's new Teach Yourself Unix in 24 Hours will give you a solid jumpstart, whether you are going to use standard Unix, or want to try your hand at Linux.

Finally, as I've recommended before, the Annoyances series from O'Reilly is an excellent resource for those that understand most of an application, but need a little help understanding why Windows or Word or Office does a particular annoying thing and how to get around it. From the feedback I've gotten, these books are helpful.



Reach the author at (520) 296-3797, or via e-mail to [barry@broadcast.net](mailto:barry@broadcast.net)

## Valuable Sites

For information on the programs recommended above and free trial versions where available, log on to the following Web sites:

- [www.benwin.com](http://www.benwin.com)
- [www.circue.com](http://www.circue.com)
- [www.askSam.com](http://www.askSam.com)
- [www.searchpad.com](http://www.searchpad.com)
- [www.enfish.com](http://www.enfish.com)

# Grounding Your System

► NEC, continued from page 19 Nov. 9, 1998 issue, for a discussion of the acceptable methods of tying these grounds together.)

Generation grounding is the grounding of the utility or your local electrical generator. If you have your own step-down transformer where you are the only load, then the utility will only be interested in the grounding on the high side of the transformer.

If you have a pole-mounted transformer, you probably have noticed a normally bare ground wire, of 8-gauge or so, coming down the pole to a buried rod. This usually is covered with a "chap," which is a continuous "U"

channel protector that runs down the pole from an elevation of at least 10 feet to the ground.

If you share your transformer, or the neighborhood uses common secondaries, there is probably an additional ground (or a cross-connection to the high side ground) on the secondary side as well.

If you are the only customer on the transformer, most often the utility leaves it up to you to ground your service supply. Because you do not always have ready access to the pole or pad-mounted transformer that has their lock on it, the ground in your main panel is the first point you get to

ground your electrical system absolutely.

This connection is the same one that creates your equipment safety ground, which makes this connection arrangement doubly important.

There is much detail in a properly installed electrical ground system. We'll make that ground connection and continue our ground circuitry into the station next time.



Charles S. Fitch, W2IPI, is a registered professional consultant engineer, a member of the AFCCE, a senior member of the SBE, lifetime CPBE, licensed electrical contractor, station owner and former director of engineering of WTIC-TV in Hartford, Conn., and WSHH-TV in Marlborough, Mass. He is based in Connecticut.

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# Transmitter Control Explained

**Harold Hallikainen**

Harold Hallikainen, a regular contributor to *RW*, is the author of Chapter 4.8 of the new edition of the *NAB Engineering Handbook*, dealing with *Transmission System Control and Monitoring*. In a three-part series, *RW* will excerpt his work on this important area of station operation, which has seen important rule changes in recent years.

The chapter starts at the transmitter and works its way back to the control point.

In 1995, the FCC made major changes to their requirements for transmitter control. Summarizing the new requirements, stations may be operated either "attended" or "unattended."

Stations operating attended have a "designated person" in charge of the transmitter as opposed to the previous requirement that a licensed operator supervise the transmitter. The person in charge of the transmitter may observe and control it directly (the transmitter is nearby). The person in charge of the transmitter may observe and control it through a remote control (and telemetry) system. Finally, the person in charge may merely supervise an automatic transmission system.

The ATS is required to monitor and control (licensee determined) critical parameters that would cause interference should they be out of tolerance. Should an interference-causing condition exist that the ATS cannot correct, the ATS is required to notify the person in charge of the transmitter. The previous requirement that an ATS shut down a transmitter in an attended station has been removed.

Stations operating unattended rely upon stable equipment or an ATS instead of relying upon a person to insure the transmitter operates within limits. If an ATS is used, it monitors and controls licensee-determined critical parameters. Should an interference-causing condition exist, it shuts down the station. This automatic shutdown is in contrast to the alarm requirement with attended stations. Unattended stations do not have an ATS alarm requirement, since there is no person in attendance to receive the alarm.

The rules previously authorized extension metering. Extension metering was a form of remote telemetry where a dedicated circuit was used for each parameter being monitored. No control functions

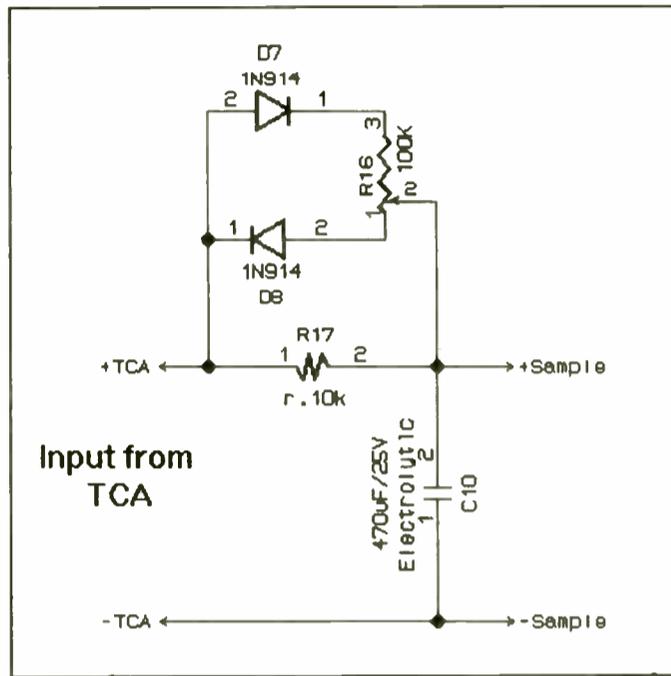
were required to be extended. Instead, a distance limit on extension metering permitted the transmitter controls to be reached quickly. The adoption of the rules permitting unattended operation deleted the extension metering provisions.

## Parameter sampling

Most transmitter parameters can be reduced to a "sample voltage" by using voltage dividers or current sense resistors. Remote metering is accomplished

kilovolt of plate voltage. If we calibrate the scale of the remote meter such that every volt of sample voltage represents another kilovolt of plate voltage, the remote meter can indicate the transmitter plate voltage directly without having to deal with high voltages.

In practice, the actual sampling ratio (sample voltage/parameter value) is not important as long as the sampling ratio is stable and the sample voltage is reasonable (low enough to be easily handled,



Remote Ammeter Carrier Shift Compensation Circuit

by sending a signal representing this sample voltage to the remote metering point, then displaying a value representing the original parameter.

The concept of sample voltages is important. Although we could measure the parameter directly from the remote metering point, wiring costs often make this impractical. For example, we would not want to send 5,000 volts to the remote metering point so we could measure the final amplifier plate voltage. (For simplicity, we'll assume vacuum tube transmitters. The same techniques can be applied to solid state transmitters.) We would also probably not want to send the several amperes of plate current or antenna current to the remote metering point.

Instead, voltages (typically DC) representing the values of these parameters are sent. We may send one volt for every

high enough not to get lost in noise). Most transmitter manufacturers provide remote samples for the FCC-required indicating instruments.

## DC voltage sampling

Sampling of DC voltages in the transmitter merely requires the addition of a voltage divider to reduce the transmitter voltage down to something appropriate for sampling or transmission. In some transmitters, a resistor is added in series with the front panel meter to provide a remote sample (the same current that drives

the front panel voltmeter provides a voltage drop across the sample resistor, which then drives the remote metering).

## Differential voltages

Not all transmitter voltages are "ground referenced." Standard voltage dividers provide attenuation of differential voltage, but very little attenuation of common-mode voltage. This lack of attenuation of common-mode voltage can cause dangerous sample voltages to be present on the transmitter telemetry equipment. Further, many transmitter telemetry systems assume the sample voltages will be ground referenced (such an assumption reduces costs considerably).

In any case, differential voltages must be reduced to a safe level for further handling. This can be done using a differential voltage divider, which is just two

voltage dividers: One for the high side of the sample and another for the low side of the sample. If the transmitter telemetry equipment can accept a differential input voltage, the output of the differential voltage divider can drive it directly.

If the transmitter telemetry equipment cannot accept a differential input voltage, several conversion techniques are available.

Add an isolation amplifier between the differential sample and the telemetry input.

Add a differential amplifier which converts a differential voltage to a "single-ended voltage."

Calculate the differential voltage based on two samples.

The calculated option will probably become a more common way of handling differential sample voltages. In such a system, parameter sample inputs can be programmed to handle a wide range of transmitter parameters. A single input design could handle single-ended analog inputs, "closure to ground" status inputs, or differential sample inputs depending upon the software configuration for that "port." When differential samples are to be measured, two analog input ports on the system would be used. System software subtracts the samples yielding the differential sample voltage.

## DC current samples

DC current samples are generally generated by adding a current sense resistor through which the current to be measured flows. As with voltage measurement, many samples will not be ground referenced. Once a differential sample is generated (using the current sense resistor), the same three differential-to-single-ended conversion techniques can be used.

## Resistor stability

The initial resistor tolerance of resistors used as current sense resistors or voltage divider resistors is not critical. However, the matching of resistors in differential voltage dividers is very critical, as this determines the common mode attenuation. Further, the temperature coefficient of sample resistors can contribute significant error as temperature varies.

## AC sampling circuits

There are several AC sample voltages or currents that may need to be sampled at a transmitter site. These include AC line voltage (perhaps three phase, including phase balance), tube filament voltage, and tower light current.

AC sampling is a bit easier in that a

See TRANSMITTER, page 25 ►

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# A Lesson in Transmitter Control

► **TRANSMITTER**, continued from page 24  
transformer can be used for isolation, removing common mode and DC voltages. Once an isolated or ground referenced sample is available, it needs to be converted to DC. This is typically accomplished with a rectifier and filter circuit. It is suggested that rectification be done prior to voltage division. Driving the rectifier circuit with a high voltage will provide a more linear sample (the sample linearly tracks the input voltage) since the diode knee voltage is a smaller portion of the applied voltage.

When sampling AC currents (such as tower lights), a current transformer is typically used. Such a transformer has a secondary current that is a fraction of the primary current. To limit the secondary voltage to a value below that which causes core saturation, the secondary is "terminated" with a resistor, which also serves as a current-to-voltage converter. It is suggested that this terminating resistor be connected to the output of a bridge rectifier that the current transformer drives. Placing the terminating resistor after the rectifier minimizes nonlinearity due to diode knee voltages.

## FM output power sampling

FM transmitters are required to have a metering circuit that measures the output power. Most transmitters have a remote output of this sensor. The sample voltage from a directional coupler is proportional to the square root of the power (directly proportional to the voltage or current), except at very low powers, where the diode knee voltage again causes nonlinearities. Remote telemetry systems that are to indicate power must include a provision to square the sample prior to display. This is sometimes handled in hardware (a power-to-linear converter) or in software.

## AM power sampling

AM power is generally determined by sampling the antenna current, squaring it, and multiplying the result by the antenna (or common point) resistance. As with measuring AC current (above), remote telemetry of an RF current is typically done with a current transformer driving a rectifier which then drives a low-pass filter. The low-pass filter removes the RF and audio components leaving a DC voltage proportional to the average (not RMS) antenna current.

Note that the RMS current increases with modulation, while the average antenna current ideally remains constant with modulation (assuming zero carrier shift). If a transmitter suffers from carrier shift (due to its design, inadequate power line regulation, or antenna characteristics), a circuit similar to that of the figure on page 24 can be used to minimize the shift in remote antenna current with modulation. The remote meter is calibrated with no modulation, then R16 is adjusted to yield the same remote indication with modulation.

Part 2 will look at control circuits, data conversion and data transmission.



Harold Hallikainen is president of Hallikainen & Friends.

## MARKET PLACE

### Management Software

ATDI is now offering Version 4 of its ICS Telecom software for radio network planning and management. It can be used with analog and digital networks from 30 MHz to 100 GHz.

The software, which runs under Windows 95/98/NT4, provides output in color-coded 2DF plots or 3D raster images. Data and images are exported to standard office software to create professional documents, administrative reports and management summaries.

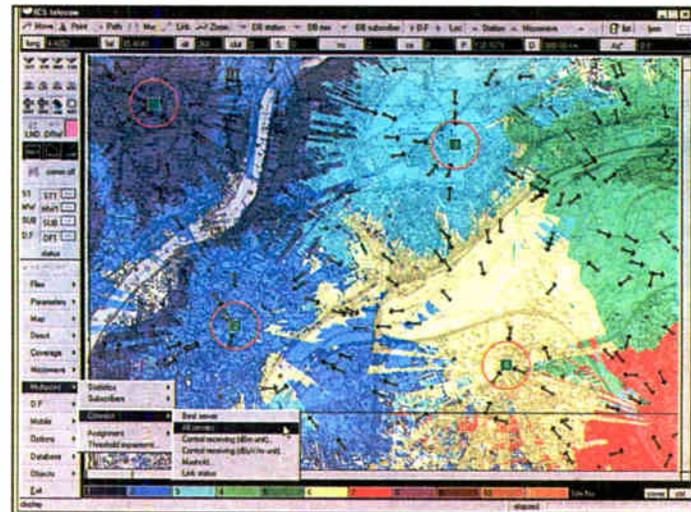
The database allows users to manage information files and associated data for multiple sites. The system accepts cartographic and technical data from external sources,

including the Internet and compatible ODBC databases such as Microsoft Access, Oracle, SQL Server and Informix. Innumerable sites can be managed within a project, with all coverage information displayed on the screen as cartographic map data.

The coverage area for each point of a region is determined by the software based on antenna response, radiated power, gain and frequency of the transmitter.

For more information contact the French Technology Press Office in

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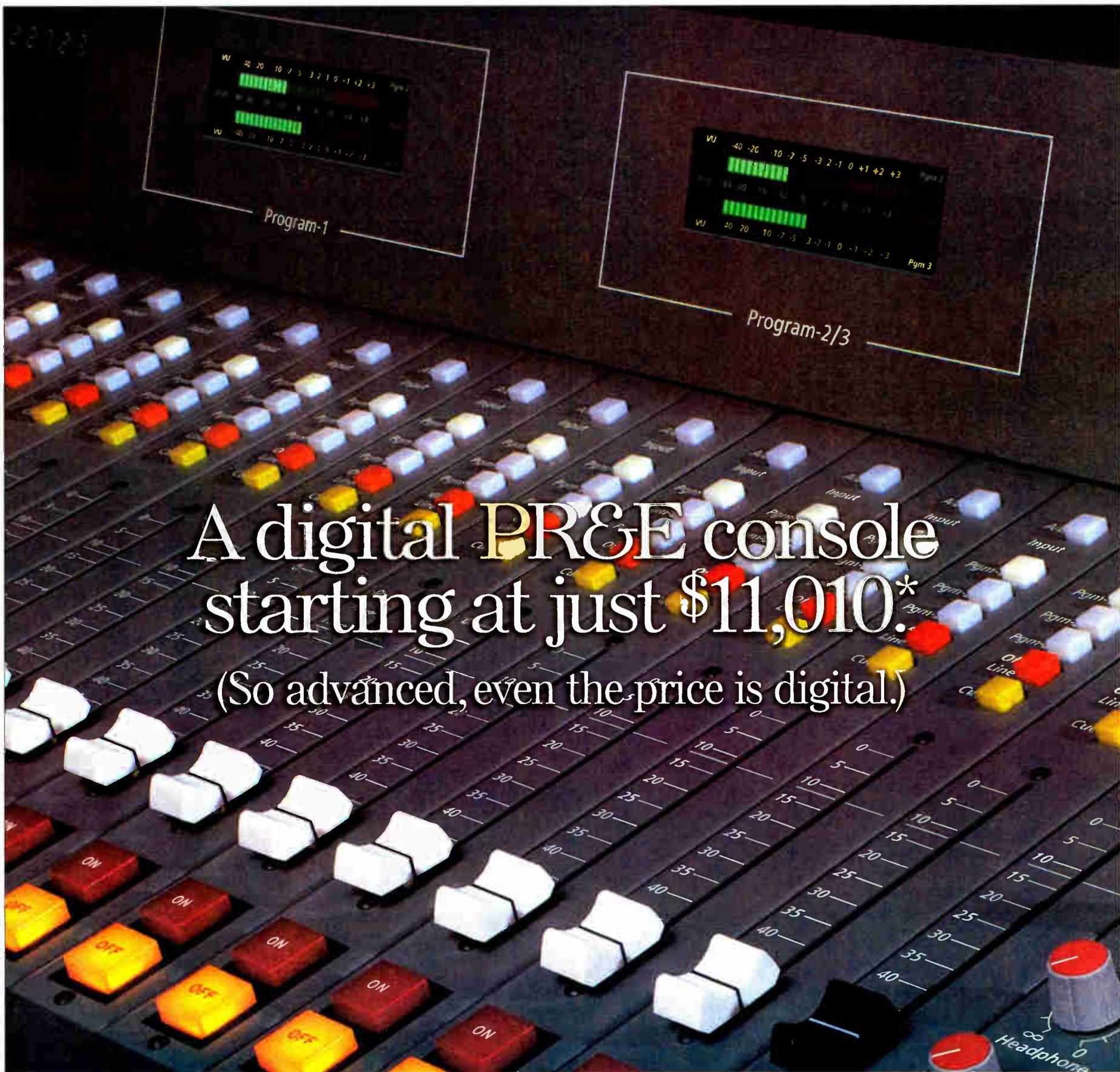
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World Radio History

# Earth and Sky Have Effect on AM

► PROPAGATION, continued from page 18 affects ground wave propagation. Built-up and developed areas have lower conductivity than undeveloped ground. Paving and otherwise building on a piece of ground lowers its conductivity.

Another factor that has a great deal of effect on ground wave propagation is frequency, or dial position. Most anyone who has been around AM radio for long knows that the lower the dial position, the better the signal propagates.

The reason is simple: The earth is more conductive at lower frequencies. In some areas, a 50 kW station on the high end of the dial may be outperformed by a 5 kW station on the low end of the dial. The lower the conductivity of the ground, the more pronounced this effect.

## Sky waves

While ground wave signals travel over the surface of the earth, sky wave signals depart the antenna at angles above the horizon and travel toward space. Layers of Earth's outer atmosphere, beginning at about 200,000 feet and extending to about 250 miles, become ionized by solar radiation and either absorb or reflect medium wave signals. This region of ionized particles is known as the ionosphere.

## The region of ionized particles is the ionosphere.

For the purposes of analysis, scientists have divided the ionosphere into three zones or layers. The D layer is at a low level of the ionosphere and is present (ionized) only during daylight hours. This layer absorbs MW signals and does not allow them to pass through to higher levels.

The E layer is in the mid-ionosphere and is ionized to some degree at all times, including after sunset. This layer is reflective of MW signals and bounces them back to Earth at the same angle at which they arrive. This causes the signals to propagate sometimes thousands of miles.

## Clear shot

During daylight hours, the D layer is ionized and will not permit any MW signals to pass through to the E layer, so no sky wave propagation occurs during the day. At night, when the D layer is gone, it is a clear shot from the transmitting antenna to the E layer and on to distant receivers.

During the "transition hours," the period from two hours either side of sunrise and sunset, the D layer is in a state of transition.

In some locations, particularly those on the eastern end of a time zone, interference from stations farther east may begin quite some time before sunset. On the other hand, in the morning, the interference from these stations may be gone quite some time before local sunrise.

Radio pioneers recognized that the

sky wave signals of AM stations could be used to reach a great number of listeners who did not otherwise receive a signal at night. It is hard for us to picture this in today's overpopulated broadcast bands, but early on, there were few stations to serve a large, spread-out populace.

## 'Clear channels'

Certain frequencies were set aside as "clear channels" and one or two dominant stations were set up on each frequency. Although the need for sky wave service areas is arguably gone, these stations remain today, with protected sky wave service areas.

The amount of ionization in the atmosphere is dependent upon solar radiation. Solar activity goes up and down in an 11-year cycle.

At the peak of the cycle, ionization levels are high, and while it would seem that this would make for stronger sky wave signals, this is not necessarily true. During these times, the D layer tends to stay ionized to some degree after sunset and attenuate MW signals on their way to and from the E layer above.

On the other end of the solar cycle, when ionization is at its lowest, the D layer tends not to become completely ionized even during daylight hours. At

night, there remains sufficient ionization of the E layer to reflect MW signals back to Earth. It is sometimes at the low part of the solar cycle that MW sky wave propagation is at its greatest.

In the future we will discuss the structure of AM allocations. Why do some stations have more power than others? Why are some daytime only? Why are some station's nighttime powers just a few watts while others operate with 50 kW?

In the meantime, if you have specific questions along these lines, please e-mail them to me. I will be sure your questions are answered.

■ ■ ■

*Cris Alexander is director of engineering for Crawford Broadcasting in Dallas. Contact him at (972) 445-1713 or via e-mail at cbceng@compuserve.com*

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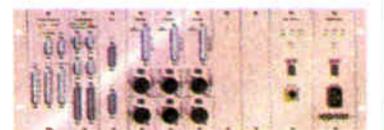


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## News Services Adapt to the Times

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**Bob Rusk**

When news breaks out, radio breaks in. And despite the constantly increasing competition from television, newspapers and the Internet, radio remains the most portable medium, able to reach the most people at once.

The biggest challenge for news managers is putting the news together in a package that attracts and keeps listeners. The package typically includes a mix of the work produced by the local news staff, if any, and stories from outside suppliers.

### Affiliate needs

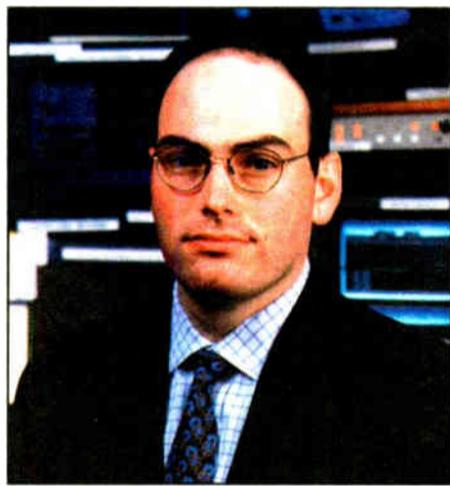
"Stations today want one foot in the network world, and appropriately need to keep the other foot in the local world," said John Garcia, chairman-elect of the Radio-Television News Directors Association and general manager of CNN Radio.

"Stations are looking for the most informative and least intrusive format that a network can offer."

Michael Packer, president of Packer TalkRadio Consulting in Detroit, said, "Listeners are hungry for the story behind the headlines. Stations need access to network reporters who can provide live Q and A from the scene of breaking news and correspondents who can be booked for debriefing by talk hosts."

Stations want their news suppliers on the scene of breaking news with equipment and staff. During the 1998 hurricane season, for example, 15 Metro Networks reporters along the Gulf Coast covered Hurricane Georges. Coverage was augmented by Metro's exclusive seat at the National Hurricane Center in Miami. The team produced more than 300 audio cuts over a two-day period. Even as Georges was downgraded, coverage of the aftermath continued with digital audio from the field.

"We continually evolve and build our product," said Lou Herbert, vice president/news director of the satellite-delivered Metro Source. "Almost every week, we add something new to the mix. We recently started a feature that covers the



Peter Kosannis, Manager,  
Bloomberg Media Distribution

different issues and concerns of Y2K. We are very affiliate-driven. If affiliates tell us that they want something, we will do everything we can to accommodate them."

That philosophy is shared by Tom Tradup, vice president and general manager of the USA Radio Network in Dallas, which has 1,400 U.S. affiliates.

"Our goal is to offer the best news in America in the most flexible, user-friendly formats to serve radio stations," Tradup said. "In the age of so-called niche programming, USA Radio Network literally has something for every station."

The menu includes top-of-the-hour newscasts 24 hours a day, customized USA NewsBreaks on the half-hour around the clock, business reports, sports and live coverage of breaking news.

"I couldn't tick off on one hand the number of senators and members of

Congress who have been on the network reacting to what we're doing (in Kosovo)," said Tradup. "We're tapped into everybody that is a player, both in this country and in Europe."

Bernard Gershon, vice president, ABC Radio News, said that, in addition to hard news coverage, stations demand "a buffet table of programming options," from entertainment reports to prep services.

"They are also looking for the 'big names' that they can only get from a network," said Gershon, "like Peter Jennings, Barbara Walters, Sam Donaldson. Every correspondent that is hired by ABC News understands that they work for radio and television."

That point was stressed by Walters in a

discussion with the general manager of a potential radio affiliate. Gershon called this "a terrific vote of confidence for the radio operation."

"The main reason ABC can say that more Americans get their news from ABC than any other source is because of the reach of ABC Radio," Gershon said. "We have in excess of 3,000 radio stations carrying some of our product — often multiple stations in the same market — and reach more than 140 million people a week."

### Money matters

Business news is hot. As consumers pay more attention to the bull market and their investment portfolios, radio is meeting the demand for information. One supplier with a strong brand is the Wall Street Journal Radio Network.

See NEWS SERVICES, page 31 ▶

## Westwood One Cuts Back NBC Radio News

**Bob Rusk**

Consolidation has left its mark in the radio news business. NBC Radio Network News, which debuted as the first coast-to-coast network in 1926, has been relegated to a morning drive-only news service — an apparent result of the consolidation that has swept through the industry.

In March, Westwood One, the program supplier that licenses the NBC Radio name from the National Broadcasting Co., announced that, effective April 18, services provided under the NBC banner would be restricted to weekday mornings, 5 to 11 a.m. EST.

### Letter to affiliates

As a result, the limited programming schedule now consists of a five-minute,

top-of-the-hour newscast, newsfeeds, correspondent debriefings and live updates during those hours only.

In a March 29 letter to affiliates, Nicholas R. Kiernan, Westwood One senior vice president, affiliate relations, wrote: "After 11:05 a.m. and on week-



ends, the hourly newscast fed on your channel will be produced by CNN. This will include a cutaway opportunity with the network commercial at :01. The five minute version of this CNN newscast will be altered somewhat from the traditional NBC newscast."

Affiliates were given the chance to

See NBC, page 39 ▶

# UPI

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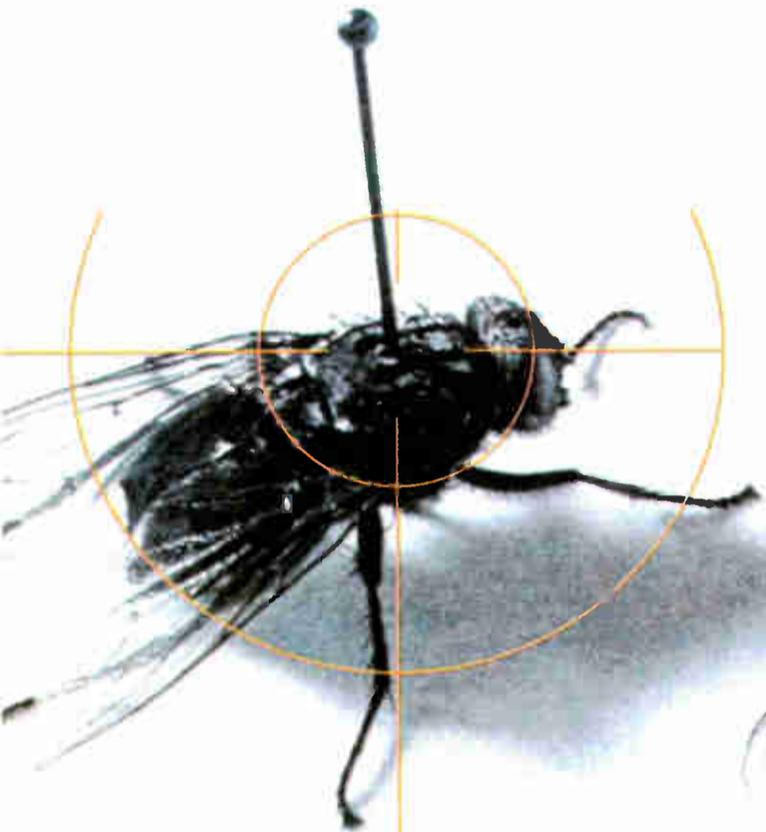
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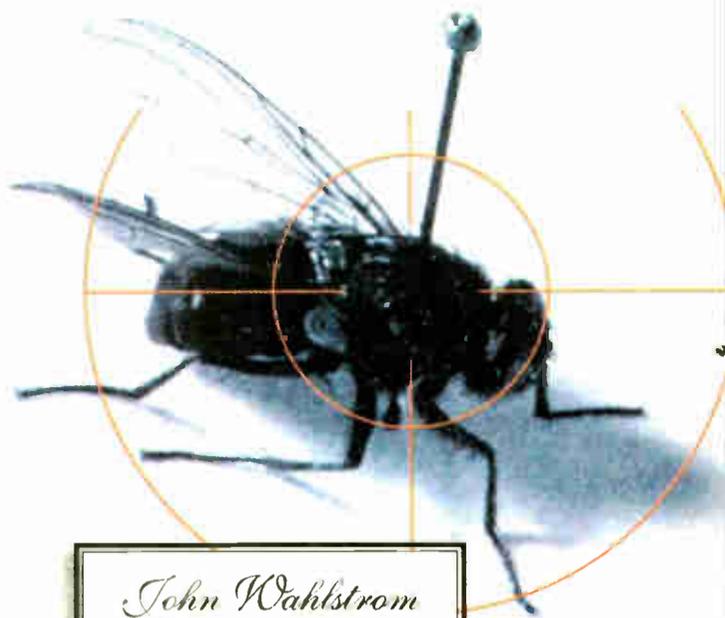
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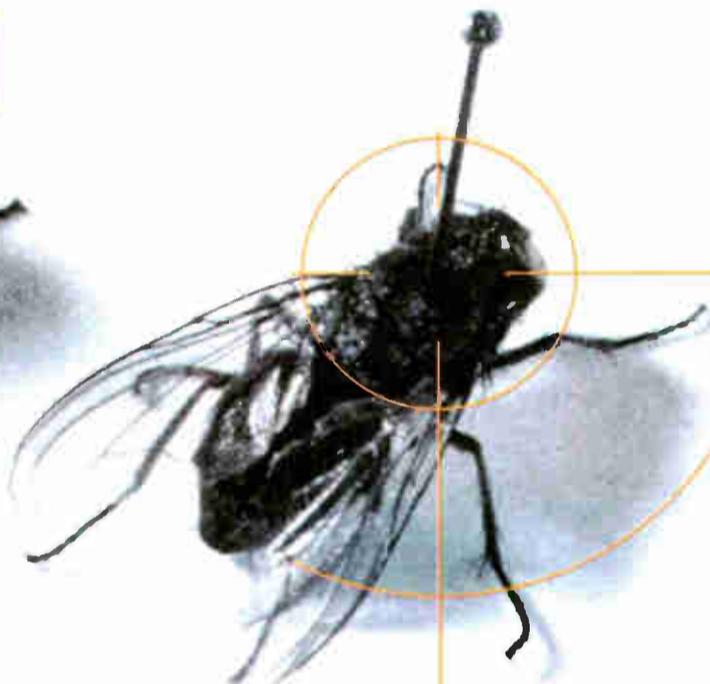
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*Steve McAllister*  
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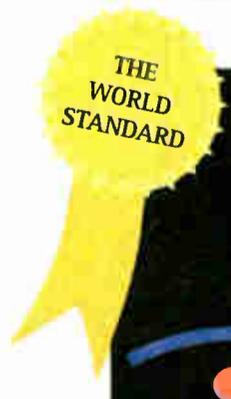
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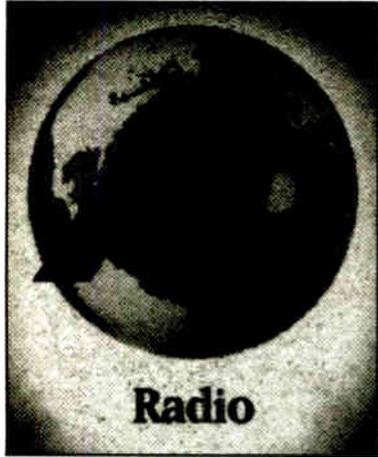
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# New Media Deliver News Online

► NEWS SERVICES, continued from page 29  
 "The Wall Street Journal Report," promoted as "the most comprehensive, up-to-the minute business news broadcast in radio," is heard weekdays on about 100 stations, including CBS-owned WCBS(AM)



partners in bringing real-time news to the public," said Larry Kramer, president and CEO of MarketWatch.com. Other offerings on the site include "Internet Daily," an extension of the twice-a-day CBS Radio web-news feature of the same name anchored by Frank Barnako.

"All of us involved in MarketWatch.com are interested in taking the old skills of being a journalist and translating them into this new media," said Barnako, who also serves as the managing editor of the site.

The line between radio networks and traditional wire services continues to blur as networks offer more text copy and the wires produce more audio content —

largely the result of web-based technology. The Associated Press, one of the text service mainstays, offers a variety of audio options.

### Prime cuts

AP PrimeCuts, for example, includes soundbites of major news, business, entertainment and sports stories from the previous 72 hours. It is delivered via the Internet, using Netscape Navigator, in a searchable database. Users log onto the site, type in the search words or cut ID number, and download the sound.

More than 250 cuts are available per day, including actualities, correspondent reports and ambient natural sound.

The companion service, AP SoundBank, contains digital audio soundbites. "It is an audio archive going back more than seven decades," said John Jones, manager of marketing com-

### ABC RADIO NETWORKS

munications. "How you use it is limited only by your imagination. You can get anything on there, from President Clinton saying 'I did not have sexual relations with that woman,' to Martin Luther King, Jr. saying 'I have a dream.'"

ABC Radio offers the NewsWire text service. A joint product of ABC Radio, Reuters and the States News Service, it is

See NEWS SERVICES, page 35 ►

in New York, WBBM(AM) in Chicago and WCCO(AM) in Minneapolis.

Another long-form feature, "The Dow Jones Money Report," relies less on numbers and more on stories that affect listeners' pocketbooks.

### Prominent provider

Another prominent business provider is Bloomberg News Radio, which has 700 reporters and editors in 78 bureaus around the world. Bloomberg recently launched business reports that target African-American and Hispanic listeners. The "Urban Business Report," billed as the nation's only urban business report, is heard on stations including WBSL(FM) in New York, KJLH-FM in Los Angeles, and WILD(AM) in Boston. The 60-second reports air three times each weekday.

Last November, "Negocios Bloomberg," the nation's first Spanish-language radio business and financial report, debuted on WPAT-FM in the New York area, and WCMQ(AM) in Miami.

**Every correspondent ... hired by ABC News understands that they work for radio and TV.**

— Bernard Gershon  
 ABC Radio

The reports cover issues of interest to the Hispanic community.

"The broadcast news community has underserved this audience and we intend to make a difference," said Rich Sabreen, general manager, Bloomberg Radio and TV.

Not to be left out of the expanded programming loop, Westwood One and MarketWatch.com in March announced the creation of the CBS.Market Watch.com Radio Network (*cbs.marketwatch.com*), which provides around-the-clock financial market updates to stations including CBS stations WINS(AM) in New York and KDKA(AM) in Pittsburgh.

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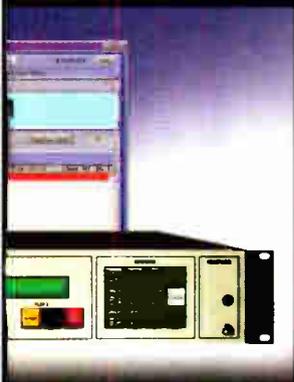
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# High-Tech Business of Radio News

► NEWS SERVICES, continued from page 31 hard-copy news and information, customized for stations.

NewsWire delivers national and international headlines, national and international summaries, bulletins and crisis coverage, and state news summaries. National Weather Service reports, entertainment news and show prep material also are offered.

On the audio front, ABC has charted new territory with News for Kids, heard on its Radio Disney stations. Offerings include a daily five-minute, commercial-free newscast geared to the 5-to-12-year-old audience. Voiced by ABC correspondent Jim Hickey, it covers news of the day, technology and money matters.

"We want to inform and educate kids and their parents ... Hopefully it'll bring kids to AM radio," Gershon said.

## Advanced technology

The biggest strength of ABC, Gershon said, is the network's ongoing commitment to breaking news coverage.

"No matter where or when news breaks on the planet, we want to be there quickly to bring our listeners the most accurate information," he said. "We have invested time and money in the personnel and technology that help us bring stories to the listeners.

"For example, we have several Inmarsat telephones that are basically satellite phones in a briefcase. We can hook them up to an ISDN line and feed high-quality audio from anywhere that has a power source.

"When we covered the Swissair crash (off Nova Scotia), we had people up there within eight hours of the crash, broadcasting live from the scene. You could hear the rescue choppers, you could hear the waves lapping against the rocks as you listened in your living room or your car."

Gershon used his assignment list for the day he spoke with RW as an example.

"One of our correspondents is headed back out on a ship in the Adriatic, somebody else is in Aviano, and someone is in London. They are all on high-quality paths.

We have a full-time satellite path out of London, and the other people are using Comrex HotLine (codecs). We also have a guy at this very moment at a baseball stadium in Cuba watching the Orioles play the Cuban team, broadcasting high-quality audio on a Comrex HotLine — where there is virtually no international



Tom Tradup, Vice President and General Manager, USA Radio Network

phone service."

At Metro Source — promoted as "radio's information system for the 21st century" — the technology is comprised of three software components: Cool Edit, Cart-O-Matic, and Click 'n Play. The first component, a complete digital work station, uses the "cut and paste" benefits of the Windows environment to edit and re-edit satellite-delivered audio.

All saved audio can be brought into the Cart-O-Matic window and cued up for airing. Cart-O-Matic, the equivalent of six five-deck cart machines, catalogs audio that is loaded for cueing. "Carts" are loaded with the click of a mouse.

Click 'n Play allows the user to play story audio simply by clicking on a hot link imbedded in the story.

Times certainly have changed since the days when radio staffers ripped and read news from UPI teletype machines. United Press International, in fact, no longer offers the text service that prints out every single story.

## News volume

"You can get history on a printer, but not news," said Ben Avery, broadcast sales manager at UPI. "The volume of news that we provide to stations has (increased) so dramatically in the past 10 years that getting it by printer is wholly impractical. We don't sell via fax either, although we will deliver by fax on an emergency basis."

Avery said, "We recommend that stations have a minimum 386, preferably 486 (computer), and WireReady soft-

ware, which is perfect for small-market stations. Anybody who is doing editing that amounts to anything needs (the) split-screen capability that WireReady has. Cues can be set up to print out only what you want."

A recent innovation popular with clients who use limited news is a streamlined package of stories sent by e-mail.

"We have picked up 50 or 60 clients in the last year that use it," Avery said. "That is all the news they need, and it works for them. Generally they want it concentrated in dayparts, particularly morning drive."

In addition to text services, UPI offers two audio newscasts each hour, around-the-clock.

Unlike most of the networks, which

them to do that. Our motto is, for every dollar you give us you'll make \$10 back in local ad sales."

Tom Tradup at the USA Radio Network, which offers its news on a barter basis, said he has not heard any objections to the arrangement from his affiliates.

"The (spot) inventory we require is the lowest of any of the major networks," he said, "which may be why we haven't had any complaints. There are networks that require stations to run one-minute or more of commercials an hour, even if they don't run the news."

USA Radio Network requires affiliates to run commercials only in the newscasts that air. Gershon at ABC likened giving up inventory to buying a new car.

"Are you dying to shell out \$18,000 or \$20,000 for that vehicle?" he stated. "It depends on what value you get. Radio news is basically a barter busi-

**Radio and the Internet are perfect partners in bringing real-time news to the public.**

— Larry Kramer  
MarketWatch.com

barter their programming, UPI newscasts are presented commercial-free. UPI is fee-based and encourages its affiliates to sell the newscasts.

The top-of-the-hour newscast is four minutes long, with cutaways at two and three minutes into the cut. Affiliates can fill with local ad spots. (For stations that choose to air UPI commercial-free, the holes are filled with news.)

"The issue, particularly in this good economic time, is: Can stations afford to give up the amount of inventory that the commercial networks request in exchange for their service?" Avery said.

"In small markets, they can afford to give up the inventory but they can't get a network. They don't add enough average-quarter-hour (share) to make it worth the network's time. The only way they can get it is if nobody else has it, and/or if they are willing to buy their own satellite dish."

Avery said, "When you do a deal with UPI, we put the dish in as part of the continuing cash expense. So a lot of stations that can't afford the \$3,000 or \$4,000 for a satellite receiver can come to UPI and it's amortized in the deal. Then they can sell the inventory, and we encourage

ness. If a station wants our product, they give up inventory. We assign a value to that product and think it's worth the barter.

"Anytime our affiliate relations people talk to a station, there is some negotiation that goes on. Some stations, if they could, would choose cash over barter. Some prefer barter. I don't think one way is necessarily better than the other. It's just what works for the company providing the service."

The ways in which the networks conduct business and the constant technological changes in this era of satellites and the Internet, are important factors for stations to consider when choosing a news service. But the most important factor has not changed.

"Ultimately," said Gershon, "it still comes down to people who are good storytellers."

■ ■ ■

Bob Rusk is a regular contributor to RW.

Tell us about the news service that your company supplies or uses. Send e-mail to [lcebula@imaspub.com](mailto:lcebula@imaspub.com) or write to GM Journal, Radio World, P.O. Box 1214, Falls Church, VA 22041.



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# Stations Turn to News Suppliers

**Bill Mann**

News can be big business. Infinity Broadcasting radio station WINS(AM) in New York is the leading example. The station finished 1998 in the top five U.S. stations as measured by overall billing, with revenue of approximately \$38.3 million, according to BIA Research.

One of the most important decisions for the managers of a news station is who will actually provide the news.

Which news services are programming executives using to augment their news staffs? Who delivers the news for successful news stations? What role does the Internet play in news programming?

RW talked to managers of several top news stations to find out. Our interviews reveal varied approaches to supplemental news sources.

For example, some stations are using the Internet heavily, some hardly at all. Services that gained fame for their traffic reports, like Metro Networks and Shadow Broadcasting, have expanded into news and become a competitive consideration for local reporters and news directors.

## ABC support

Some stations, like all-news WBAL(AM) in Baltimore, owned by Hearst-Argyle, use a combination of news networks and services. News Director Mark Miller uses Associated Press wire and audio services and the ABC Radio Network.

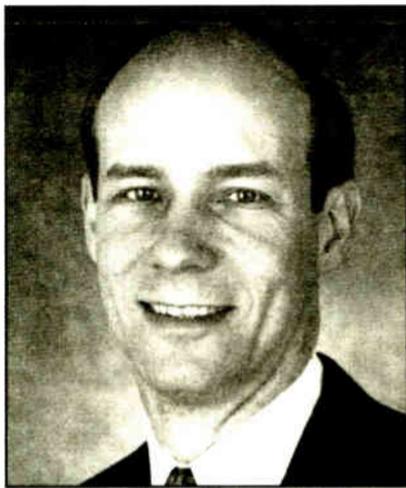
A 19-year WBAL veteran, Miller said his station was an NBC affiliate before switching to ABC a few years ago, then to CBS and, finally, back to ABC.

"ABC Radio is the most modern, contemporary and most solid news product," Miller said. "The ABC news organization is always soliciting feedback. They're on the phone with us all the time."

Miller said ABC was particularly helpful to WBAL, the Orioles' flagship station, when the Major League Baseball team

made its historic trip to Cuba last month.

"We had an ABC Radio person in Havana who served as our liaison. We had problems finding hotel rooms for our people. ABC even helped us by having one of their Spanish-speaking secretaries



Mark Miller

in New York call Havana and find rooms for us," he said.

WBAL does not use outside traffic reports. "We're one of the few major-market stations that doesn't use Metro or Shadow Traffic for anything," Miller said.

He said WBAL uses only AP and ABC for news programming, the former because "you have to have AP to have a 24-hour, fully functioning newsroom."

Miller said there is no doubt radio news is getting smaller nationally and in his market.

"Twenty years ago, we had nine or 10 stations in this market that had news departments. Now we're the only one in town that even bothers to go out and cover the news," Miller said.

WBAL uses its Web site "not so much to gather the news as to disseminate it. WBAL is linked 24 hours a day to *Broadcast.com*, and when the Lewinsky-Tripp tapes were released, we steered lis-

teners to our Web address." WBAL's target demos are in the 35-54 age group.

## News for all people

Jeff Hillary is operations manager of Denver's Jacor-owned KTLK(AM), which uses a news, business and sports format and also targets listeners 35-54. He uses ABC's hourly newscast and AP wire and audio services, and supplements those with numerous syndicated business sources.

In the mornings and early afternoons, KTLK focuses on business programming before switching to sports talk at 2 p.m.

"We buy Bloomberg's Market Updates and use them four times each hour," Hillary said. "We also talk with CNBC morning personality Tom Costello on our morning business show three days a week. We do quite a bit of cross-promotion with CNBC," Hillary said.

Hillary said he augments KTLK's business and news programming with syndicated shows like that of popular host (and RW columnist) Kim Komando. Hillary also purchases Don McDonald's syndicated daily business talk show, which he airs from noon to 2 p.m. weekdays, as well as Bloomberg's "Business Minute" feature.

"We're looking for programming that will interest both CEOs and working women," said Hillary, who also buys Chris Witting's syndicated one-minute business feature "Success Journal: Tracking Business Leaders" for KTLK.

## Silicon Valley news

CBS is a big player in news programming. Among news formatted stations throughout the country, BIA reports, CBS-owned stations make up 60 percent of the top 25 news radio stations as measured by revenue in 1998.

At KCBS(AM), the San Francisco all-news station, veteran News Director Ed Cavagnaro uses CBS newscasts at the top of each hour. The CBS-owned station also buys Bloomberg Financial radio services.

In fact, KCBS, which targets the 25-54 demo, carries Bloomberg's Silicon Valley Stock Index on its twice-an-hour business reports alongside the familiar Dow, NASDAQ and S&P averages.

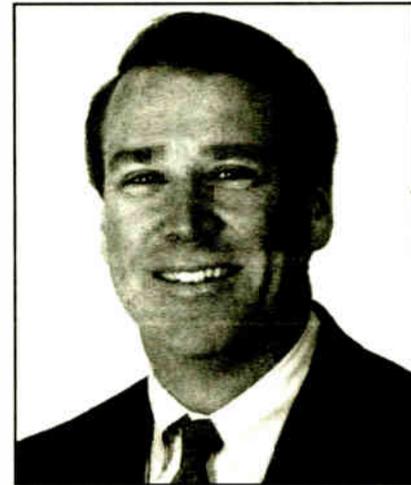
Fifty-thousand watt news giant KCBS is only a 30-minute drive from the high-tech heartland. "CBS-owned stations still buy supplemental programming on a station-by-station basis," said Cavagnaro. "For example, we use some Westwood One programming, like Martha Stewart." (Westwood One is managed by Infinity Broadcasting.)

In addition, Cavagnaro said, the station buys the independent astronomy feature "Star Date," and uses both AP text and audio services.

As for Internet use, Cavagnaro said his news staff makes extensive use of his newsroom's high-speed ISDN phone lines. "We use the Web a lot, it's a great tool for research and newsgathering."

Is radio news waxing or waning?

"In this market, anyway, news will always be a big presence," Cavagnaro said. "The commute here has gotten much longer and people want news. Even though there are fewer stations here doing news, that helps us because people know exactly where to find it."



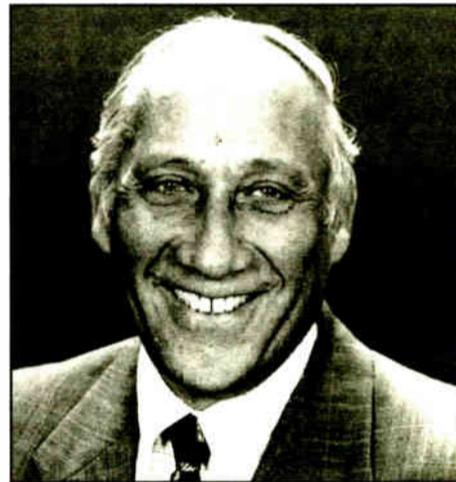
Ed Cavagnaro

Michael Speers, operations manager of CBS-owned, Dallas news-talk giant KRLD(AM), also targets the 25-54 demo group. And, like KCBS, KRLD uses CBS-owned Shadow Traffic's resources as well as its own traffic reporters.

KRLD uses AP text services, he said, and takes Jim Bohannon's syndicated talk show from Westwood One.

The station also carries CBS hourly news and it has an unusual supplemental provider — local TV.

"We have a news-sharing agreement with both WFAA-TV and the Dallas Morning News which we use to augment our product. We now simulcast WFAA's



Roy Shapiro

6 a.m. half-hour newscast," Speers said.

Speers said his station also uses the Internet, "but mostly for research for our talk shows, as well as federal-government sites for information."

KRLD also is a news provider to other stations around the state. It is the headquarters of the Texas State Network radio news service.

## High-touch, low-tech

Ray Shapiro, general manager of Infinity all-news station KYW(AM) in Philadelphia, uses AP audio and text services and CNN to augment his large news staff. "We're a high-touch, low-tech operation," he said with a chuckle.

KYW is ranked second in revenue among news-formatted radio stations, behind New York's WINS. KYW sold an estimated \$34.4 million last year, according to BIA, which accounted for a whopping 13.5 percent of market revenue. (WINS, by comparison, accounts for about 6 percent of New York radio sales.)

Still, its success is built on its staff, Shapiro said.

"I like to use real, live people to gather the bulk of our news. The bread and butter of our operation is local news," said Shapiro. He said KYW targets adults 25-plus.

See NEWS RADIO, page 38 ▶

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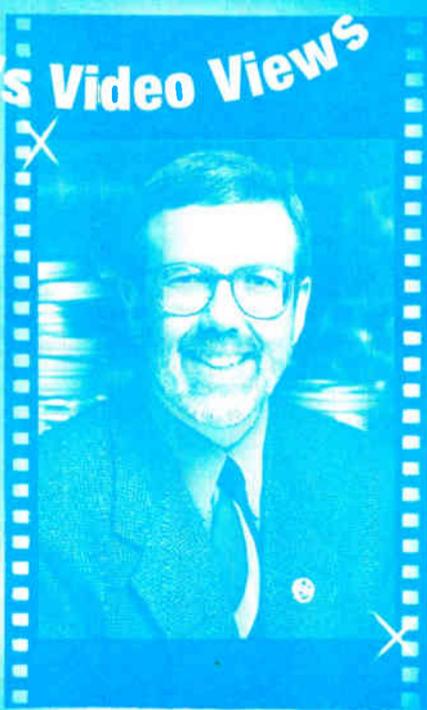
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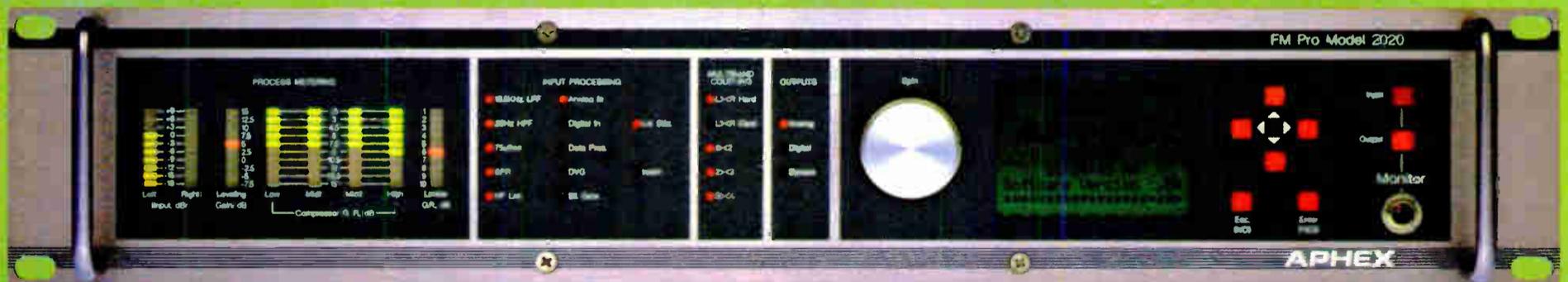
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# Local Radio Reporters a Rarity?

► NEWS RADIO, continued from page 36

Shapiro said CBS/Infinity's vertical integration has had "little impact" on his station's newsgathering approach. "You don't get a staff from a group owner," he said.

Is radio news gaining or waning in Philly? Shapiro said, "I figure we have in excess of 200 hours a day of local news available when you include local TV and the new regional, all-news cable channel here.

**We'll survive, largely because people still seem to care what's going on.**

— Mark Provost

"Still, with all that TV news, if I could start from scratch and choose a single radio format to adopt in this market, I'd still choose all-news," he said. "I think we put out the best news product in the country. We pioneered the all-news format at KYW in 1965."



Mark Provost

Mark Provost is executive producer for news at Portland's highly rated news-talk KXL(AM).

He said that station is a CBS affiliate and uses that network's hourly newscast. He said KXL also takes both the AP's text and audio service, as well as Bloomberg's business-news service.

"KXL," Provost said, "does almost all our own news content. We use AP audio only for selected actualities."

The Oregon station was purchased recently by Microsoft co-founder Paul Allen, the billionaire who also owns the

Portland Trail Blazers NBA team.

With an owner like that, it's no wonder the station staff has computers on their minds.

## Microsoft radio

"They've got a great computer system over at the Blazers," Provost said. "We're still using old 386s here. But we were told the day after Paul Allen bought us that, any day, trucks will pull up to the station and disgorge new computers. I can hardly wait.

"We use the Net a bit for research, but being up to speed with new PCs will allow us to use the Net as a news resource much more than we do now."

Provost said KXL's target demos are 25-54 adults, "but 35-54 is more the reality."

But clearly, radio news has changed.

Provost said, "Nationally, radio news is waning. Stations don't have to do it any more, so a lot of them don't. But we'll survive, largely because people still seem to care what's going on, especially in the morning.

"And I believe it's still illegal to watch TV while you're driving."

**You Read It Here**



## Ten Years Ago

Hoping to reduce AM adjacent channel interference, the FCC ... adopted the National Radio Systems Committee RF emission limitation, NRSC-2. ...

NRSC Chairman Charlie Morgan praised the ruling as accomplishing 90 percent of the committee's goal: "reduction of second adjacent interference," he said.

The action also puts receiver manufacturers on notice to make wide-band receivers, a key to the success of AM, Morgan said.

News Item  
April 26, 1989

# RW Revisits the Top 40 Uncle Ricky Web Site

Alan Haber

Museums and repositories of one kind or another are funny things. By all outward appearances, kids love them if they are cool and have gift shops.

Parents love them, especially if kids love them. But the truth is, a lot of people love an educational experience, especially if they can blow it off.

If museums and repositories and other manner of historical closet space are to be attractive to you and me and Aunt Mary and Uncle John and little Ricky,

If Reel has a demographic, it's decidedly adult — "a 30-plus phenomenon," according to Ricky. The site's comprehensiveness is unparalleled and it gets under your skin and right into your heart of hearts. You surrender to Reel because, especially if you are *in* radio, it is you.

Veteran radio guy Uncle Ricky, also known as Richard Irwin, started Reel just over three years ago with five airchecks. The site is now about 700 megabytes large. Radio fans connect to the advertising-free site (Ricky thanks those who pitch advertising for their

**The premier stop for all things DJ is piled high with more than 450 magical audio snapshots.**

they should be fun and they should be educational, but not so you *know*.

## The power of radio

Uncle Ricky's Reel Top 40 Radio Repository ([www.reelradio.com](http://www.reelradio.com)) is fun and educational, and more than that you cannot ask for. The premier stop on the Net for all things DJ is piled high with more than 450 magical audio snapshots, delivered via RealAudio, that demonstrate the power of radio, of one-to-one-ism, of theater of the mind.

You choose to listen to airchecks ranked by popularity in the Reelradio Top 40, or aurally peruse the special collections contributed by a variety of aircheck collectors. You can also search for specific aircheck magic.

If, say, you have a Cousin Brucie jones, you'll come up with a pair of wonderful slices of memories from WABC(AM). One, from October 1963, is particularly magical and marvelous.

interest and asks them if they have any airchecks to contribute) with the promise of a grand view of top 40 history, which is indeed what they get.

It started with the idea of gathering "as much material from everywhere as possible," said Ricky. The Reel curator is always hearing from people whose memories are sparked by listening to airchecks on the site, many of which are donated by aircheck collectors.

These stations "made their mark and people have not forgotten them," he said. "When they get to hear them again, it's that same wonderful emotion ... it still happens. People still just get so excited and we still get these wonderful e-mails from people that say, 'I've just been sitting here mesmerized for three hours listening to this stuff.'"

But what are people coming to the Reel site to get? "Well, I don't know," said Ricky. "Why does oldies radio

See RICKY, page 45 ►

Now available for Radio Stations...

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**A: ...Your Radio Station!**

## This is Bob Harris



DBA is proud to introduce **BOB HARRIS**, an award-winning humorist and commentator for **KNX Radio - Los Angeles**, whose loopy humor and keen journalistic eye earned him a **1998 Associated Press award for Best Radio Feature** and the **L.A. Press Club award for Best Specialty Feature Reporting**.

Bob's credentials for capturing the attention of young adults is impressive:

- Nominated five times as Lecturer of the Year by Campus Activity Today... Bob has appeared on stage at over 250 college campuses.
- Widely published newspaper and magazine columnist including Mother Jones On Line, The Funny Times, Z and National Lampoon.

Want more? - Bob is a five-time *Jeopardy* champion, author of "Cramming 101" and has received accolades like these: "wickedly observant" - (Chicago Tribune), "One of the most talented political comics performing today" - (Cleveland Plain Dealer)

For More Information Contact  
David West at:  
Dick Brescia Associates  
164 Garfield Street  
Haworth, NJ 07641  
Phone: 201-385-6566  
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E-Mail: [dbasynicators@prodigy.net](mailto:dbasynicators@prodigy.net)

Another Fine Radio Program from Dick Brescia Associates

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# Consolidation Affects Network News

► NBC, continued from page 29 switch to either CBS, CNN or Fox — the other radio networks that Westwood One distributes (although prior CBS exclusivity agreements may apply in certain markets). RW contacted Kiernan for comment but was referred to Westwood One President and CEO Joel Hollander, who did not return several calls.

## Industry response

A high-level industry executive who spoke on the condition of anonymity said the cutbacks at NBC were done strictly "to save money."

The source said, "The Westwood One radio network is switching around management and there is incredible pressure to cut costs."

Strictly from a business standpoint, the source said, "Westwood One is doing the right thing. They really (are)

NBC? Perhaps consolidation is in order with radio networks too."

NBC is happy to be the only network that basically has a non-existent presence in

**It is difficult to get the attention of the affiliate public if you have so many brands to sell. You end up competing against yourself.**

— Industry Executive

Lund theorized that General Electric-owned NBC may now want to take back the radio name and re-enter the radio business.

The source said, "I can't imagine that

radio news. With newscasts only in morning drive, I doubt that the clearances will be very high."

An NBC corporate spokesman said the

company had no comment on the matter — including possible plans by Westwood One to totally eliminate NBC Radio news — but "doubted" that NBC would get back into radio.

In the letter to affiliates, Westwood One's Kiernan stated, "In the current radio environment, by focusing our primary news resources in this way, we can improve our existing products and services as well as respond more effectively, flexibly and immediately to market requirements."

"With the resources of CBS News, CNN and the Fox News Channel, the implementation of digital facilities at both CBS and CNN and the enhanced production capabilities in New York, Atlanta and Washington, Westwood One can confidently offer affiliates news services absolutely second to none."



marketing too many brand names. It is difficult to get the attention of the affiliate public if you have so many brands to sell. You end up competing against yourself."

John Lund, president of the firm Lund Consultants to Broadcast Management, said, "CNN and Fox News may offer Westwood One more profit. Westwood One only has to market (those) services and sell time; they don't have to originate the news, which is costly."

Lund said, "The NBC Radio network has always been a third-tier choice behind ABC and CBS. Perhaps way back when Nipper was alive and wagging in the 1930s it was a major force, but not in our time."

Lund, who was operations manager at NBC flagship WNBC(AM) in New York in the late 1970s and early '80s, said, "When I programmed WNBC, the rumor was that the NBC letters stood for 'No Body Cares.'"

Speculating on the recent cutback, Lund said, "Isn't it coincidental that Westwood One, controlled by CBS, markets CBS, CNN, Fox News, Mutual and



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# ◆ STATION SERVICES ◆

## Programs and Services for Radio Stations

Mail info and photos to: RW Station Services, P.O. Box 1214, Falls Church, VA 22041

### Free Health Care

"Health NewsFeed" is a series of five 60-second reports each week, offered free and focusing on developments in health care. Radio stations can sell time and receive all income from its use.

The program is a service of **The Johns Hopkins Medical Institutions**. Stations also can obtain individual actualities, scripts and available guest experts. The format is flexible; stations can take a weekly bulk feed via satellite, retrieve programs via ISDN, or download audio files from the Health NewsFeed BBS.

For more information, contact Tom Haederle in Baltimore, Md., at (410) 955-2877, or circle Reader Service 61.

### Imaging From Radioscape

Radioscape/Radio Potato is in the business of creating the right news-talk image for your station. The company offers a variety of jingle packages for news-talk radio.

The "WIBC Package," for example,

includes jingles, sounders and promo music tracks and is updated annually.

Radioscape provides a "Lite Talk" package for stations that prefer a "softer" image. "Today's Talk" includes 11 jingles plus news and traffic with a contemporary rock style.

For more information call Marshall Such at (817) 481-4453, send e-mail to potatoe@flash.net or circle Reader Service 6.

### 'USA News Talk Live'

"USA NewsTalk Live" from USA Radio Network is delivered via satellite



on a market-exclusive basis with a low affiliation fee.

The service features national news and well-known guests. Stations receive gen-

erous local breaks and customized cut-aways for local programming.

"USA NewsTalk Live" offers a user-friendly format clock for maximum localization and ID. Maximum flexibility is a key

### USA NewsTalk Live™

element and offers as much or as little local input as each station requires.

Stations receive both breaking news coverage and the coast-to-coast "Electronic Town Hall" from parent USA Radio Network.

For more information call (800) 829-8111 or circle Reader Service 88.

### 'Issues Today'

Produced in Los Angeles by **The Gourley Group** and distributed to 50 stations, "Issues Today" features discussions of important topics of the day.

Each 30-minute program features guests who explore issues in a lively discussion. The company also produces local issues programming for stations looking for in-depth coverage. Local public service representatives in the community are interviewed and packaged and offered to station managers that want to augment their issues programming.

Bob Gourley has been hosting radio talk shows for 27 years.

For more information contact Bob Gourley at (310) 519-1324 or circle Reader Service 113.

### Specialty Programming From Learfield

Learfield Communications produces and distributes radio networks and programming to more than 1,000 radio stations. For 25 years, it has offered the Brownfield Network, providing agriculture programming to the Midwest. State



news networks include the Missouri and Radio Iowa networks, which cover legislature, state government and breaking news from their respective states.

For information call (573) 893-7200, e-mail: kmichael@learfield.com or circle Reader Service 194.

### Shadow, SmartRoute Team Up

Two high-tech information service companies have combined traffic monitoring operations to create a more accurate, sophisticated travel data service for radio.

The traffic gathering and distribution alliance allows the new partnership between **Shadow Broadcast Services** and **SmartRoute Systems** to offer up-to-date travel information.



1988.

Shadow Broadcast Services, a division of Westwood One, is a premier provider of traffic, news, sports, weather and entertainment programming.

For information contact Fred Bennett at Shadow Broadcast Services at (201) 939-1888 or John Routke at SmartRoute Systems at (617) 949-8100, or circle Reader Service 27.

### UC Radio News

Twice monthly, the **University of California, Davis** distributes the tape syndication service, **UC Radio News**, to more than 80 radio stations in California, Washington, D.C., and Yuma, Ariz.



Broadcasters are provided with professional material for use in newscasts, farm broadcasts and consumer programming. Each release contains produced wrap-arounds for maximum flexibility.

An information bank at the University of California Cooperative Extension Service provides hundreds of experts. Among the topics are nutrition, home and garden, commercial and family-size farming, fishing and marine science are explored.

For information contact Robert Singleton at (530) 757-8930, send e-mail to ersingleton@ucdavis.edu or circle Reader Service 101.

### New Finance Network From CBS and Westwood One

Financial market updates that are broadcast from the New York Stock Exchange and delivered around the clock to radio station affiliates are the focus of



the new **CBS.MarketWatch.com Radio Network**. The new network began operations in March and is distributed through Westwood One Inc.

A new MarketWatch.com bureau at the New York Stock Exchange serves as the broadcast point for correspondents, as well as existing bureaus in New York, Washington, London and San Francisco.

Editors of the Web-based financial news provider, "CBS.MarketWatch.com," Thom Calandra and Frank Barnako will direct the new radio network. The network is modeled after the Web site of the

See STATION SERVICES, page 41

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# Radio News Providers

► **STATION SERVICES**, continued from page 40 same name and will provide real-time financial and market information for individual investors.

The information includes news, financial programs and analysis tools.

Launched less than two years ago, MarketWatch.com Inc. is a joint venture of Data Broadcasting Corporation and CBS Broadcasting Inc.

For additional information, log on to [cbs.marketwatch.com](http://cbs.marketwatch.com) or circle Reader Service 12.

## Metro Source

**Metro Source** is the newest total information service and digital audio workstation available from Metro Networks.

The system allows Metro news affiliates to receive news and features in text and audio formats, via satellite. Affiliates can view, write, edit and report the news.

Touted by the company as the successor to the traditional wire, the system provides news and features written by broadcasters.

Stories written and produced by Metro's national correspondents, reporting from locations across the nation, are available on Metro Source.

Breaking local, regional, national and international news, sports and weather reports as well as business and enter-



tainment information are also provided. Visit [www.metronetworks.com](http://www.metronetworks.com) to see a sample.

Metro Networks is a provider of traffic reporting services, local news, sports and weather. The company operates in more than 65 markets.

For information contact Kelly Barton at (404) 467-0303 or circle Reader Service 24.

## Kentucky News Network

News summaries, sports information and market reports are part of the variety of services the **Kentucky News Network** provides for its member radio stations.

KNN offers 13 hourly newscasts of five minutes each, and 13 "newsminutes" of about two minutes each.

The newscasts and newsminutes are provided throughout the week. KNN also provides daily sports broadcasts and a sports feature on the University of Kentucky.

Crop news, and a lawn and garden feature are included in KNN's full-spectrum coverage.

During high school basketball season, KNN provides affiliates with a Saturday morning scoreboard report.

KNN feeds Kentucky news to 135 stations.

For more information contact Ed Huckleberry at (502) 479-2248, send e-mail to [ehuckleberry@kynewsnet.com](mailto:ehuckleberry@kynewsnet.com) or circle Reader Service 7.

## UPI

**UPI Broadcast News** provides 24/7 news, weather, sports, business, consumer, religion and feature news with UPI Broadcast wire and radio network as its components.

The UPI Radio Network has two newscasts per hour, sportscasts and business reports.

This service also provides a daily

audio religion package including short-form programs and actualities.

UPI Radio maintains a second channel devoted to long-form special events such as news conferences, the impeachment trial and Michael Jordan's retirement.

For more information contact Ben Avery, Broadcast Sales Manager at (800) 503-9993, send e-mail to [bavery@upi.com](mailto:bavery@upi.com) or circle Reader Service 31.

## Rush to the Internet

Now Rush Limbaugh can talk politics on the radio and on the World Wide Web.

**Premiere Radio Networks** has launched a daily live Webcast of "The Rush Limbaugh Show" on [broadcast.com](http://broadcast.com)

His top-rated political talk show is syndicated to more than 600 radio stations.

Internet service provider MindSpring Enterprises, Inc. is the first multimedia sponsor of the program and will run Internet



advertisements during Webcasts as well as radio ads within the national radio broadcast.

MindSpring, chosen by Premiere Radio Networks to offer this new service, provides local Internet service to many locations throughout the United States.

The Internet broadcast can be accessed through the [broadcast.com](http://broadcast.com) home page at [www.broadcast.com](http://www.broadcast.com)

For more information contact Jennifer E. Johnson at Premiere Radio Networks at (818) 461-5418 or circle Reader Service 4.

See STATION SERVICES, page 42 ►

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MP-2-4	4	2,000W	3.3	\$1,820
MP-3-5	5	3,000W	4.1	\$2,270
MP-3-6	6	3,000W	5.2	\$2,740

### LOW POWER CIRCULAR SERIES

Model	Bays	Power	Gain	Price
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GP-2	2	4,000W	0	\$1,350
GP-3	3	6,000W	1.5	\$1,900
GP-4	4	6,000W	3.4	\$2,600
GP-5	5	6,000W	4.3	\$3,150
GP-6	6	6,000W	5.5	\$3,700

### MEDIUM POWER CIRCULAR SERIES

Model	Bays	Power	Gain	Price
SGP-1	1	4,000W	-3.3	\$690
SGP-2	2	8,000W	0	\$2,690
SGP-3	3	10,000W	1.4	\$3,595
SGP-4	4	10,000W	3.3	\$4,500
SGP-5	5	10,000W	4.1	\$5,300
SGP-6	6	10,000W	5.2	\$6,100

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# ◆ STATION SERVICES ◆

## Programs and Services for Radio Stations

Mail info and photos to: RW Station Services, P.O. Box 1214, Falls Church, VA 22041

► STATION SERVICES, continued from page 41

### The Dennis Prager Radio Show

Dennis Prager, prolific author and radio talk show host, is reaching out to a nationwide audience with the newly syndicated "The Dennis Prager Radio Show" from MediaAmerica Inc., part of Jones Radio International.

The show is broadcast from KABC(AM) in Los Angeles, where it has been broadcast since 1982.



### JONES RADIO NETWORK™

Prager has written four books and hundreds of articles for major publications such as The Wall Street Journal, the Los Angeles Times and Commentary. MediaAmerica Inc./Jones Radio Network serve 2,500 radio stations, reaching 55 million listeners weekly.

For more information contact Gary Schonfield at (212) 302-1100 or circle Reader Service 216.

### The Associated Press Gets Wired

"The Wire" is a new Internet service for broadcasters from The Associated Press. "The Wire" provides updated around-the-clock news coverage to AP member Web sites.

"The Wire" is "plugged-in" to a sub-



scriber's Web site, transforming it into a worldwide news agency.

Text, photos, graphics, and audio and video are delivered 24-hours a day. The information is integrated with the subscriber's own site.

Useful features include "The Navbar," which provides easy navigation plus a keyword search for news, and Quick Clips, which provides audio and text summaries of top Associated Press stories.

The service is available exclusively

through AP member sites and offers local advertisers an opportunity to link their messages to this global news report.

For information, visit the Web site at [www.ap.org](http://www.ap.org) or circle Reader Service 11.

### Alaska Public Radio

Alaska Public Radio Network provides news and information programs to 29 public radio affiliates in Alaska.

Founded as a cooperative by stations to provide them with Alaska news programs, APRN has produced award-winning programming for 21 years.

Programming includes APRN's half-hour "Alaska News Nightly," daily short newscasts, and daily market and weather reports.

Also featured is a weekly statewide call-in/interview program, "Talk of Alaska."

The network packages newscasts with reports from member station staffs, including full-time correspondents at bureaus in Juneau and Washington D.C.

APRN programming is distributed through the Public Radio Satellite System. The network is developing a Web site at [www.aprn.org](http://www.aprn.org)

For additional information contact Tim Tattan at (907) 263-7470, send e-mail to [tim@aprn.org](mailto:tim@aprn.org) or circle Reader Service 22.

### The Century Minute

"The Century Minute," a vignette from ABC Radio Networks, features rare audio Monday through Friday and the familiar voices of veteran news anchors Peter Jennings and Charles Gibson.

The service provides one-minute vignettes, special holiday programs and special year-

### ABC RADIO NETWORKS

end millennium coverage beginning Dec. 30 with live reports from around the globe.

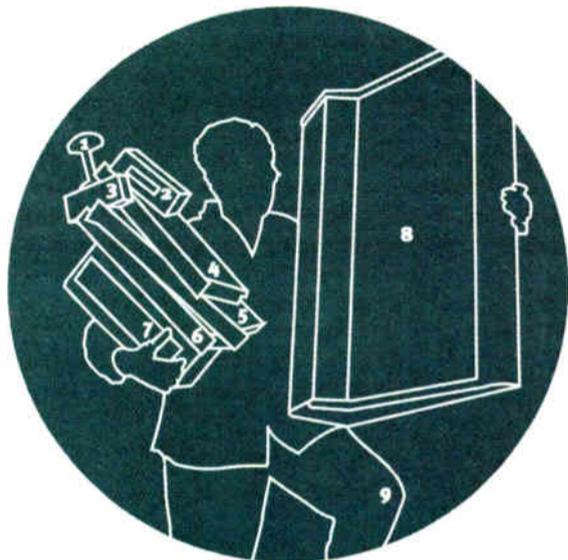
For additional information on "The Century Minute," contact ABC Radio Networks at (972) 458-7107 or circle Reader Service 43.

### TeamNews

TeamNews is a software application from Dalet Digital Media Systems. It is designed to assist a news team in organizing information.

TeamNews is anchored in a user-friendly screen in which users can browse incoming wires from 64 sources, access Web sites, edit audio and text cuts, insert audio, browse Dalet audio and logs database and access the contact manager for interviews.

For more information, contact Philippe Collin, Project Manager, (212) 825-3322, ext. 200, send e-mail to [pcollin@dalet.com](mailto:pcollin@dalet.com) or circle Reader Service 33.



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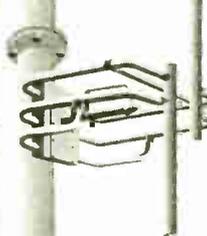
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## Excilbur Electronics

### HA-1 Hybrid Adapter



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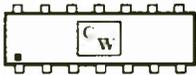


HC-3 shown with optional rack mount

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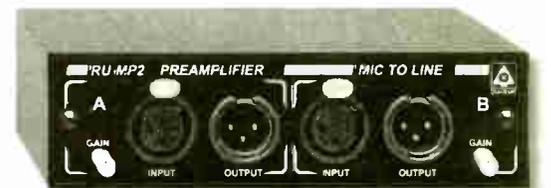
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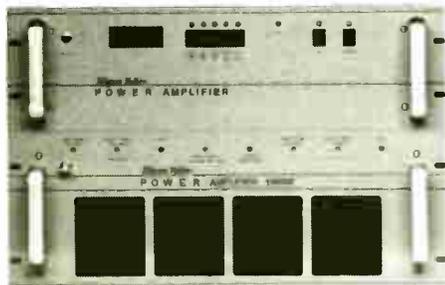
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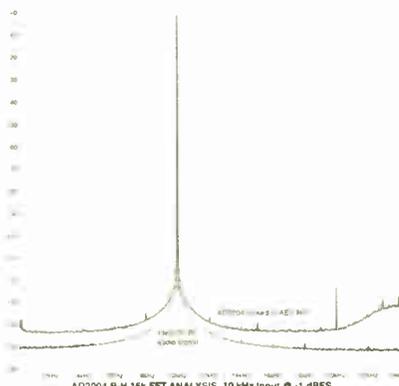
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READER SERVICE NO. 120

## ONLINE RADIO

# Prospect for Sales Using the Net

Kim Komando

Today's Internet is a veritable gold mine of information about prospective advertisers. The more "wired" your city is, the more information your sales reps will be able to find. An incredible amount of information literally is at their fingertips.

If you're wondering just how wired your city is, both Yahoo! Internet Life magazine and research firm INTECO recently completed surveys on this topic. You can find the results of the Yahoo! survey at [www.zdnet.com/yil/content/mag/9903/cities.html](http://www.zdnet.com/yil/content/mag/9903/cities.html) and the results of the INTECO survey at [www.inteco.com/pulic/pu990201.htm](http://www.inteco.com/pulic/pu990201.htm).

(Although the results of the two surveys were similar, they weren't exactly the same. Make sure you check out both.)

One of the best ways to find potential advertisers is to visit any local online "city guides" that may have information about them. A city guide is a generic term that has come to mean a gigantic Web site that offers guides to local entertainment and business.

These city guides typically provide links to other sites, as well as original editorial content — things like restaurant reviews and such. You should be able to

pinpoint prospects and research them on one of these city guides.

## Guides attract ads

A number of companies have made a national business from creating local city guides. America Online got out of the gate early with its Digital City, which has since moved from the on-line service to the World Wide Web.

The site, located at [www.digitalcity.com](http://www.digitalcity.com), offers guides to more than 50 major metropolitan areas. Microsoft's Sidewalk series of city guides, found at [www.sidewalk.com](http://www.sidewalk.com), offer guides to about 75 cities. However, the folks at Sidewalk only produce original editorial for 10 of them.

That means the quality and quantity of information is likely to vary depending on which city you're interested in.

Cox Interactive Media, the online arm of Cox Communications (RW, April 14), offers city guides in many of the areas where it provides cable service. Although the site, located at [www.cimedia.com/sites.html](http://www.cimedia.com/sites.html), only offers about 25 such guides, these are generally very comprehensive guides. If you're located in one of the Cox areas, these are worth checking out.

These big outfits aren't the final word in city guides, though. Depending on the

size of your market, chances are that at least one local company has put together its own city guide. Since these companies are often more well received by the locals, it's worth spending a few minutes on your favorite search engine to see if they exist.

It also pays to know if your prospect has made any recent headlines. Luckily, more and more major metropolitan newspapers are including searchable archives on their Web sites. Some of them got into this thinking they'd be able to charge for such a service.

However, as the recent conversion of the Slate on-line magazine from a pay site and back to a free site punctuates, the typical Web surfer isn't willing to pay extra for content, no matter how valuable it is. That means for the foreseeable future these newspapers are likely to provide their online resources for free.

## Smart information

Of course, companies issue press releases all the time that your local newspaper may or may not be interested in. But no matter how boring the topic, your prospect's news releases are interesting to you, right? Chances are, you may be able to find those news releases on line.

Two of the biggest news wire services for businesses of all sizes are PR Newswire and Business Wire. Companies pay these organizations a fee to distribute their news releases through a variety of channels, including on their own Web sites.

If you're looking for news about a particular company, visit both PR Newswire and Business Wire on the Web at [www.prnewswire.com](http://www.prnewswire.com) and [www.businesswire.com](http://www.businesswire.com), and spend a few minutes poking around.

Finally, don't forget to investigate the most obvious site of all, that of the prospect. The barrier to getting on the



Web is getting lower every day. That means whether your prospective client is a corner hot-dog stand or a sporting-goods store, they're likely to have some sort of online presence. You can track them down using your favorite search engine.

Many companies who are new to the Internet tend to put too much information on their Web sites. While this can be a turn-off for the typical visitor, it's good news for you. You want to make sure you have as much intelligence information as possible. So make sure you explore all the nooks and crannies.

You're likely to find an archive of press releases, a description of products and services, a history of the company and its founders, price lists, links to related sites and maybe even the name, direct phone number and e-mail address of the person in charge of the marketing department.

Computers are getting cheaper too. If you try hard enough, you can find an Internet-capable machine for under \$500. And dial-up Internet access is inexpensive. You probably can get a great deal from the network that hosts the station's Web site.

If they don't offer that type of service, check with one of the local Internet providers, who may be a potential advertiser. Sign up for a yearly plan and you can get the cost down to about \$10 per month. At those prices, there's no reason not to give your sales reps the competitive advantage of the Internet.

## Back to Ricky's Reel Top 40

► RICKY, continued from page 38

exist? There's a feeling of comfort in hearing things again that you remember."

Especially, perhaps, the DJs themselves. The ubiquitous *everybody* still connects with the DJs of their youth. In the veritable olden days of classic top 40, DJs were showmen; their job was bigger than playing records.

"These guys didn't have somebody screaming at them on the hotline about shutting up, playing the music."

In fact, their job was pretty straightforward, in a decidedly off-center way.

"These guys were expected to open the microphone and talk, and in many cases they had to improvise," said Ricky. "So what did we get? We got great entertainment. We got entertainment that is so spontaneous and so connected with the individual that did it that it's just become classic."

The Reel site is a lasting, ongoing tribute to the magic of radio. But where Ricky is now is not exactly where he thought he would be at this stage of his repository's history.

"I really did not expect to be a place where Don Steele's wife would send her husband's airchecks," he said. "I didn't expect to be in a position to host the story of Robert W. Morgan's life."

Reel visitors poured their hearts out when Morgan got sick (the veteran DJ passed away last May).

"We put up a 'Get well Robert W.' thing and there were hundreds and hundreds and hundreds — they're still up there — of messages that people from all over started writing to him. That must have been some encouragement to him; that must have made him

feel good to know that many people cared."

That's the kind of person the Reel site attracts — the person for whom radio is part of his skin. Which is as it should be because Ricky is not only chronicling the lives of radio's best voices, he's chronicling the lives of his visitors, too.

"I get as much excitement out of pulling these tapes out of the envelopes and putting them online as the people who listen to them," he said.

## As real as it gets

The Reel site is more than simply a final resting place for airchecks. In fact, Ricky hates to call his site that.

"But unless there is some attempt made to remember these stations and the people (who) worked there and listened to (them), it really won't matter ... This is why we have museums across the country," he said.

Museums. You know what *those* places are like: lots of big rooms and stuff under thick glass that can't touch and wrap your hands around. The Reel site is unlike any museum you've ever visited. There are no dusty old sarcophaguses or relics wrapped in age-old cloth.

No, the work preserved at Reel is dressed to the nines and speaks volumes about the power of radio and it's not encased in glass or any clunky polymer you'd care to mention.

There is no gift shop, but memories are more precious than a key chain or bumper sticker, unless of course you can display said sticker on the bumper of your cross-town competition's van.

If top 40 is in your blood, the Reel site is, well, as real as it gets.

# SMART BOY

## -he bought a BEXT

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**BEXT**

## BUSINESS DIGEST

# Talk America Signs Jackie Mason

Comedian Jackie Mason has signed on with Talk America Radio Networks as the host of his own national radio show.

"The Jackie Mason Show" airs Sunday nights from 9 to 10 p.m. EST.

Talk America Acting President Tom Star said the program will feature high-profile guests from entertainment, politics and sports.

Mason has hosted a talk program on KIEV(AM) in Los Angeles. He has a BBC Radio show and is the star of a television show produced in London, set to air this fall, also built around debate on world issues.

The company also announced that



Jackie Mason and Tom Star

Tom Star was named acting president. The announcement was made by Network Board Chairman Alan Gottlieb, who said Star assumed the duties of President John Crohan, who stepped down due to illness.

"Tom Star has served as vice president of operations and as a member of our board of directors since we launched the network with just a few dozen affiliates in 1992," Gottlieb said.

Talk America promotes itself as the only national radio network offering two-way talk programming 24 hours a day, every day.

Talk America has 400 affiliates.

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### ABC Radio Appoints New President

John Hare has been named president of ABC Radio.

Hare, former group president of ABC radio stations in New York, Los Angeles, Dallas, Detroit and



John Hare

Washington, will lead the 38 stations of the ABC Radio division.

Hare is former president and general manager of KSCS(FM) in the Dallas-Fort Worth region and was responsible for the company's radio stations in Detroit.

"John's experience in station management as well as his broad knowledge of the industry make him well-suited to the challenge of expanding ABC's many radio interests," said Robert F. Callahan, president of broadcasting, ABC Inc.

### New Sales Manager For Jones

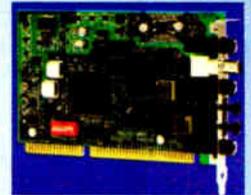
Patrick Crocker of Jones Radio Network was promoted to national sales manager and will oversee the network's Denver-based affiliates sales staff and Jones' long- and short-form syndicated products.

He has network and sales management experience, including four years at Unistar/Westwood One.

Jones Radio/MediaAmerica provides programming to more than 2,500 radio stations.

# Studio Sessions

Your Card, Sir



See Page 48

Radio World

Resource for Radio Production and Recording

April 28, 1999

## PRODUCT EVALUATION

# Symetrix 628: Third Time Charmed

Digital Control and a Popular Announcer Mic Processor Come Together in a Single Package

Ty Ford

When the Symetrix 628 digital mic processor originally came out, it had problems.

Digital noise of unknown origin (DNUO) was coming out of both analog and digital outputs. Although not horribly audible, it was there and should not have been.

The second version, shipped a few months later, had the same problem. I was beginning to think that Symetrix, a fine analog company, had met its match with the digital domain.

A/D and D/A converter.

The current iteration of the 628 digital mic processor uses 20-bit A/D and 24-bit D/A converters. The preamp chip is an Analog Devices SSM2017. This is one of the best applications of the 2017 I have heard.

### Similar topology

Symetrix also uses the 2017 with a similar topology on their new 302 preamp, resulting in lower noise and THD than with the Symetrix 202.

The 628 has six sections: Preamp, De-esser, Expander/Gate, Compressor,

adjustment and 0.3 to 4.0 octave Q width.

The Master section includes a  $\pm 15$  dB master gain control and data display. Here is where preset Choose, Load and Save features are activated.

The (free) RC-1 remote control is a 3-3/4 by 7-1/4-inch tabletop box with 12 buttons and scribble strips. According to Symetrix representative Kim Cahail, if you ask for this box

when you order the 628, Symetrix will send it to you at no charge along with a very heavy duty, 20-foot, seven-pin DIN cable. What a great deal!

Want separate processing for everyone on a radio station airstaff? Lock up the 628 and leave the RC-1 in the air studio. Scribble each person's name next to the appropriate button. When they come in for their shifts, all they have to do is hit the button to call up their own special processor settings.

You can also dump all the presets from See SYMETRIX, page 55 ▶



The third time was the charm for the Symetrix 628 Digital Microphone Processor.

When the newest Symetrix 628 arrived (\$1,199 with MIDI box if you ask for it), the first thing I checked for was the DNUO. There wasn't any.

### Slight buzz

In fact, the only noise I could find was the slight buzz that confirmed that I was powering the 628 from the AC outlet I know to be of slightly different ground potential from the rest of my system (I use this outlet to see how well different boxes do with ground loops). Even when plugged in to the problematic outlet, I did not get any ground noise when going digitally into my Audicy workstation.

I called to ask Steve Kawasaki, director of sales and marketing for Symetrix, what was different about the new 628. He said the entire front end had been redesigned including the preamp, line in,

three-band Parametric EQ, and Master. The De-esser, Expander/Gate and Compressor modules have independent I/O buttons. The Preamp section has a switchable Mic/Line input with a -12/+20 trimpot, 15 dB pad and phantom power indicator.

Following the preamp is the De-esser, which steps in 100 Hz increments from 800 Hz to 12 kHz, has a threshold control and gain reduction LED meter. The Expander/Gate features a -60 to 0 dB Threshold, 1:1 to 10:1 ratio and 2.5- to 5-second release time with an LED meter to indicate degree of expansion.

The compressor features a -60 to 0 dB threshold, 1:1 to 14.8:1 ratio and .25- to 5-second release time. The three-band Parametric EQ includes Low Frequency (20 to 500 Hz), Medium Frequency (160 to 6,300 Hz) and High Frequency (680 Hz to 20 kHz). All bands offer  $\pm 15$  dB

## PRODUCT EVALUATION

# Consider the Yamaha DS2416 'DSP Factory'

Carl Lindemann

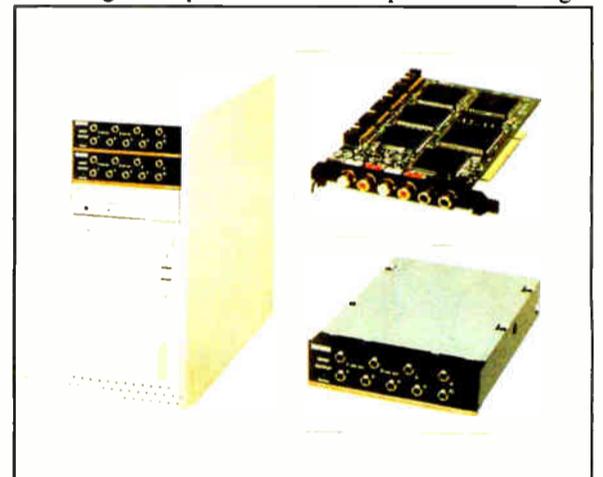
As personal computers took on digital sound editing and processing capabilities over the years, there have always been some compromises.

The all-purpose machines really were not designed with high-quality audio in mind. It took the advent of "professional" sound cards to make this possible.

From there, designers have had two paths: use software to emulate sound-processing hardware, or integrate such digital signal processing (DSP) hardware with the soundcard. Until recently, using software emulation has typically been more cost-effective.

Now the Yamaha DS2416 "DSP

Factory" offers a way to turn a PC or Macintosh into the full-fledged equivalent of the top-notch 02R digi-



Clockwise from left: a DS2416 installed in a PC, a standalone DSP Factory card, and the optional AX44 input/output expander.

tal mixing console at a reasonable price.

See DSP, page 52 ▶

**MACKIE**  
Professional Audio Systems  
www.mackie.com

## TECHNOLOGY UPDATE

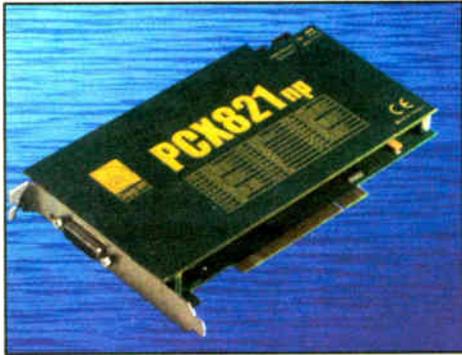
## Getting 'Carded' at Your Station

Val Davis

As the broadcast industry continues its march toward efficiency and consolidation, more and more stations are finding they must embrace computer technology to deliver music and commercial content.

While there are many companies selling PC-based digital cart systems and automation systems, there are surprisingly few companies who manufacture the heart of these digital audio systems: the audio interfaces (soundcards).

The audio interface determines how many streams of audio can be played simultaneously, how the commercials are



Digigram rolls out the PCX821np Card.

recorded into the system and most importantly, the on-air audio quality.

A number of soundcard manufacturers were present at the NAB convention in Las Vegas last week. Even more can be found by perusing computer magazines or by strolling through music stores.

This might be a good time for anyone thinking about installing digital audio workstations or storage and playback systems at their stations to make a list of features they need and then go ask the right questions.

Here is a list of manufacturers that are now in considerable use in computer audio. At deadline, all or most of these were expected to exhibit at the NAB show.

**Adb Digital**

Of all the companies I contacted, this one had the most surprises for me. The first surprise was that I have never heard of them before. Adb is in the business of providing very high-quality audio solutions to professional and project studios.

The company's top-of-the-line product is the Multi!Wav Digital PRO24. It delivers true professional AES/EBU, optical & coaxial S/PDIF digital audio. It features true 24-bit audio transfer, word clock I/O and pristine 24-bit analog monitoring.

In addition, the PRO24 can be configured in software to operate as a two-in/four-out audio card where the analog and digital outputs play independent files.

Multi!Wav Digital PRO24 is capable of being upgraded to 96 kHz audio and fea-

tures many technical features found only on high-end rack-mount equipment. The unit is now available for \$499. Find out more at [www.adbdigital.com](http://www.adbdigital.com)

**Antex**

Antex has established itself as an industry leader with possibly more audio cards in radio stations and recording facilities than any other manufacturer.

One of the newer cards from Antex is The Broadcaster. The Broadcaster eliminates the need for separate machines or boards, saving broadcasters money and making it easier to access production and playback operations. This high-quality digital audio adapter allows production of spots, the recording of phone calls and on-air programming on the same board.

All outputs of the Antex Broadcaster can be field upgraded to all-digital outputs with an optional daughtercard. The Broadcaster's playback block has eight balanced analog outputs and one stereo AES digital output. Antex also has a new MPEG Audio Editor that allows you to work with MPEG files just as you would with WAVs. Check out [www.antex.com](http://www.antex.com)

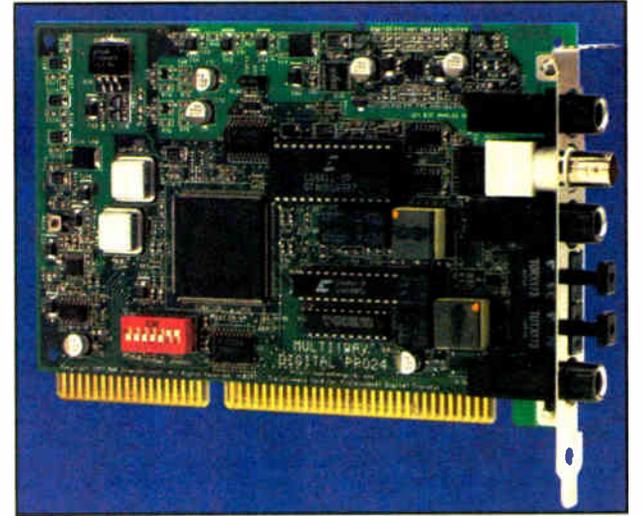
**AudioScience**

From Delaware comes the AudioScience ASI4100 family of digital audio adapters, offering multistream

Find out more at [www.audioscience.com](http://www.audioscience.com)

**DAL**

Digital Audio Labs made a name for itself with the CardD audio card. Many radio stations and production studios ushered in the digital audio editing age with the CardD. DAL continues to blaze its way with the CardD Plus.

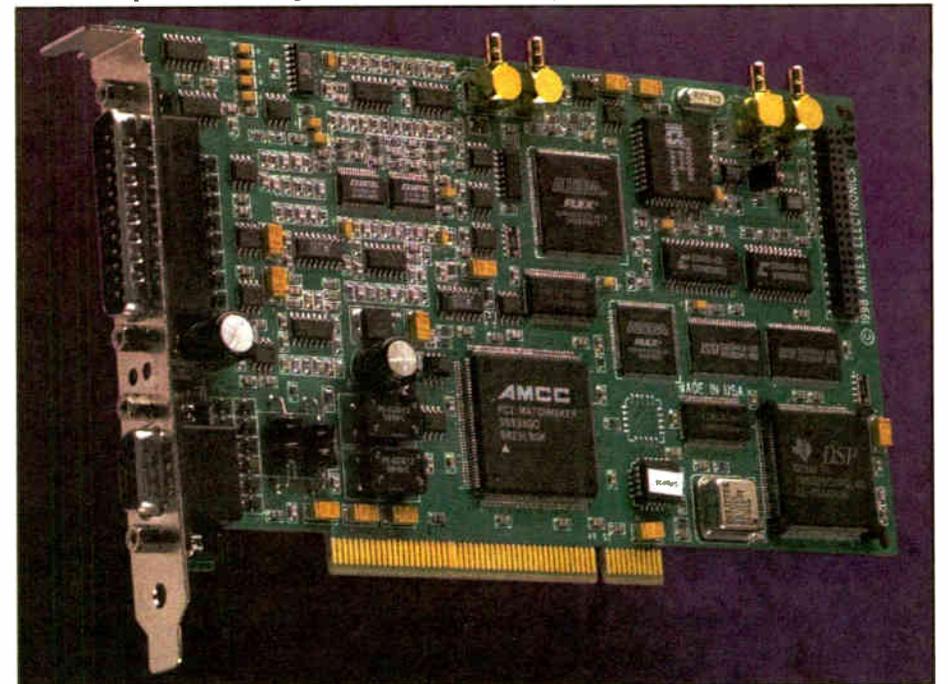


The AdB Multi!Wav Digital PRO24 Card

Not to be confused with a "multimedia" sound card that comes with a synthesizer section for gaming and music production, the CardD plus is a high-fidelity, dedicated recording and playback card for the PC. With superior audio specifications, WAV compatibility and duplex play-while-record feature, the CardD plus is a suitable match for your favorite audio editing and multitrack programs.

For digital transfers via S/PDIF to and from a DAT recorder or outboard converters, an optional digital I/O CardD is available.

Digital Audio Labs also has the V8



The Broadcaster From Antex Electronics

recording and reproduction of MPEG Layer 2 audio.

These audio interfaces are far from "hobby" cards. These were designed to deliver high performance specifically for broadcast applications. For example, the ASI4113 card outputs four streams of MPEG 2 playback and one stream of MPEG Layer 2 record simultaneously.

All streams have independent sample rate and compression format. With three physical balanced outputs, any output can have any mix of any four playback streams.

These cards were designed from the ground up to be broadcast interfaces.

Engine, a versatile audio card that can be configured with up to eight individual inputs and outputs. The V8 is a powerful audio card capable of turning your favorite multitrack software into a fully functional recording studio. Find out more at [www.digitalaudio.com](http://www.digitalaudio.com)

**Digidesign**

Digidesign was arguably the first to bring functional audio editing to the computer. The ProTools systems are in use worldwide in production studios and radio stations.

ProTools was originally designed for

See CARD, page 54 ▶

## TRY SOMETHING REALLY COOL!

**Cool Edit Pro**

The complete multitrack recording studio for Windows™

**The easiest way to:**

- Record and build spots, news, and clips
- Add music and sound f/x
- Stretch or condense

\*Cool Edit Pro has been the dream come true that we have wanted for decades: a low cost production studio software package that has the power of any hardware studio we have worked in. Our morning shows across North America now have the capability of doing all their show preparation in their home studios with Cool Edit Pro. It is not just a new program, it's a revolution that has changed the way radio is done.\*

- Bob Hamilton, New Radio Star

\*It's difficult to go anywhere in Cool Edit Pro and not hear yourself whispering to yourself 'this is cool.'\*

- Dave Oliwa, Radio And Production, May 1997

Check out our downloadable demo at:  
<http://www.syntrillium.com>

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# Drawmer Processors On or Off Air

**Rick Barnes**

Looking for something to "sweeten" the sound of your radio station? Two products from Drawmer might help you do just that.

I recently had the opportunity to test the company's MX-30 audio processor and the MX-50 De-esser. Normally used as in-studio components, I decided to give them both a go instead as airchain processors.



Drawmer MX-50 De-esser

Both devices offer subtle changes to the character of a station's signal and they may help you achieve the sound that you are looking for.

## What does what?

The MX-30 audio processor is a combined dual-channel gate and compressor/limiter which may be used in balanced or unbalanced systems and requires 1 RU of space. The compressor section combines aspects of both the traditional ratio style compressor and the "soft-knee" approach.

Soft-knee compressors are preferable for unobtrusive level control where the original sound changes as little as possible. Ratio compressors are more successful in creative applications where large amounts of gain reduction are required. Front controls for each channel include Gate Threshold and Release, Compressor Threshold and Ratio, Output Gain, Peak Limiter Level and a Bypass switch. LED meters are provided for Gain Reduction and Input/Output of both channels.

A Linking switch, when depressed, applies the same amount of gain reduction to both audio channels to

prevent image shifting.

The rear panel provides XLR inputs and outputs for balanced +4 dBu operation and quarter-inch tip and ring sockets for unbalanced -10 dBu operation for each channel.

The MX-50 De-esser also operates with either balanced or unbalanced systems and also requires only 1 RU space. The de-esser can be set up before or after compression to help equalize the sound and control the effects of sibilant "S" and

"T" sounds inherent in human speech.

The front controls for the MX-50 include Frequency and De-ess knobs and switches for Air, De-ess Band and Bypass for each channel plus Stereo Link.

As on the MX-30, the MX-50 De-esser rear panel provides XLR inputs and outputs for balanced operation and quarter-inch tip and ring sockets for unbalanced operation for each channel.

## In the field

My first stop was in the studios of WRNR(FM)-WYRE(AM), Annapolis, Md.

I noticed that the MX-30 compressor/limiter did not have a mic level input, so the notion of using it as a mic processor was definitely out. Without checking the manual, I attempted to insert the MX-50 De-esser between the main studio mic and Channel 1-A of the control board, with horrible results.

Although this seemed the natural place in the audio chain for insertion of a de-esser, it also was not built for mic-level input. Too bad.

Unfortunately, the Radio Systems control boards at WRNR/WYRE did not offer an easy way to insert these two box-

es into the audio chain and, with the WRNR transmitter located on the opposite side of the Chesapeake Bay, inserting them at the transmitter site would have been impractical for this short test.

So, to coin a pun, it was back to the Drawmer-ing board.

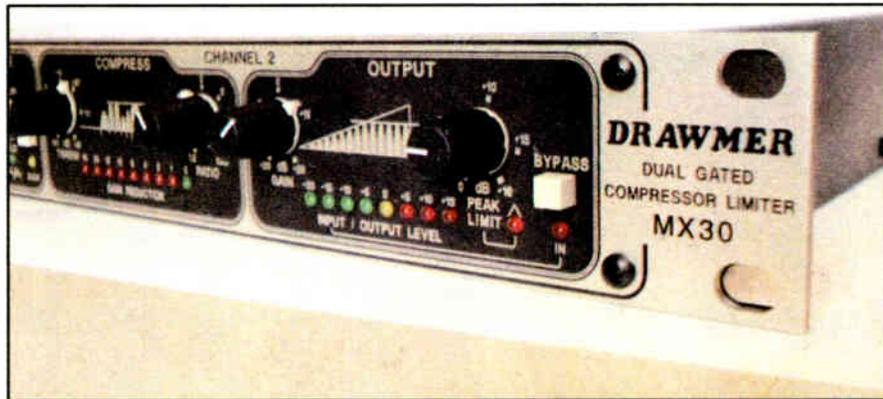
Where could I test these two devices? The answer came at Radio One, Inc. in Washington, D.C., the home of WKYS(FM). On the way out of the studio building to the transmitter site, their audio passes through an audio processor that is similar to the MX-30.

By inserting the MX-30 and MX-50 in lieu of the box already in place, I felt that I could get a test result of the effectiveness of these two devices.

## Ratings battle

The difficulty I ran into was that WKYS is in contention for the No. 1 spot in the nation's eighth-largest radio market. The notion of doing this equipment test during daylight hours was definitely not acceptable.

I had to wait until the dead of night and during Arbitron non-rated time in



Close-up Detail of the MX-30 Dual-Channel Gate and Compressor/Limiter

order to substitute this equipment and make my analysis.

I showed up with my two new Drawmer devices, to wreak havoc on the late-night audience of Cayman Kelly, known to fans as "K-Man." I disconnected the XLRs from the audio processor already in place. A few poops-and-pops later, we were in business.

First of all, both K-Man and I agreed that eliminating all processing entirely at this point in the air chain definitely affected the sound of the station. The signal sounded rough and we both could hear abrupt changes in levels as K-Man went from one audio source to another during his late-night urban "slow-jamz" musical broadcast.

I tuned the Drawmer MX-30 to settings comparable to those on our main audio processor. The "smooth" sound of WKYS — the one K-Man and I were accustomed to — immediately returned.

By changing the Gate controls, I could either emphasize or eliminate K-Man's breathing.

Lowering the Peak Limiter provided too much flat-topping and definitely created an unsuitable sound. When properly tuned, however, the MX-30 provided a full, robust and naturally well-blended sound for the radio station.

At 2 a.m., it was time for the changing of the guard. K-Man was replaced by Chris "Action" Jaxon who continued to help me with this project. We tried placing the MX-50 De-esser before, then after, the MX-30 processor in the audio chain. Chris and I both agreed that it was

most effective before the audio processor.

I tuned the frequency of the MX-50 to the 4 kHz position and created a fairly deep notch by tuning the De-ess knob to approximately -15 dB. I then asked Chris to overemphasize the letter "s" in his speech as he spoke about the latest happenings in S-S-S-Silver S-S-S-Spring, Maryland.

## So long, sibilance

Jaxon told me that the effects of the MX-50 were abundantly evident. As he held the letter "s" in each word, he said that he could hear the "s" fade out in his Air Monitor headphones as he was still articulating the sibilance.

I was concerned about placing the De-esser this far down the air chain. Again, my personal choice is to place a de-esser right after the microphone and before the mic processor or control board. With the Drawmer MX-50 placed as the next-to-last item before the signal left the studio building, it did not affect the sound of cymbals in the music nor did it not alter or color the music in any way.

One interesting effect that I did find: beware not to make the "notch" too deep. Approximately -20 dB was tops. Anything past that would create what sounds apparently like a crazy phasing

effect between the left and right channels.

The MX-50 offers a Full Band/Split Band switch that is supposed to help with this effect according to the directions. However, if the De-Ess knob — or as I refer to it, the "notch" — is too deep, not even the Full Band/Split Band switch helps.

As these are studio components, my one genuine complaint is that they lack mic level inputs.

The audio distributors I normally deal with related list prices of \$479 for the MX-30 audio processor with "street" prices between \$370 and \$390. The MX-50 De-esser lists for \$549 and it is so new that two of my favorite distributors could not give me a price quote. Another has it for sale at \$429.

My thanks to Tony Diggs, chief engineer of Radio One Inc., Washington, for allowing me the opportunity to use the facilities of WKYS to do this test.

My thanks as well to Cayman "K-Man" Kelly and Chris "Action" Jaxon for their comments and observations as we listened to the effects of the Drawmer equipment.

For information contact Drawmer in California at (805) 241-4443 or circle Reader Service 94.

Rick Barnes, CBRE, is an engineer with Voice of America in Washington. He is the former chief engineer for WRNR(FM) and WYRE(AM), Annapolis, Md., and is a contract engineer with Radio One, Inc. He can be reached at KE3QJ@msn.com



EXAMPLES OF ARTISTS FEATURED ALONG WITH THE TRACKS FROM MILLER, BASIE AND JAMES: BIG BAD VODOO DADDY, SQUIRREL NUT ZIPPERS, BRIAN SETZER, MICHAEL CIVISCA, CHERRY POPPIN' DADDIES, GEORGE GEE AND HIS MAKE BELIEVE BALLROOM ORCHESTRA, ETC.

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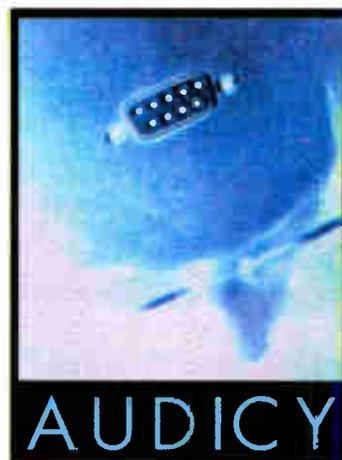
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# Inside the Yamaha DSP Factory

► DSP, continued from page 47

When coupled with the right multi-tracking software, the DSP Factory transcends expectations. It brings honest-to-goodness real-time processing power to even middle-of-the-road PCs.

But for a few caveats, the DSP Factory is a breakthrough product that should be a serious consideration for any radio producer contemplating a new system or a system upgrade.

Traditionally, the problem with software emulation comes in providing real-time processing of effects, fades and other such functions.

## Shared resource

The typical machine's CPU usually is a single chip. As such, all computing needs are divided through this shared resource. But how many tasks can a CPU juggle? Add innumerable tracks, effects, pans, and fades to the mix and the CPU chokes.

Back in 486 days, you had to burn an "image" file to hear what the mix was going to sound like. You would then listen and go back to the original to make changes.

The systems were not fast enough to make a lot of changes on the fly. This has vastly improved with the increase in CPU power, but the problem still crops up.

If price is no object, using dedicated digital signal processing hardware is preferable. This approach does not steal horsepower from the CPU. This is the basic design philosophy behind the Yamaha DSP Factory soundcard.

The DSP Factory does not try to sound like the Yamaha 02R digital mixer. Instead, it is the 02R's sound repackaged.

The DSP Factory uses the 02R chipset: five Pentium-sized chips that can handle most anything you throw at them. According to Marc Lopez, applications specialist for Yamaha, this transforms a garden-variety PC into a monster DAW.

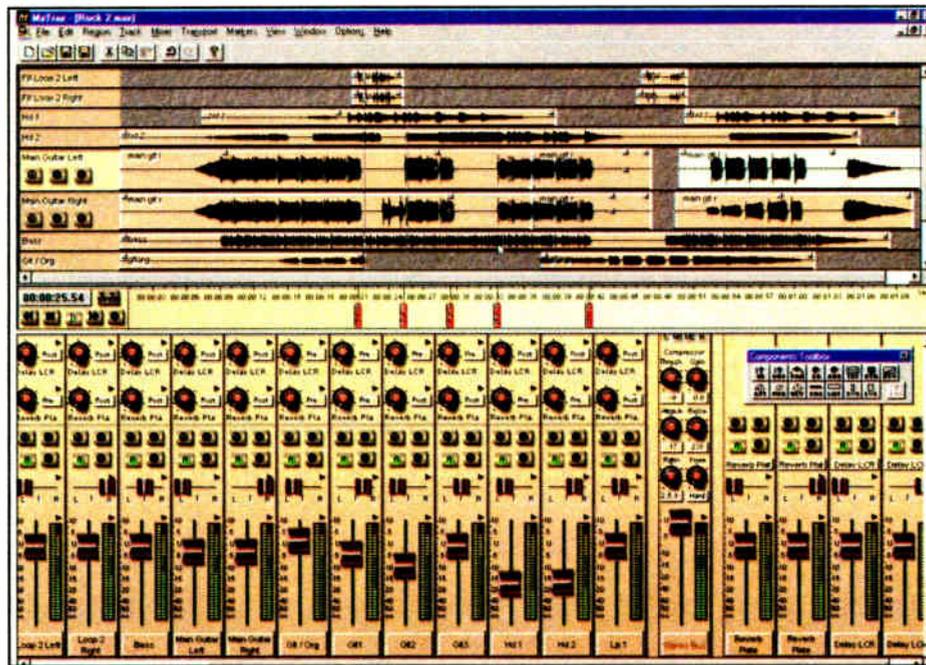
"With the five DSP chips on the DS2416, it offers a full-time 24-input, eight-bus, six-Aux mixer with 104 bands

of parametric EQ," said Lopez. Equalization consists of selectable peaking, shelving, or filtering types.

Lopez also noted the unit's 26 dynamic compressors — selectable compressor, gate, hard compander, soft compander,

allow you to add additional cards to multiply these capabilities.

The card is very quiet, with an advertised 93 dB dynamic range. The AX44 expansion unit betters that with a 100 dB dynamic range, even though it uses unbal-



To run the DSP Factory, you need software designed for it. Shown is MxTrax from Minnetonka Software.

ducker, and expander — two ProR3/REV500 quality effect processors, comprehensive input signal and gain reduction metering. All take place at the same time and in real time.

Even minus these 02R capabilities, the DSP Factory is a terrific PCI soundcard.

Externally, it has two stereo analog inputs paired with two stereo outputs each with matching 20-bit D/A converters. There also is a coaxial digital input/output with 24-bit resolution.

Internally, the card has digital connectors for up to two AX44 audio expansion units, providing four additional inputs and outputs each. As if that is not enough, serial I/O connectors

anced connectors. The AX44 is about the same size as a CD-ROM drive and mounts the same way into the front of a PC.

A third-party breakout box — the AX88 from AdB — is fully balanced.

In terms of quality and expandability, the DSP Factory is a well-thought-out and engineered PCI soundcard. The only thing missing is full 24-bit/96 kHz capabilities.

It does support 24-bit audio, but only to 48 kHz. For pro audio applications, this may be an issue. But for radio producers, this is likely to be irrelevant.

I tested the DSP Factory card and one AX44 expansion unit on a plain-Jane Pentium 200MMX machine with 64 MB

RAM and Windows 95.

Coupled with MxTrax, the digital recording software specifically designed by Minnetonka Audio Software for the DSP Factory, this modest computer setup became a powerful DAW.

Installation was simple and seamless in Windows 95. An NT driver will be available by the time you read this, and Macintosh drivers are already available.

After the hardware drivers were installed, a diagnostic utility confirmed that everything was set. Even with this minimal system, the DSP Factory performed admirably.

When taxed to the max over multiple tracks, I did experience occasional hesitation in commands. Speaking with Jeff Wilson, director of marketing for Minnetonka Audio Software, we determined that this was due more to the computer's limited video RAM: It took longer for the PC to draw what was happening on the screen than for the DSP Factory to actually perform the task.

On a system that was configured as the absolute bare minimum required for the MxTrax program, its performance was much more than merely "minimal." And as promised, the audio quality was a match for the 02R.

The only real question is whether getting wedded to a specific soundcard is an invitation to obsolescence. That may have been more true a short time ago than it would be today.

There were additional features and functions yet to be added in the package. But with the DSP Factory as is, it is hard to imagine what else a radio producer might need.

Lopez admitted, "The user does get locked into using these DSP functions, and the firmware is not upgradable, but I believe that this gives the tools necessary for mixdown."

## Plans for the future

There is also plenty of room for expansion. Again, according to Lopez, "The DSPF system offers enough I/O for some to use external effects or EQs if they want more. Most of the software companies who support the DSPF are incorporating the use of DirectX effects, which use CPU power, with the DSPF."

This use of DirectX also gives the end user options on numerous "plug-ins" that are available.

Lopez said, "If end users need more, they can add a second card to double everything — the number of playback tracks and the number of mixer channels — except the number of record tracks, which stands at eight simultaneous tracks."

Another interesting option is the ability to interface with the original Yamaha 01V mixer. If you cannot let go of physical faders and knobs, you do not have to.

The DSP Factory offers a way to turbocharge your aging DAW or to create a new system that will easily carry you over well into the next millennium. It is an excellent soundcard that adds all of the virtues of the Yamaha 02R mixer console, for not much more than a regular studio-quality soundcard.

You may lose some possibilities by committing to such a "closed" system, but taken in its own right, this is a winner.

■ ■ ■

For information contact Yamaha Corp. of America in California at (714) 522-9819, visit the Web site at [www.yamaha.com](http://www.yamaha.com) or circle Reader Service 26.

Minnetonka Software maintains a Web site at [www.minnetonkasoftware.com](http://www.minnetonkasoftware.com)

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# So Why Is Today Any Different?

Alan R. Peterson

I am generally not prone to using clichés, but I do believe the phrase about things being the same the more they change is true. Especially in radio.

Oh, certainly there are enough surprises and new twists to keep even the most grizzled radio veteran on his or her toes: "Will I have a place to work tomorrow?" "What if they ship me to the new Watertown acquisition?" "Who sneaked this extra stopset into the log?"

But when you get right down to it, a lot of the surprises that our new computer-driven systems are throwing at us are the very same ones that grabbed us by the neck and shook us around years ago. We just forgot.

## Tunes

Okay, so there you are in the studio, clicking the mouse or the trackball to get a song on the air. Only there is nothing happening. The monitor shows the system is stalled.

Maybe somebody dumped an MP3 file into the drive, not realizing the system cannot read the header or the bit rate is unsupported. Or maybe the danged thing just crashed and needs a reboot.

This never happened back in the "old days," did it? Well, yes it did, but in a different guise.

Have you already forgotten how it sounded when the drive shaft on the triple-deck cart machine slipped out of alignment or got physically bent by a temperamental jock slamming a cart? The wow and flutter that permeated all audio events on that deck were intolerable.

But *something* on the air was better than *nothing*, so we endured it until the new shaft arrived from the factory. And before Fed Ex and UPS got it together, that meant a one-week wait, until which time your audio would sound like Shep Fields and His Rippling Rhythm Orchestra.

Are you seasoned enough to have done shows with turntables? Back in my "North Country" days, I used a set of reasonably contemporary Micro-Trak tables at one daytimer. Thanks to local temperatures and infrequent maintenance on the part of our engineer, those turntables required 15 minutes of warm-up each morning for the rubber idler puck underneath to become pliant enough to drive the platter.

We all found that out one morning when, right after sign-on, we played the "Star Spangled Banner" from a disc. With the jumpy, slurry playback of the cold turntables, we may as well have been playing "In-A-Gadda-Da-Vida," it was so unrecognizable.

## Spare change, mister?

A dull stylus meant a skipping record, which correspondingly meant a penny taped to the tonearm. Very dull styli meant a nickel. When weighted down with two quarters, the needle would gouge spiral vinyl shavings off the surface of the record, which meant it was time to order new fangs ... another week's wait.

Shortly before the introduction of CDs, vinyl was of such low quality that cue-burn would occur as early as the first playing. So it was a good thing we began to put music on carts, right?

I suppose you forgot how many tapes got eaten by that deck. How many labels were done improperly or simply showed "various" as the outcue to multiple cuts. How loose that intro was, or how badly that first drumbeat was up-cut. How many out-of-date spots hit the air the day after the big sale.

Have you already forgotten about "cart quacks?" A cart dubbed a little too tight would come around for a recue, and if your fader was still open, would go "Hic!" on the air.

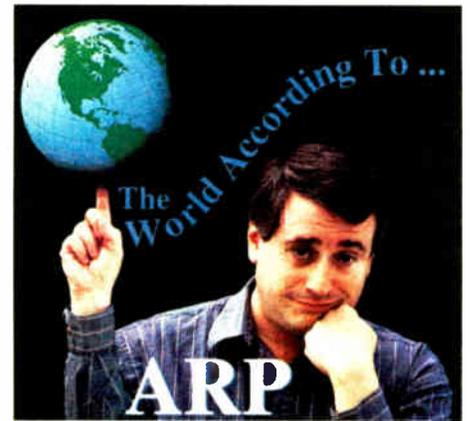
Then came the day you figured out *phase error*. The clock radio at home would come on at 6 a.m. and you would hear the No. 1 song of the week come out

of your mono speaker, swimming through an oatmeal swamp. The swooshing and warbling of a stereo cart through your mono radio was impossible to forget.

Carts would walk out to the sales office for telephone playback to the client, then promptly vanish down a wormhole in the universe. Part-time jocks would pull carts out before they recued, leaving the full-timers with multiple events of dead air.

Maybe hardware-based automation would cure those ills.

Well, it seemed like a good idea at the time. Set up several reel machines with a sequencer and a cart carousel for automatic playback. It is just that the care and



feeding of the early machines was a chore unto itself.

If a reel ran out or a cart was not ready, off went the alarms and the red strobe lights. Office staff and managers

See ARP, page 56 ▶

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# New Generation Audio Interfaces

► CARD, continued from page 48

the Macintosh, but some systems were ported across, and are now available for the PC.

ProTools 24 is the latest workstation from Digidesign. Audiomedia III is a highly powerful I/O interface, and the company's 882120 is an entry-level audio interface with a better-than-100 dB noise floor.

ProTools is one of the more powerful audio editing systems ever presented, with more features and capabilities than I wish to list here. It is a complete production studio, right down to mastering to CD. Check out [www.digidesign.com](http://www.digidesign.com)

## Digigram

An established audio company in Europe, Digigram has been on the domestic scene for a relatively short time, but is making big WAVs (pun intended).

This year, the company introduces the PCXnp series 800 and PCX440np cards. These PCI bus cards use a new driver that allows them to take advantage of a new DSP chip that is more powerful than the previous generations. All PCXnp cards are available with a complete set of development tools, the Digigram Xtrack multitrack editor and a range of other Digigram OEM applications.

The new Digigram PCX440np features two stereo or four mono analog balanced channels. It does simultaneous record and playback and makes efficient use of the standard PCI bus. The PCX821np provides four-channel stereo digital outputs in AES/EBU or S/PDIF formats, along with one stereo digital input.

Digigram has numerous other interfaces. Visit [www.digigram.com](http://www.digigram.com) for more information.

## E-Mu Systems

E-mu is a manufacturer of wavetable synthesis chips and samplers for profes-

sional music production. E-mu was purchased by Creative Labs — think "Soundblaster" — and is now in a partnership with Ensoniq.

E-mu has released two products worthy of mention. The EMU8710 is a PCMCIA audio card, featuring a high-quality DSP

Event monitor speakers.

The Layla allows computer audio editors to do what multitrack tape machines have been able to do forever: record several tracks simultaneously. Many popular cards only allow one or two tracks at a time.

It starts with a cross-platform PCI bus-



A full-blown Digital Audio Labs V8 rig is shown with PC and ADAT pair.

chip for recording audio to a laptop and a good-quality MIDI wavetable synthesis chip. This card makes it possible for reporters and broadcasters to record digital audio in the field directly to a laptop.

## Creation

E-mu also has the Creation Studio, a recording studio in a box featuring an AWE64 soundcard from parent company Creative Labs, bundled with a suite of powerful software including Sound Forge.

Radio producers and audio engineers can create high-quality multitrack recordings for a suggested price less than \$400.

The music and recording industries have awaited the release of Layla, a multi-in and out package from Event Electronics, the same company that brought us RØDE microphones and

master host card that connects to a rackmount audio interface.

The interface sports eight balanced 20-bit analog inputs, 10 balanced 20-bit analog outputs, and 24-bit S/PDIF stereo digital I/O.

It also has considerable on-board DSP, word clock for synchronization and expansion, a 24-bit signal path and MIDI In/Out/Thru.

The system should be available soon for less than \$1000, joining "sister" Event soundcards Gina and Darla, also for multitrack recording. Information can be found at [www.eventl.com](http://www.eventl.com)

## Turtle Beach

I recently reviewed the Turtle Beach Pinnacle Project Studio. Like the E-mu Creation Studio, the Pinnacle Project Studio is a complete studio in a box.

The soundcard is the Fiji Multisound and the software is the Voyetra Digital Orchestrator. This package allows for the recording and manipulation of digital audio side by side with MIDI data. The sound quality is superb, the interface is intuitive and simple to use and the package retails for \$600.

This will give any radio station the capability of producing commercials with original music, station liners, sweepers and anything you may imagine. The software features multiple effects like echo, chorus and compression.

Turtle Beach is releasing a PCI audio card called the Daytona, loaded with some of the best wavetable sounds available anywhere, as well as high-quality digital audio recording. Turtle Beach can be investigated further at [www.thebeach.com](http://www.thebeach.com)

## Yamaha

Following the success of the 02R digital mixer, Yamaha has released the DSP Factory (See the RW review on page 47).

This an exciting new system that provides a complete digital mixing and recording environment inside a standard PC. The first card released in the DSP Factory line is the DS2416: 16 tracks of digital recording with up to 32 bit resolution, all mixed with the equivalent of an 02R digital mixer in a box.

Many software companies have announced that they are supporting the DSP factory line, including Cakewalk, IQS (SAWPlus), SEK'D (Samplitude), Sonic Foundry (Sound Forge), Emagic, Steinberg, Canam Computers, Musicator and many more.

Yamaha also offers a line of personal audio cards for the PC including the SW100, SW200 and the soon-to-be-released SW 1000. These cards provide remarkable wavetable synthesis and full-duplex direct-to-disk recording. For more information visit [www.yamaha.com](http://www.yamaha.com)

■ ■ ■

Val Davis is a broadcast automation consultant and producer. He can be reached at [vdavis@nerds.com](mailto:vdavis@nerds.com)

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READER SERVICE NO. 50

# In the Studio With the Symetrix 628

► SYMETRIX, continued from page 47

one 628 unit to another by using the MIDI program dump button on the 628 back panel. The RC-1 gets its power from the 628 via a MIDI cable that also does the control switching.

If you are really MIDI-literate, you can use the RC-1 for switching with other MIDI devices. Symetrix put a power supply jack on the backside of the RC-1 remote control. Feed it with 9 VDC and you can use the RC-1 for other MIDI applications.

## Around back

The back panel of the 628 features a phantom supply button, XLR connectors for both Mic and Line input, and a TRS jack for line-level inputs that is also TS-savvy.

There are two XLR balanced and two quarter-inch unbalanced analog outputs. An internal jumper allows either of the XLR analog outputs to be set for +4 dBu line level or -40 dBu mic level.

The 628 has switchable 32, 44.1 and 48 kHz outputs and you can choose either AES/EBU or S/PDIF output. The 628 has no digital inputs.

Lastly, on the back are the MIDI components of the 628: a MIDI Channel 1 through 16 selector switch, a

breaths and sometimes popping open just a bit on lip smacks just before each new phrase.

Staying on mic is also very important. Move back a bit too much and the lower level will cause the Expander to close too soon and open too late.

If your talent has very loud asthmatic inhales or big lip smacks, you may have to process more aggressively, but I found the best results were gained by setting the expander ratio at 3:1 and the threshold at -30 dB, with the mic preamp input just below clipping.

That, of course, will vary with the amount of ambient noise and the power of the individual talent's voice or instrument.

At Flite Three studios in Baltimore, Messrs. Louis Mills and Mark Patey obliged by interfacing the 628 to feed AES/EBU into their AMS AudioFile recorder, running at 48 kHz.

Our first attempts were not good: a rolled-off low end and high end and some distortion.

## Quickly solved

We discovered the 628 digital output had been set at 44.1 kHz. Switching to 48 kHz was a noticeable improvement and we were amazed

by using higher ratios and adjusting the threshold to increase the amount of gain reduction. We set the ratio to 14.8:1 and hit it with enough signal to cause 4 to 6 dB of gain reduction. We could hear it working, but liked the way it sounded.

The de-esser works about as well as most I have tried. You choose the frequency and the threshold and that is it. It would be helpful to have the full boost and cut on the de-esser, because the boost helps to find the offending sibilant frequency range.

Without it, you just dial up and down the frequency range while listening to the track with the threshold set to catch

everything in hopes of finding the right range.

A work-around is to use the parametric EQ to spot the offending frequency, which can then be dialed into the de-esser.

Given its noisy history, I was pleasantly surprised by the sound of the preamp, the low noise and processing of the Symetrix 628. The redesign really helped, and has added years of shelf-life to the unit.

If, in the past, you have relegated Symetrix to the "industrial audio" enclave, maybe it is time to reconsider.

■ ■ ■

For information contact Symetrix in Washington state at (425) 787-3222 or circle Reader Service 191.

Ty Ford may be reached at www.jagunet.com/~tford

**I was pleasantly surprised by the sound of the preamp, the low noise and processing of the Symetrix 628.**

MIDI In port and a combined MIDI Out/Thru port. The 628 uses an industry-standard, removable IEC power cord.

## Ear test

I was surprised at how good the 628 preamp sounded. The Symetrix 628 uses a 20-bit A/D converter with 24-bit internal processing.

I compared the 628 mic preamp with my GML preamps by first recording my voice on a Gefell UM 70 microphone to the GML, then through the line input of the 628 and going digitally into my Audicy workstation, set to record at a 32 kHz sample rate.

I then recorded the same copy using the 628 mic processor. The tracks were indistinguishable. I bumped everything up to 44.1kHz and got the same results.

To eliminate the possibility of the converters being the limiting factor, I recorded directly from the GML preamp into the Audicy. Again, virtual exactitude.

The difference caused by my minor movements around the mic were more noticeable than the difference in the preamps.

The throughput delay caused by the digital processing of the 628 is minimal; not enough to cause phase cancellation in my headphones when monitoring my own voice. Throughput delay of the Audicy is greater.

With the Expander, I found the best approach was to set the Ratio and Threshold controls to shut down during inhales. I tried leaving the inhales in, but the Expander sometimes closed down roughly, fluttering across the

that, given the incorrect sample rate, the 628 sounded as good as it did.

By itself, the 628 preamp sounded a bit warmer on the bottom than the API preamps at Flite Three, and without their hallmark edge.

I remember having the Yamaha 02R digital mixing console to play with just before it came out. You should never trust your memory as to what something really sounds like, but upon hearing the 628 preamp against the API, I thought, "Hmm, reminds me of the 02R preamps."

The session, for a Mattress Discounters' Boston flight, went well. We used a Neumann U 87 through the 628 and went digital directly into the AudioFile.

We chose to use just a small amount of compression: 2-4dB of gain reduction at a ratio of 2.45:1 and a release time of .25 seconds. The attack time of the 628 is not adjustable. The fastest release time is .25 seconds. No EQ was used. Later, with the job done, we continued to explore the compression and EQ features.

We found adding 4 to 6 dB of 10 kHz added a nice amount of "air," and that the highest compression ratio of 14.8:1 worked well as a limiter. Adding 4 dB of 65 Hz or 90 Hz, with a Q of .85, also sounded quite nice.

We noted that the EQ comes after the expander and compressor, but didn't seem to mind once we got working with the unit.

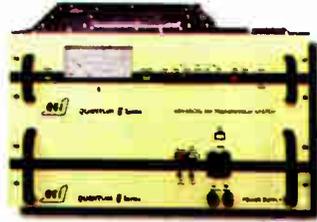
We tried the compressor over a range of settings and found, as we expected, that we could make it pump



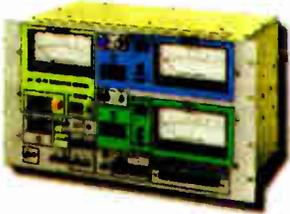
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# History Lesson: Great Gear Failures

▶ ARP, continued from page 53

would scramble to "feed the baby" and make it stop crying. When a part broke down or went out of alignment, a replacement had to be imported from the planet Neptune.

Any dead air meant death for all. We were so paranoid, we even spliced out little bits of silence that were actual parts of songs. The Silence Sense threshold was set at impossible levels and would trip during the quiet part of "You're My Soul and Inspiration."

Weekend shows that came in on disc had to be dubbed to reel to play back on the automation system. After all, the studio had no turntable because the automation was hardwired to the Program Line.

Oh wait, did I mention the 25/35 Hz trip tone? Of course not.

Which certainly explained why that weekend program kept stopping and firing the next deck — nobody thought about brick-walling all bass signals below 80 Hz.

As I understand it, this sometimes happens today with computer-based systems and network audio. Some networks send low-frequency tones to start local commercial playback. When a song or music bumper mixed with lots of sub-bass blows through the filter, it can fire the next event. Not pretty.

Then along came CDs to save us.

Those early consumer-type decks we started out with were pretty touchy. Songs

would skip and derail if you looked at the player cross-eyed and went "boo!"

## We have learned the hard lesson to keep some sort of playback deck in the studio.

The players with the slide-in plastic cases are great. But all stations have one jock that slams the discs into the player, dislocating the little doors on the cases and rendering the unit unplayable until a trip to the shop.

When all three players in the studio got slammed-and-jammed, what happened then? You couldn't play a song from cart because the tapes were retired when the CD players arrived. The old records were filed away in the basement in 1988.

After playing back four minutes of spots and every PSA in the rack, you decided to yammer for 10 minutes until the engineer unjammed a player. And that's how talk radio was born.

Just kidding.

So today when there is a log conflict, a song that dies right in the middle, an outdated forecast that comes up or an entire system collapsing and not able to make a peep for hours on end, just remember this

is the same thing we put up with for decades before the computer came along.

mental pieces of gear.

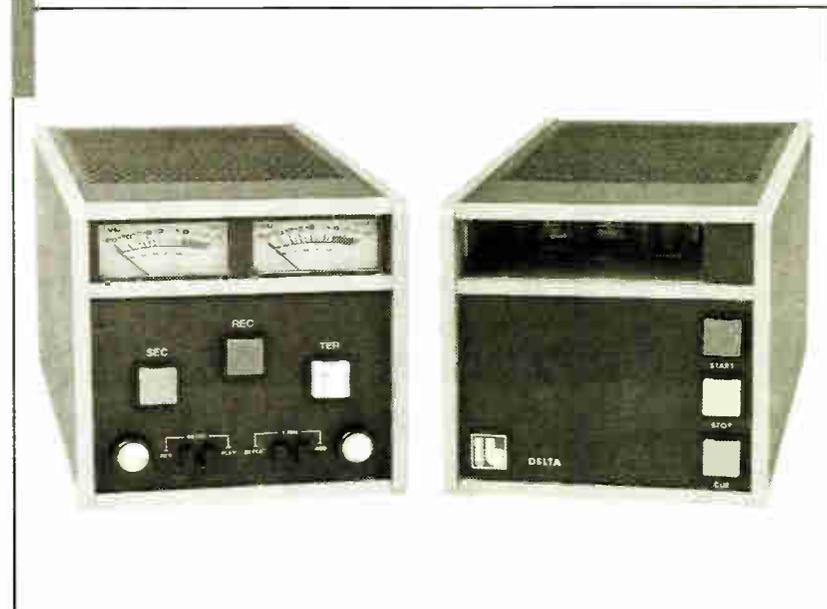
Recovery may take a little longer, owing to our unfamiliarity with the new system. But it will come back and we will be back on the air in a few moments. We are used to it. We can handle it. Just now, we have to wait for the warm boot-up to finish cycling, rather than waiting to pull shredded tape out of the cart deck.

We have learned the hard lesson to keep some sort of playback deck in the studio. When the big rig faints for a few moments, we can at least keep the show rolling with a CD, a cart or even a record, and the public is none the wiser.

With a nod to good Mr. Murphy and his Law, Peterson's Radio Corollary — with respect to any kind of radio, past or present — observes the following:

*Sooner or later, everything in the studio will go ka-boom.*

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School: University Of Montana

Favorite format: oldies

Favorite place to listen to radio: alone in the car

Coffee: regular double tall mocha, with whip

Favorite piece of equipment: Cutting Edge Omnia

Hobbies: antique radios and classic blues

Favorite color: blue

Proudest moment: the kickoff of the ill-fated BRS satellite network

Favorite Section in Radio World: GM Journal

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Wanted: pwr supply, schematic or manual for Gates Stereo 80, President & Executive console, any cond, also tax-deductible contributions of exciters, RF amps, telephone remote controls, RPUs, STLs, antennas, transmission line, towers, etc. will pay shipping. 1-888-291-4901 PIN 5134.

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Motorola 51327B service monitor w/plug-ins & manuals, \$500; HP 3580A spectrum analyzer, audio range w/manual, \$700; HP 6259B pwr supply, 12VDC 50-60 A, \$700; HP 344A, \$250; HP 141T w/plug ins & manuals, call for details & price; Marconi FM, AM mod meter mdl TF-230D, BO. Barry, 207-255-3140.

Wayne Kerr digital modulation analyzer/meter, like new, orig box, manual, \$2K or trade for vintage mics, compressors. M States, 907-456-3419.

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Tektronix 7L14, 7L18, 7633R RF spectrum analyzer system, 10 kHz to 18 GHz, very clean, vgc w/manuals, \$5000. R Lankton, 941-377-1488.

Wavetek real time spectrum analyzer, \$275 +shpg; Tektronix DC502 FG501, 508, \$475/all +shpg. J Baltar, 207-293-3479.



300B (See SV300B)

3CX300A1  
3CX400A7  
3CX2500A3  
3CX2500F3  
3CX2500H3  
3CX3000A7  
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3CX15.000A3	4CX1500A	572B	SV572-10
3CX15.000A7	4CX1600B	6550C (See SV6550C)	SV572-30
3CX15.000H3	4CX3500A	6AS7G	SV572-160
3CX20.000A7	4CX5000A	6BM8	SV6550C
3CW20.000A1	4CX5000R	6D22S	SV6L6GC
3CW20.000A7	4CX7500A	6L6GC (See SV6L6GC)	SV811-3
3CW20.000H3	4CX10.000D	6N1P	SV811-3A
3CW20.000H7	4CX12.000A	811A	SV811-10A
3CW30.000H3	4CX15.000A	812A	TH5-4
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4CX350A	4CW10.000A	EL34	SK300A
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**RCA BTA-5T AM** xmtr w/spare parts, \$4000. J Henderson, 320-252-5308.

**Tepco J-340** (2), 2 & 3 yrs old, 0-40W, \$2000 ea; **Tepco J-317** 0-10W translator, \$900. C Marker, 906-249-1423.

**Collins 830 FM** 1 kW xmtr, can tune to your freq for extra charge. Chief Engineer, 801-973-7759.

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## ACTION-GRAM

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Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations and recording studios only. All other end users will be charged. This FREE service does not apply to Employment Help Wanted ads or Stations For Sale ads. These are published on a paid basis only. Send your listings to us by filling out the form below. Please be aware that it takes one month for listings to appear. The listings run for two consecutive issues and must be resubmitted in order to run again. Thank you.

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- F. Recording Studio
- K. Syndicators/Station
- M. Ind. Engineer
- G. Audio for Video/TV Station
- H. Consultant/ind engineer
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- J. Other

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- A. Ownership
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- H. Programming/production
- G. Sales
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\*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.

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- 5 KW FM 1983 Harris FM 5K
- 5 KW FM 1982 Continental 816R1
- 5 KW FM 1967 Collins 830E
- 10 KW FM 1967 Collins 830F1
- 10 KW FM 1962 RCA BTF 10D
- 10 KW FM 1986 Wilkinson 10000J
- 20 KW FM 1970 Harris FM20H3
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**Technics SL1200M TT**, BO: Various TT pre-amps, BO. J Parman, 606-236-2711.

**Technics SL-1500MK2** in gd cond, \$150; **Technics SL-1200MK2**, missing lid, \$125; (4) **BE/Spotmaster/Russco** w/MicroTrak 404 arms, 3 gd, 1 poor, \$100 ea. D Palmer, 740-593-6651.

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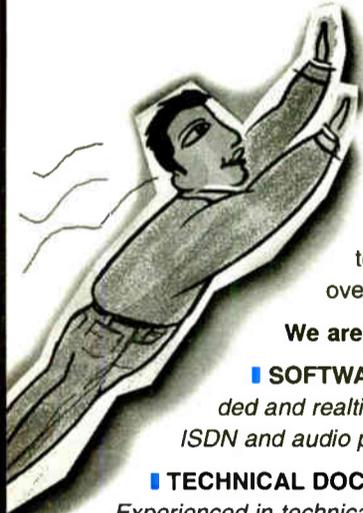
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## ◆ READERS FORUM ◆

Letters received are the property of RW, and may be edited for space considerations.

### Patent payment

Dear RW,

In the article by Lynn Meadows in the Feb. 17 issue of *RW* it was indicated that Quad Dimension Inc. is seeking a payment for a patent license.

I trust that the NAB and broadcasters will investigate this questionable request.

In the past, Energy-Onix has provided the weather service with broadcast transmitters, and in the process we have become somewhat acquainted with the activities of the weather service.

It was brought to our attention that the development of the existing EAS system was funded by the Weather Service — in other words, by public funds. The resultant system should be in the public domain because it was developed with government funds.

I strongly recommend that the NAB and other organizations responsible for protecting the broadcaster investigate this situation.

Thank you for bringing this information to the attention of broadcasters. *Radio World* does provide an excellent service to the industry.

Bernie Wise  
President  
Energy-Onix  
Valatie, N.Y.

### Banner rates questioned

Dear RW,

I feel that the claimed \$10-per-thousand click-through banner rates in the March 3 Kim Komando column are outrageous. They are unbelievably and unachievably high.

I successfully run a "medium"-size (1,000+ unique visitors per day) site with high and exclusive free technical content at [www.tinaja.com](http://www.tinaja.com)

We have quite a few high-quality banner advertisers who pay a rate somewhat over \$1 per thousand.

If you assume an unrealistically high 2 percent click-through, then \$10 per thousand page views translates to 50 cents per click-through. I cannot imagine any advertiser willing to pay more than five cents per click-through.

Some insider secrets of successful banner advertising appear at [www.tinaja.com/glib/bannyear.pdf](http://www.tinaja.com/glib/bannyear.pdf)

Please let me know where I can find these \$10-per-thousand advertisers.

Don Lancaster  
Thatcher, Ariz.

### More stupid things ...

Dear RW,

After reading Ken R's "Ten Stupid Things Radio Stations Do" in the March 3 edition, I thought about perhaps one more stupid thing.

For some reason, many stations make use of repeating phrases in promotional copy, the second time all distorted and EQ'd to sound like a whisper: "WXXX 96 FM — BEST VARIETY! (*best variety*) ..."

It seems every AC station in the country has all station liners and promos with the echo/whisper. It's really overdone, and shows how uncreative many people in this business have become. And what is "best variety," anyway?

John Landry  
Audio Maintenance Engineer  
ABC Radio  
New York

Dear RW,

Regarding the March 3 *RW* Ken R. article:

Amen.

"Slick" Mike Edmonds  
Tucson, Ariz.

### Conglomerate concerns

Dear RW,

I just finished reading the open letter to FCC Chairman William Kennard, "Revisiting radio ownership" written by Robert Conrad, president of WCLV(FM) in Cleveland (*RW*, Jan. 20).

Bravo, Mr. Conrad! It's refreshing to hear a broadcasting executive take a well-articulated stand against this consolidation trend.

As a 30-year professional broadcaster, I have recently been "eliminated" along with a sizable chunk of the staff at an AM/FM combo here in Worcester, Mass.

The Capstar big guns decided it was time to reduce their operating costs by installing their Wizard digital automation system, then proceeded to reduce the staff. The localism, the diversity, the relatability that this fine FM had is now pretty much gone.

The ratings seem to be about the same as they were, with minor drops throughout all of the dayparts, which for the most part are still "live," to the best of my knowledge.

Several times I have chuckled at the jock who obviously voice-tracked his Saturday shift, and pre-recorded his

## Localism and Listeners

"When news breaks, we break in."

That's a phrase not heard often anymore, except on news/talk stations. What happened to the days of full-service radio? Where are the "information stations?"

Of course there are many reasons for changes in formats and listener habits over the years. But radio has always been one-up on TV and newspaper because of the immediacy factor. We should continue to take advantage of this position.

A variety of news service resources are available for radio stations. As demonstrated by the Focus on News Services in this issue's *GM Journal* section, many fantastic programs and services are available to supplement your local coverage — from traditional wire or audio services such as ABC and AP to long-form features such as "The Dow Jones Money Report."

Stations must use such services wisely, and not lose sight of localism.

Listeners crave information — but not only on national, business and lifestyle matters. Your listeners want to know the northbound lanes of Main Street downtown are closed thanks to a water main break, or that the power company is working around the clock to restore electricity to your community following the spring thunderstorm, and folks in the tri-county area can expect to be back online by dinner time.

We've heard that information is power. Harness that power for your station by giving your listeners the power of knowledge and information.

National news coverage in a top-of-the-hour three-minute blurb is not sufficient to qualify as a complete public service commitment in our industry. Localism is a part of what made radio great. Listeners gain a sense of community with a radio station that reports on city council and school board happenings. Localism promotes loyalty. And loyalty promotes listenership.

We applaud radio stations that make local news and information a priority.

— RW

weather, announcing that it was a sunny, cloud-free day, when it was pouring the whole day.

Songs play one on top of each other, and the unholy happened when the automation system decided it was going to be a commercial-free day. Not one spot played that was scheduled, and this happened while the station was "live-assist."

The program director was on the air the day after, apologizing his head off. Did the almighty stockholders know about this; more importantly, did they care? Of course not.

I love new technology, but only if it's intended to be utilized as a "tool" for personnel to use.

I am 100 percent against technology when it replaces jobs, lifelong careers and family finances.

Perhaps it's time for our government to step in, review exactly what's transpiring, and take another hard look at this conglomerate "own-every-station-in-the-market" trend.

Yes, radio as we knew it is changing, but from this broadcaster's angle of view, it's not for the betterment of the audi-

ence, the clients or the professionals who dedicated many years of our lives to become radio broadcasters. Something has to give.

Radio, within itself, is becoming a cheap and fast way for those with the power and money to make a fast buck at the expense of everyone involved.

If you are in the executive chair, you as an owner should really think why you got into the radio business in the first place.

Vin Lewis  
Unemployed Professional Broadcaster  
Spencer, Mass.

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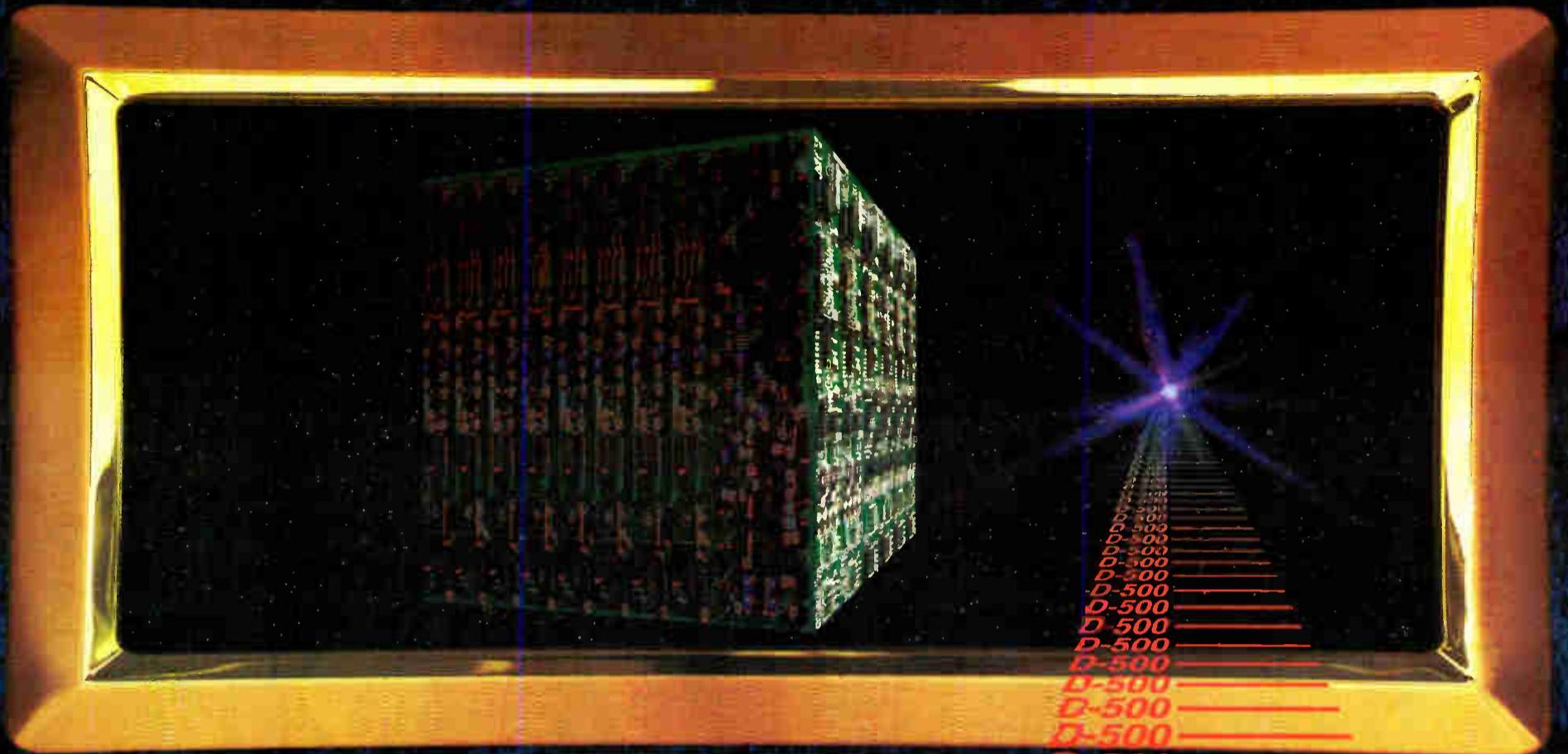
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