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An abandoned transmitter site helps KRCV get back on-air after a fire.

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**30-Year Man**

Jim Wood talks about what he's learned in three decades at Inovonics.

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January 1, 2003

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**NEWS MAKER**

## Deana Coble: WUNC's Engineer on the Go

by Ken R.

**CHAPEL HILL, N.C.** Deana Coble doesn't want to be the best woman engineer in radio; she wants to be the best engineer in radio, period.

News station WUNC(FM), a noncommercial outlet in Chapel Hill, N.C., is where Coble holds the title of engineering supervisor. She says she strives to bring a human quality to what is sometimes a purely technical job.

"When our co-workers call us, they are usually in crisis," said Coble. "That's why I make sure I get around to seeing them during quieter times to build relationships. In this business you have to treat the person as well as the equipment, because if you don't, your customers still aren't satisfied."

**Learning distance learning**

Coble, 33, is a North Carolina native. After receiving a bachelor of science in telecommunications at Liberty University in Lynchburg, Va., she joined the media department at the North Carolina School of Science and Mathematics in Durham. As media coordinator, she worked with teachers to get them to stop using old-fashioned overhead projectors and put their presentations on computer.



Deana Coble

"The school was setting up a distance-learning network so they could share their classes around the state. During my five years there, we added graphics to make those classes more like a TV show," she said.

"Our broadcasts started as two-way  
See COBLE, page 8 ▶

## 'Kinstar' Antenna Tested

*Two Firms Develop Top-Loaded Cage Monopole AM Design*

by Randy J. Stine

**BRISTOL, Va.** Preliminary test data indicate that a new low-profile AM antenna design, now under development, could someday be an alternative for AM broadcasters by allowing for easier zoning approval of antenna projects and offering a less-expensive option to quarter-wave monopole antennas.

Other developers of short antennas have failed to gain FCC approval in the past, prompting skeptics to wonder if such short antennas will ever be effective radiators. But the companies developing this design say field measurements from a test site in southwest Virginia indicate their top-loaded cage monopole AM antenna is approximately 96 to 98 percent as efficient as a standard quarter-wave monopole antenna at less than one-third the height.

STAR-H Corp. and Kintronic  
See AM MONOPOLE, page 5 ▶



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# ◆ NEWSWATCH ◆

## FMC Assails Concentration

**WASHINGTON** The unprecedented consolidation of the commercial radio industry that followed the Telecommunications Act of 1996 has led to a loss of localism, less competition, fewer viewpoints and less diversity in radio programming in media markets across the country, according to a study released by the Future of Music Coalition. "Our report clearly demonstrates that the radical deregulation of the radio industry has not benefited the public or musicians," said Jenny Toomey, executive director of the organization. "Instead, it has led to less

competition, fewer viewpoints, and less diversity in programming." The group filed its report with the FCC as part of the public record for the media ownership proceeding. Key findings include: Ten parent companies dominate the radio spectrum, radio listenership and radio revenues; and oligopolies control almost every geographic market.

Sen. Russ Feingold, D-Wis., said the study "reflects the concerns I have been hearing from independent radio stations, concert promoters, artists and consumers. The Telecommunications Act of 1996 opened the floodgates for concentration and resulted in anti-competitive practices such as a new form of payola."

Feingold introduced a so-called anti-pay-

ola bill into the 107th Congress "to ensure that concentration of ownership and cross-ownership of promotion services or venues are not used to hurt musicians, concert promoters, or other radio stations."

Reacting to an advance copy of the study earlier, NAB called the methodology "flawed" and said it contained little of news value.

## Arbitron Extends PPM Trial

**COLUMBIA, Md.** A technical problem involving encoding at a Philadelphia sta-

tion does not represent a flaw in the PPM technology. So said Arbitron in revealing it will extend the ratings comparison portion of the PPM market trial in that city after discovering the problem.

"We are going to provide the industry with additional ratings comparisons that will coincide with the Arbitron Winter 2003 radio survey period and the Nielsen Media Research January, February and March 2003 local market television survey periods," the company said in a statement about its Portable People Meter.

Arbitron said technicians discovered that the audio input to the KYW(AM) encoder was not set to the appropriate level, "which may have inhibited the encoder's performance" during several ratings periods. KYW and Arbitron fixed the problem in November.

"We're giving the radio and television industry and ourselves an additional three months of ratings comparisons to determine if out-of-spec encoder input might have affected the performance" of the PPM, Arbitron's Thom Mocarsky stated.

He said technicians have since checked the performance of every encoder at the 49 radio stations, 11 television stations and 26 cable networks in the trial.

"What we learned is that we need to refine our installation specifications and also to refine our procedures for verifying that the encoders have been properly installed. We are also improving the design of our in-station monitoring equipment to allow it to analyze more completely the quality of the encoded signal."

## Spectrum Task Force Shares Ideas

**WASHINGTON** More details are out about the FCC's Spectrum Task Force suggestions to increase efficiencies of how spectrum is used and allocated.

In a paper titled, "A Proposal for a Rapid Transition to Market Allocation of Spectrum," Evan Kwerel and John

See NEWSWATCH, page 6 ►

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# KRCV Gets Back on Air After Fire

by Michael Hedrick

When a wildfire raged through the Johnstone Peak area near San Dimas, Calif., and burned down utility poles carrying electricity and communications lines to the mountain, Hispanic Broadcasting Corp. station KRCV(FM) 98.3 found itself off the air, unable to power or send signals to its transmitter site on the hilltop.

However, through a combination of diligent effort and the generosity of members of the local radio community, the engineering staff had a low-power signal back on the air the next day and began operating from an alternate site a few days after.

"The fire erupted about 4 p.m. on Sunday, Sept. 22," said Chief Engineer Tom Koza. "It was fairly benign for a good long time, but got wild on Monday," and the site owner told the station that the blaze had "gone in the wrong direction and was going to run over Johnstone Peak.

"That's when we decided to go to Plan B. We didn't have any emergency power at that site. Programming was delivered on T1 lines and backed up on ISDN, but when the fire went roaring through there, it cut out two dozen power poles."

This took down the site's electricity and program feed connection. The building was saved from damage after the Forest Service blasted it with Phos-



The KRCV(FM) tower and transmitter site survived the fire, but destruction of utility lines took the station off the air.

Check, a fire-retardant chemical.

The station went off-air at 8:05 p.m. on Monday, Sept. 23. Meanwhile, the engineering staff worked on backup plans. Another Hispanic Broadcasting station, KSCA(FM), located on nearby Mt. Wilson, had a relationship with TV station KCET, which consented to the use of its tower.

Koza and Staff Engineer Jim Sensenbach showed up to examine the site on Monday in preparation for transitioning the feed, but when KRCV went

off the air, it was too dark to do much, and no tower-climber was available to install the emergency antenna.

"When I got home, I started making calls to other engineers," Koza said. "The radio engineering people in L.A. are just wonderful. After I put out a few calls, the phone started ringing. When people heard what was going on, we were inundated with e-mails and phone calls offering help and equipment. It was absolutely wonderful, very touching."

With two climbers volunteering to

help, an emergency directional antenna and transmission line was installed on the KCET tower, while Koza and Sensenbach installed an emergency exciter. On Tuesday afternoon the station was back on the air with a 77-watt ERP.

"At the same time," wrote Sensenbach in an account of the effort, "I began hearing rumors of an intact 98.3 MHz broadcast site in the Industry Hills."

Through a tip from a couple of contract engineers, the staff found an abandoned transmitter site in the City of Industry on Tuesday that had gone off-air approximately five years earlier. It had belonged to KMQA(FM) and is now owned by the city.

"It was just sitting there, frozen in time, and the electric service was still good," said Koza. Some of the remaining equipment at the site was also workable, including a 150-foot monopole, a two-bay ERI antenna, 1-5/8-inch transmission line and a Harris HT 3.5 FM transmitter. "The city gave us permission to use it, and there's a possibility we'll make it our long-term emergency site."

"We cleaned a lot of dust and dirt from the room and transmitter," wrote Sensenbach, "but no insects or bodies! After two days of cleaning, we finally got that old site on the air at 1 kW at dinner-time on Friday night. The audio is a received signal from sister station KRCD(FM) in the Baldwin Hills." After a few days, an expedited ISDN line provided a cleaner audio feed.

In November, KRCV was awaiting restoration of phone and power services to Johnstone Peak. 🌐

## Stewart's SEC Woes Skip Radio

by Naina Narayana Chernoff

The federal government's probe into Martha Stewart's stock transactions has not affected the station carriage and profitability of her radio show, according to her company publicists.

The 90-second syndicated radio show, "Ask Martha," continues to be aired on 329 Westwood One affiliates, said Nina Pawlak, spokeswoman for the Brunswick Group, a public relations firm contracted by Martha Stewart Living Omnimedia. Stewart's show, which has been on the airwaves since Sept. 1997, remains a profitable area for MSLO, she said.

Westwood One syndicates the daily radio show in which Stewart offers listeners how-to tips based on questions from Martha Stewart Living radio, television and magazine audiences.

"(The show) has experienced no material changes in radio station carriage during this period," Pawlak said. "Westwood confirmed that the average quarter hour ratings remain strong."

The Securities and Exchange Commission said in late November that it expected to make a decision shortly on whether to file civil charges against Stewart, the chairman of MSLO, for alleged insider trading and securities fraud in connection with her sale of ImClone Systems Inc. stock last December.

Westwood One officials declined to comment on the effect on its affiliates' carriage or advertising sold around the show, which is broadcast during a day-

part chosen by the affiliates. In 2000, the company signed a three-year agreement with MSLO to serve as the sole syndicator of the show.

"AskMartha" airs five days a week and reaches approximately 20.6 million monthly listeners. Westwood has carriage agreements in 23 of the top 25 markets and 90 percent market coverage throughout the country, said Pawlak. Delivered to Westwood One affiliates by CD, MP3 or via satellite, the program is produced at MSLO's studio/offices in Westport, Conn.

Citing MSLO's policy against publicly discussing future agreements or contracts, Pawlak would not comment on whether Stewart's company would keep producing the show upon the expiration next year of the three-year agreement.

The MSLO recently reported a 42 percent drop in third-quarter profits and predicted that its fourth-quarter earnings would be lower than expected. The radio show is a part of MSLO's publishing arm, one of the company's four business divisions, which include television, merchandising and internet/direct commerce. Besides the radio show, the publishing division primarily consists of the company's magazine operations, its book and music operations and a newspaper column, also called "AskMartha."

A source close to Martha Stewart Living Omnimedia said the yearly CBS television holiday special hosted by Stewart was cancelled this year by the company, not the network, due to the show's expense. 🌐

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# \$119,321.50 ... And Still Counting

In the past 24 months, I have had the pleasure of doling out 52 prizes to Radio World readers, with a total retail value of \$119,321.50.

With this issue, we conclude our second year of awarding prizes to randomly selected readers. Our Readers' Choice Sweepstakes, and last year's Silver Sweepstakes, were huge hits.

What fun to be able to call a reader and tell him or her that they've won a world-class microphone ... an ISDN codec ... an automation system ... an equipment shopping spree?

I want to thank the many suppliers and readers who took part. And with a track record like that, you don't think we're going to stop now, do you?

It's time for you to put your name in for our 2003 Radio World New Technology Sweepstakes. As in the past, you need only visit our Web site at [www.rwonline.com](http://www.rwonline.com) and click on the Sweepstakes logo.

You'll be asked to register and tell us what you like about Radio World. It takes only a moment, and you'll have entered for the year.

We are starting fresh with a new list of registered readers; so even if you signed up last year, please do so again. I'd really like to call you one of these

days with the news that you've won a big prize.

★ ★ ★

Organizers are seeking sponsors for a golf benefit this spring to help the family of Scott Beeler.

Beeler, a broadcast equipment executive who was known for his work at ERI and Harris/Allied, died in October. He is survived by five children and his wife Kim, expecting their sixth child.

Organizers seek sponsors for each of the 18 holes for a \$1,500 contribution. For info on a sponsorship or arranging a foursome, contact Cam Eicher at Logitek at [cam@logitekaudio.com](mailto:cam@logitekaudio.com) or Brian McConnell at SAS at [brian@sasaudio.com](mailto:brian@sasaudio.com).

★ ★ ★

Who's got the hot box? Marketing claims are in the air, as two manufacturers make their latest claims to the radio on-air processor market.

## We are starting fresh, with a new contest; even if you signed up last year, it's time to do so again.

The Scott Beeler Memorial Golf Tournament will take place on Saturday, April 5, at the Revere at Anthem golf course in Las Vegas, before the convention floor opens at the annual NAB show. Anyone can enter. The fee for a foursome will be \$500, with proceeds going to the Beeler family.

At the root of the latest volley is a press release from Omnia Audio saying that "more than half of the top 100 FM stations in the USA are processing with Omnia," and that "leading FM broadcasters choose Omnia audio processors more often than all other brands combined."

Frank Foti and his crew say surveys of Arbitron's top 10 markets found that a majority of the highest-rated FM stations "have upgraded" to Omnia audio processing. (The numbers are from the spring 2002 ARB, Mon.-Sun., 6a-Mid, 12+.)

Orban's president and CEO, Jay Brentlinger, responded that Omnia's press release is "part of a disciplined, long-term marketing campaign." He questioned some of the terminology in the release, and he claimed dominance with the top FM stations in the important Los Angeles market with the Optimod 8400. He also claims that his product is "the first FM processor to be hardware-upgradeable for full compatibility with the Ibiqity HD FM IBOC system."

An Omnia spokesman then wrote in

## From the Editor



**Paul J. McLane**

reply to Brentlinger's questions. We have the full text of their respective statements in the Special Report section at [www.rwonline.com](http://www.rwonline.com). I encourage you to visit there to weigh their arguments.

Such exchanges are not unusual in the processing arena; but the tone of the Omnia pitch is notable to me because I remember when Frank Foti liked to describe his company as an eager challenger to the established market leader, Orban. Now, it seems, Omnia is feeling its oats, no longer satisfied with the "No. 2-tries-harder" approach, and playing up the successes it has enjoyed in major markets in the past year or two.

Jay Brentlinger, meanwhile, seems to be saying that Orban has no intention of giving up its long-acknowledged position at the top of the processing heap.

I'm glad to see this kind of back-and-forth; yes, it makes good copy for a publication, but I also think it's important to have strong competitors in any market niche. Although Orban has taken some lumps in recent years during its changes in ownership and staff, it has an impressive product and remains home to broadcast innovator Bob Orban, not someone to ride quietly into the sunset when competition heats up. Omnia, meanwhile, deserves great credit for the position it has carved out in that marketplace. It reflects a tremendous amount of work.

Such battles make good theater, but they also make for better products. Competitors push each other. Here's to healthy competitive disagreements. We continue to watch with interest.



Our 26th and final prize in the 2002 Reader's Choice Sweepstakes is the iMediaTouch Builder Bundle from MediaTouch.

Designed for a two-workstation architecture, it includes iMediaTouch's innovative suite of software programs and the essential support and Internet training you need to get a radio station up and running quickly and easily. Retail value: \$5,400.

Our winner is Steve Runyon, general manager of KUSF(FM) at the University of San Francisco. He helped launch the 3 kW station in 1977. It airs alternative music and multicultural programming in 14 languages. Congrats, Steve, and happy 25th anniversary to KUSF.



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# AM Monopole

► Continued from page 1

Laboratories Inc. are partnering on the venture, using the name Kinstar for the new antenna. A full-scale version of the Kinstar low-profile antenna was tested in November under a special experimental license from the FCC at 250 watts on 1680 kHz near Bristol, Va. Consulting engineer Don Crane took field measurements for Kintronic over several weeks.

STAR-H officials said the test antenna was 45 feet high and 105 feet in diameter over a full 120-radial ground screen and supported by wooden poles. The horizontal loading wires were 95 feet in length. The four vertical wires were spaced evenly on a circle with radius of five feet.

Officials said in permanent installations, the system would use a standard 120-foot quarter-wave buried ground system. The company has patent applications for the antenna concept pending for both the U.S. and international markets.

Tom King, president of Kintronic Labs, said his company has a licensing agreement to market and sell the antenna in the United States once the firm obtains the required FCC approval.

"If the final data shows that it works with field proofs, we hope to have FCC approval for use in the U.S. by early next year (2003)," King said. "So far, all indications are that it worked to our expectations. It has very good bandwidth characteristics with a minimal amount of network matching needed."

King said a standard 146-foot-tall quarter-wave monopole antenna was first constructed on the test site and field measurements taken. The antenna then was dismantled and replaced with the Kinstar antenna.

The field strength measurements of both antennas were being evaluated in early December by Ron Rackley of duTreil, Lundin and Rackley Consulting Engineers.

In his preliminary assessment of the Kinstar, Rackley wrote, "I have not graphically analyzed the sets of data, but I have been able to review them in tabular form and can say that the Kinstar configuration appears to produce unattenuated field values that are within 5 percent of that produced by the quarter-wave reference antenna ... and are in excess of the minimum efficiency that is required for most AM radio stations by FCC rules."

Rackley declined further comment citing a confidentiality agreement with Kintronic.

## Quick installation

King said the Kinstar consists of four electrically short, vertical closely spaced elements, each of which is terminated in a horizontal top load element. Each vertical element is fed via a phase-matched section of 50-ohm transmission line.

King said his company used a Nautel P-400 transmitter for the tests.

In addition to being shorter than a standard quarter-wave monopole antenna, the Kinstar antenna can be constructed rapidly and at a cost savings to broadcasters, King said.

"It can use wooden or reinforced concrete poles as vertical supports. Construction time will be cut dramatically. It could serve as a drop-in replacement. The new antennas will not require FAA lighting or marking in most cases," King said.

Kintronic has modeled the Kinstar

using steel supports, which demonstrated that steel supports could also be used, King said.

"The antenna will offer broadcasters in the mid- to low end of the AM band a big cost advantage through the antenna's simplicity of erection. Communities should be more receptive to the new design since the visual impact of the Kinstar is greatly reduced over quarter

**The antenna will offer broadcasters in the mid- to low end of the AM band a big cost advantage through its simplicity of erection.**

— Tom King

wave monopole designs."

King declined to give an estimate of what the Kinstar antenna would cost once it is brought to market. "That would be dependent on final configuration, the matching network and location," he said.

## 'Substantial' market

Broadcaster interest in the Kinstar has been high, King said.

"We have had preliminary discussions with Clear Channel and some other major broadcast groups. Of course it all depends on receiving FCC approval, but we feel there will be a substantial market for it eventually, both here in the U.S. and worldwide," King said.

Neither company would comment on how much money has been invested in the development of the technology.

Dr. James Breakall, a professor in the Department of Electrical Engineering at Pennsylvania State University, is the inventor of the low-profile antenna, said Mike Jacobs, director of research and development for STAR-H.

Jacobs, an adjunct professor of electrical engineering at Penn State, and another faculty member at the school founded the company in 1999 with hopes of taking their academic research technology into the commercial market.

"STAR-H is engaged in research and development of advanced antenna systems for broadcast and commercial applications," Jacobs said.

"Data taken from the test site in Virginia seems to confirm what our computer modeling has shown," Jacobs said. "The benefit will be reduced height but high efficiency."

Jacobs said the Kinstar antenna consists of the same volume of antenna as a standard quarter-wave. "It's just a tower with the legs peeled down, if you will, and run them out horizontally. We are trading a little horizontal extent for height and that is how we are able to preserve the efficiency," Jacobs said.

A short antenna typically offers a difficult impedance to match the 50-ohm transmission line. The matching network, depending upon the impedance of the antenna, can introduce a lot of loss into the system, Jacobs said.

"The matching network from Kintronic doesn't have to work very hard, so you have less loss and wider bandwidth. And that's important with IBOC to make sure you have the bandwidth to cover all of the side bands for the hybrid digital transmission," Jacobs said.

Jacobs said in-band, on-channel digital

audio tests with the Kinstar were scheduled to take place in December.

The Kinstar antenna should be able to serve in AM directional arrays, Jacobs said.

"We have used the two-wire version of the antenna for directional arrays. We think the versatility with the four-wire version can be used in directional applications," Jacobs said.

they serve, Jacobs said.

"Anything that gives a station looking for a new site some options and that reduces the land requirements is a good thing for broadcasters," Jacobs said.

## Watching, waiting

Several technical consultants say they are waiting for the final analysis on the Kinstar antenna before deciding if the new technology will be suitable for use by AM broadcasters in the U.S.

"I am awaiting final test results from Kintronic (before I make up my mind). You can make anything radiate, the question is if you can drive it efficiently," said Ben Dawson, of the Hatfield-Dawson technical consulting firm.

Stanley Salek, a consulting engineer with Hammett and Edison Inc., said the Star-H antenna design has directional array applications, but is mainly focused on approving overall feed and ground-wave radiation efficiency while reducing element height above ground.

"My main concern focuses on a lack of specific elevation plane radiation characteristics. There has been very little specific discussion on elevation plane pattern or skywave performance to this point," Salek said.

Salek said that in "highly restricted" areas, the Star-H design could prove to be very useful. "But for practical use by stations other than daytimers and Class C stations, more has to be known," he said.

To see illustrations of the antenna, go to: [www.star-h.com/publications/papers.html](http://www.star-h.com/publications/papers.html).

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## Newswatch

► Continued from page 2

Williams of the Office of Plans and Policy propose that the FCC reallocate spectrum to flexible use and organize large-scale, two-sided auctions in which occupied spectrum would be auctioned together with unassigned spectrum. The idea is spectrum users would volunteer their spectrum for auction to gain flexibility and keep the money from the sale.

By making highly complementary spectrum available in a single auction, the reallocated bands could be restructured quickly and efficiently, according to Kwerel and Williams.

Under the proposal, incumbents would have two basic choices. They could choose not to participate and continue with their current use without any additional flexibility. Or they could participate and be granted immediate flexibility in their occupied spectrum and be allowed to keep the auction proceeds from the sale of their spectrum.

This paper was presented to FCC commissioners at the recent open meeting. It has not been endorsed by the agency, which means it does not necessarily represent the views of the commission. Its point is to stimulate debate about the topic.

An FCC staffer speaking privately after the meeting said the concept of sharing spectrum would not likely prove practical for broadcasters, but would work better for other spectrum users.

## Clear Channel Fights Music Piracy

**SAN ANTONIO** Clear Channel Radio has joined the fight against Internet music piracy. The company has begun a public awareness campaign to inform its listeners that downloading pirated music is a serious problem for musicians. The campaign kicked off with anti-piracy commercials on Clear Channel radio stations across the globe, on syndicated Premiere Radio Network programs and on the company's XM Satellite stations.

Clear Channel will support the campaign with advertisements on station Web sites and in company-run publications. The company is making the commercials

available at [www.clearchannel.com](http://www.clearchannel.com) to any broadcaster.

"It's no secret that illegal music downloading is the most pressing issue that the recording industry is faced with today," said Clear Channel Radio CEO John Hogan.

RIAA Chairperson Hillary Rosen applauded the radio company's support of the music industry. "We need more media companies to help educate the consumer on the pressing issue of Internet theft and its consequences. In the end, the music lover pays the price for illegal downloading through the increased cost of distributing music through legitimate delivery systems."

## Record Labels Speak Out

The recording industry, including the labels and their artists, lose millions of dol-

lars a year to Internet theft. According to information released by the RIAA, U.S. music shipments in the first half of 2002 were off 10 percent over the same period in 2001, with sales down nearly 7 percent.

Clear Channel's recent move to help publicize the issue of music piracy struck a chord among the record labels and the RIAA issued statements from several labels.

"The plague of music piracy is spreading in geometric numbers and the industry is faced with the challenge of turning around the mind-set of a generation that thinks its 'cool' to obtain recorded music for free," said Arista Records, Antonio "L.A." Reid, President and CEO.

Atlantic Records, Craig Kallman, Co-President, said, "Their PSAs are humanizing an injustice that threatens every musician's livelihood."

"Clear Channel's efforts to educate the consumer on the destructive impact of Internet music piracy will be invaluable," said RCA Music Group Chairman Clive

Davis. "We must protect our creative community even from well-meaning fans who just don't know that with every file they download or CD they burn, they are undermining the future of the very music they profess to love."

## Media Broadcasting's Fine Reduced

The FCC cut in half a fine against Media Broadcasting Corp., licensee of WAAA(AM), Winston-Salem, N.C., for several antenna violations.

In June, the commission had found the owner apparently liable for \$12,000 in penalties for failing to post an antenna registration and not having a red obstruction light on the tower at night. The station did not notify the FAA that the light was out as required, the commission found.

Media responded that it had notified the FAA and made several attempts to have the bulbs replaced, but "various certified tower companies" refused because of the tower's age and the danger in climbing the structure.

In December, Media told the FCC it plans to replace the tower but has not indicated when. Because both violations continue, the FCC stated, Media must pay a fine; but it concluded that a penalty of more than \$6,000 would be a financial hardship for the station after reviewing financial records submitted by Media.

## Marantz Reorganizes Distribution

**ITASCA, III.** Marantz Japan has acquired the North American distribution business for Marantz Professional audio and video products from Superscope Technologies.

Marantz now will handle North American distribution of Marantz Professional products directly through Marantz America Inc., based in Itasca, Illinois.

"This is another step in Marantz  
See NEWSWATCH, page 7 ►

**MARKET PLACE**

## Meterman Offers New Series of DMMs

Wavetek Meterman is out with five new multi-meters, called the XR-Series, targeted for various markets.

"We took the guesswork out of buying the meter that is right for the job," a company official said.

The meters start with being housed in an ergonomic case with a Magne-Grip holster; with its hanging magnet strap, it allows for hands-free use.

The low-cost Model 30XR has an integrated, non-



The 38XR includes an output for data logging of measurement events.

contact voltage tester for detecting live AC voltages.

Two mid-priced models, the 33XR and 34XR, are for the field service engineer or contractor. Electrical, HVAC or facilities maintenance technicians will use the temperature, capacitance and frequency measurement capabilities. The 34XR has true-rms and autoranging features.

The 37XR is aimed at the "electronic professional." It has 0.1 percent accuracy with 10,000-count for high measurement resolution. Features include LCR meter for component testing, logic test, frequency and dBm capabilities. And the 38XR is aimed at the industrial user, with true-rms capable with high accuracy, optical RS232 output for data logging of measurement events, 4 to 20 mA loop current test, temperature, frequency and capacitance. Prices range from \$59.95 to \$149.95.

For information contact the company in Washington state at (877) 596-2680 or visit [www.metermantesttools.com](http://www.metermantesttools.com).

## Newswatch

► Continued from page 6

Japan's plan to integrate all sales and marketing activities for the Marantz brand around the world into one company," said Takashi Sato, president and CEO of Marantz Japan.

Previously, Superscope was the exclusive distributor for Marantz Professional in the Americas. Superscope will continue to develop and market its own line of professional audio and video products, which are manufactured by Marantz Japan.

M. Mehdi Alister, vice president and general manager of Superscope, was named vice president of Marantz America, and will oversee the Marantz Professional division of Marantz America Inc.

"For the past nine years, we have been extremely proud to be the distributor of Marantz Professional products in North and South America, and although our distributor relationship will end, we are looking forward to continuing our long relationship by virtue of a supply agreement for Superscope brand products," said Fred Hackendahl, president of Superscope Technologies.

Mark Perrins, European Sales Director of Marantz Professional Europe, said that despite the changes in the United States for distribution of Marantz Professional products, Marantz Professional Europe will continue to distribute Superscope products in Europe, Africa and the Middle East for the foreseeable future.

## VOA Transmission Boost

**CAPE GRECO, Cyprus** The Broadcasting Board of Governors recently increased its medium-wave capability with a 600 kW installation in Cyprus.

The BBG is the independent agency responsible for U.S. foreign-service broadcasting, including Voice of America and the new Arabic-language Radio Sawa.

BBG went on air in August with a S7HP 600 kW solid-state medium-wave transmitter supplied by Thales Broadcast & Multimedia. Thales had responsibility for installing the transmitter and ancillary equipment.

The transmitter is installed at the Radio France Internationale (RFI) Cape Greco site, where RFI has had a 1.2 MW S7HP transmitter in operation since 1998.

The RFI and BBG antenna arrays are near each other, so the transmitter project involved the installation of special rejection filters.

# Meet Ed McMahon's Loyal Sidekick.

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# Coble

► Continued from page 1

audio and one-way video through cable-vision, but grew as the school decided to implement fiber-optic technology. This gave me a better understanding of data networked full-motion video and systems and redirected my interest from production to engineering."

Coble's next move was to Iowa Communications Network, where her focus was video sessions for hospitals, military and educational sites.

"Iowa had the largest state network in the country working on distance learning and they worked hand in hand with Iowa Public TV," she said. "I learned routers and switchers from the data side, not just the production side."

In 1995, Coble received a master of science degree in educational media and technology at the historically black North Carolina Agricultural and Technical State University.

"This was an amazing experience," she said. "As a Caucasian, I was a minority student on campus, and my perspectives exploded with new insights. I was drawn to NCA&T because it was the only school that could facilitate my keeping a job and enhancing my education."

In 1997 Coble rounded out her repertoire with RF training and transmitter maintenance at WUNC, where she was added to the expanding staff by David Wright, associate director of radio. Coble was thrown into a major studio design and rebuild project. She embraced the challenge and considers her switch from commercial broadcasting and telecommunications to public radio a major turning point in her career.

## Mentors matter

Dick Stufflebeam, an assistant director of engineering at Iowa Public Television who is now retired, was an important early influence.

"He taught me this amazing thing: that engineering isn't just about fixing equipment," said Coble. "He encouraged me to spend time with people, ask them what else needs working on, and make sure they are enjoying their experiences."

She said that Stufflebeam's philosophy blended marketing, customer service and engineering concepts together.

"It was a wonderful gift he gave me," she said.

Coble said sometimes she was called upon to repair something quickly in a remote location.

"We would have to get creative if we were in the middle of nowhere, that's for sure," she said. "But it was a great opportunity to cross-pollinate ideas from place to place within the state."

Coble also welcomed the chance to tackle and solve problems on her own.

"That's a real confidence-builder when you're out there all alone and you can get it done," Coble said.

Wright, associate director of radio at WUNC, also is a mentor.

"He believes in me and just basically forgot I was a woman," she said. "Everywhere I would go, people would be shocked at my gender, but David desensitized me to all that."

Even to take note of her gender might seem anachronistic in other industries; but the fact remains that, in 2002, most radio engineers are men.



Call her Deana the Riveter: Coble stands in a studio she built.

"David and I went out to a new tower site that was being built and I was the only woman there among all these contractors," she said. "We had to crawl into a truck to look for parts, and he started to help me up as a gentleman would help a lady, then he changed his mind. He didn't treat me any differently from one of the guys, which greatly helped my credibility with the other people on the job."

One thing that helps her is the attitude of the people around her, including Wright.

"He never assumes I can't do a job; he assumes that I can," said Coble.

Another helpful person along the way was Chuck Reisinger, at the time a contract engineer at WUNC.

"What I love about him is that he helped me create an open atmosphere," Coble said. "Chuck didn't have an issues with me being a female and a manager. I'll toss out projects and the department brainstorms together on how to get there. We teach each other and no one looks like a fool. Chuck is a real asset in creating an engineering learning center."

## Building a better studio

WUNC recently underwent a major renovation that Coble helped design and oversee. On the first phase, Wright designed the structure and Coble took responsibility from the walls in. On the second phase, she handled the project

design from top to bottom.

"Then WUNC expanded to Manteo, Buxton and Rocky Mount, and I worked with David on everything from antenna installation to putting in the concrete pads to installing the dishes, transmitters and remote controls," she said.

"Construction workers had to be supervised and we had to maintain structural integrity," Coble said. "I didn't just build a building, I built relationships with people. I designed this place according to the users' needs, even when they didn't know exactly what they needed."

One example is the studios. Prior to her efforts, the consoles were difficult to

reach for some of the shorter employees. She took it upon herself to change that.

One colleague said her selflessness is her biggest attribute.

"She always gives credit to her staff, which is a good lesson for all managers," he said. "Her 'get-it-done' mentality has helped her guide her staff through some difficult minefields, but she is in the trenches with them and she knows what's going on."

Coble takes on outside work as well, such as production contract work, including such projects as a live national show, "The People's Pharmacy." She also edits programs and designs fundraising shows. Coble also is available as a contract engineer.

"When no one had heard of me as in that capacity, a man named Ben Brintzer gave me a try when he was trying to move and consolidate four stations at one location. He handed me a drawing, a punch tool, heat shrink and strippers and said he would be back in an hour. If he liked my work, I was hired."

He did and she was, and Coble claims still to have calluses two years later from stripping cables for that job.

In the meantime, WUNC is looking towards the future technically. The station plans to convert to IBOC with the purchase of an upgradable transmitter. No firm date had been set at press time.

"Those leaders in our industry who are able to convert now without seeing an immediate profit will position themselves as leaders," she said. "Technology, cost and content. I want to be a part of bridging these elements of the digital divide so that the industry and the audience are both winners."

And what is in the future for Deana Coble? She isn't completely sure.

"But I probably won't be here in 10 years," she said. "WUNC has been great for me and I appreciate the growth and opportunities provided for me here, but I see myself expanding beyond this basis and accepting new challenges."

Coble can be reached at [deanacoble@mindspring.com](mailto:deanacoble@mindspring.com).

## Main Air Studio

WUNC has a digital path from the studio to the exciter. Here's the gear list for Studio A, the main air room. A full equipment list is available with the Web version of this article at [www.rwonline.com](http://www.rwonline.com).

- Wheatstone D500 Digital Console
- Cart Ready/WireReady computer audio system
- Digital interconnect cabling and digital cable within the room
- Torpey clocks, synced with NPR data
- Genelec speakers
- Laser jet printer
- Okidata printer ("for the ones who still rip and read")
- AP wire, Cool Edit, DACS
- Studer A727 CDS series CD Players
- HHB CDR-850 CD recorder
- Panasonic SV-3700 and 3800 DAT machines
- Broadcast Tools 12x4 switcher/router
- Technics turntables
- ADC digital audio patch panels
- Audioarts DAs model 8400
- Telos Zephyr ISDN codecs
- WinTV to bring in TV/cable on the computer desktop. It also provides video between studios during fundraisers.
- Cybex Longview equipment (removes the CPU from the studio and allows the keyboard and mouse to operate in one room while having the CPU elsewhere — reduces noise).
- Broadcast Tools Box o' Switches to remote-fire audio on satellite stations
- Computer record of Skimmer as well as tape backup

Also at WUNC is Studio C, the main production room; Studio D, a talk studio; four smaller specialty rooms; and a tech center, home to the remote CPUs, NPR downlinks and demods, studio interconnects, servers and other support systems.

Its air chain includes an Orban Optimod 8200, Harris CD Link STL, Harris Digit exciter and HT-35 transmitter, and an ERI panel antenna.

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## TECHNOLOGY FOR MANAGERS

# Recording, Storage: One Step at a Time

by Ken R.

Station managers face many decisions that require knowledge of a rapidly changing broadcast technology. Audio formats blossom and die. Computers continue to replace traditional studio equipment. A wrong decision can be disastrous to the bottom line.

This is one in a series of articles designed to simplify recent developments and explain them in terms non-engineers can understand.

## MiniDisc, CDs catch on

Tim Schwiager is president of Broadcast Supply Worldwide, a company that sells audio products to the industry.

"We find that instead of carts in the studio and cassette recorders in the field, it's MiniDisc," he said. "This is a format that never really caught on with consumers, but it became accepted for broadcasters because they wanted something that worked like a cart machine. MiniDisc is inexpensive and air personalities can take their own removable discs with them. The format is extremely reliable and robust, and with the small amount of maintenance needed, it's a good way to get into digital."

Frank Grundstein, broadcast sales manager for Lightner Electronics, concurred.

"These machines use a floppy disc, but not the typical 3.5-inch style found in computers. The advantage is that there is no tape involved," he said. "The audio can be indexed so you can locate items easily, and

some users is that when its ATRAC-compressed audio is fed into a system or air chain that uses a different compression scheme, such as a MP3-based automation system or an apt-X based STL, the "cas-



CD recorders have become ever more affordable — and portable. This is the Marantz CDR300.

the more elaborate machines even allow simple editing. The drawback is that some people don't like them because of proprietary algorithms that alter the sound."

In order to get more audio into less space, a MiniDisc leaves out some of the sounds it sees as redundant or unimportant. With MD, one concern expressed by

recording" algorithms may yield audio artifacts that are audible to listeners.

Another recent development is the affordability of CD recorders.

"They're even starting to use them in the field now for concerts," said Schwiager. "They're portable and you get 74 minutes on each disc, which is removable. The truth is that a blank CD is now cheaper than a blank cassette." And, he said, the technical quality of CD is about 10 times better than that of a traditional tape cassette.

## No moving parts

A recent addition to the world of digital recorders is a recording medium with no moving parts, a CompactFlash card, to store sound. For instance, German company Mayah Communications makes a device called a Flashman, which is handheld and can record and play back in stereo. The Dutch-made Maycom HandHeld Recorder is a similar unit. The user can select the quality of the audio, and the recorder can connect to a computer for editing the production. Several other companies offer similar products, although many are not designed for broadcast-quality audio.

"But these devices cost several thousand dollars instead of several hundred for other types of recorders," said Grundstein. "And no one has a rack-mountable version that I know of."

Another concern Grundstein expressed is the dearth of rack-mountable versions of such units. The Swiss-made Nagra Ares C-PP is rack-mountable, but it also includes a number of ISDN communications features, which increases the price significantly.

Fraser Jones, president of Independent Audio, said his company offers the Sonifex Courier, a portable hard-disk recorder/playback system that allows recording in several formats. The Courier uses PCMCIA hard disks, or "PC cards," to store its audio; the cards can be changed quickly, allow on-board editing and are capable of storing up to 18 hours.

"When you record on our device, you can transfer or transmit it instantly," he said. "You can record with full bandwidth for maximum fidelity or compress the contents greatly, giving you anywhere from an hour of recording up to days of recording depending on the algorithm."

Another model that uses PC cards and CompactFlash is the Marantz PMD680.

"This portable has a street price of about \$1,000," one user told Radio World. "Add a MemStick and reader for another \$100 and you're in business. Quick and direct downloads to a PC for storing and editing are a snap. As more machines like this get into the market, the prices will come down, making it a very solid long-term choice."

CompactFlash and Memory Stick (MemStick) are small-format memory cards, widely used by PDAs and digital cameras. The PMD680 can make use of these formats thanks to adaptor cards that fit into the PC card slot of the unit.

Designed to speed the transfer of data from the smaller memory cards to laptop computers, the same devices can be used with digital recorders with a PCMCIA slot, such as the Courier, Nagra Ares-C and C-PP, and the Maycom Easyrecorder. The advantage of CompactFlash is the lower cost of the media; however their storage capacity tends to be lower.

Card readers are similar devices that can be used to transfer data from PC cards, CompactFlash and other digital media to a digital audio workstation or other computer via USB.

## Stand-alone

360 Systems developed several digital record-playback products that have caught on in the studio and use their own internal hard disks as the recording media. DigiCart/II, for example, has controls that resemble an analog cart machine, but it offers random access to the audio, meaning no fast-forwarding or rewinding is necessary. The audio quality is selectable; the less material to be stored, the higher the quality available. DigiCart/II provides some editing and processing functions.

The same company's Instant Replay 2.0 can hold thousands of audio clips and make them available in groups at the touch of a button. To the air personality, it would be like having 50 cart machines that can be picked up under his or her arm and taken to a remote broadcast. If editing in an "all in one box" is desired, 360 Systems makes Short/cut 2000, which boasts flexibility and a short learning curve.

The most drastic form of change is to go from analog components to an entire integrated computer-based system of audio recording and storage.

"Full-scale hard-disk systems ... are expensive," said Grundstein. "Some require proprietary software, some don't. But the main thing is that if you go with one of these systems, you'll have to learn to do everything differently."

He said younger staff members probably won't care, but some older staffers may not want to learn something new.

## Storing audio

Regardless of the storage medium, audio can be archived in many forms. You may hear the word "linear." It means that the audio is recorded exactly as it is produced, without reduction or "compression" of the data. Data-compressed audio takes up less space on a hard drive than does linear, but the audio quality is compromised. Engineers debate the relative merits of various data reduction schemes or "algorithms," such as apt-X, AAC and MP3.

See MEDIA, page 12 ►

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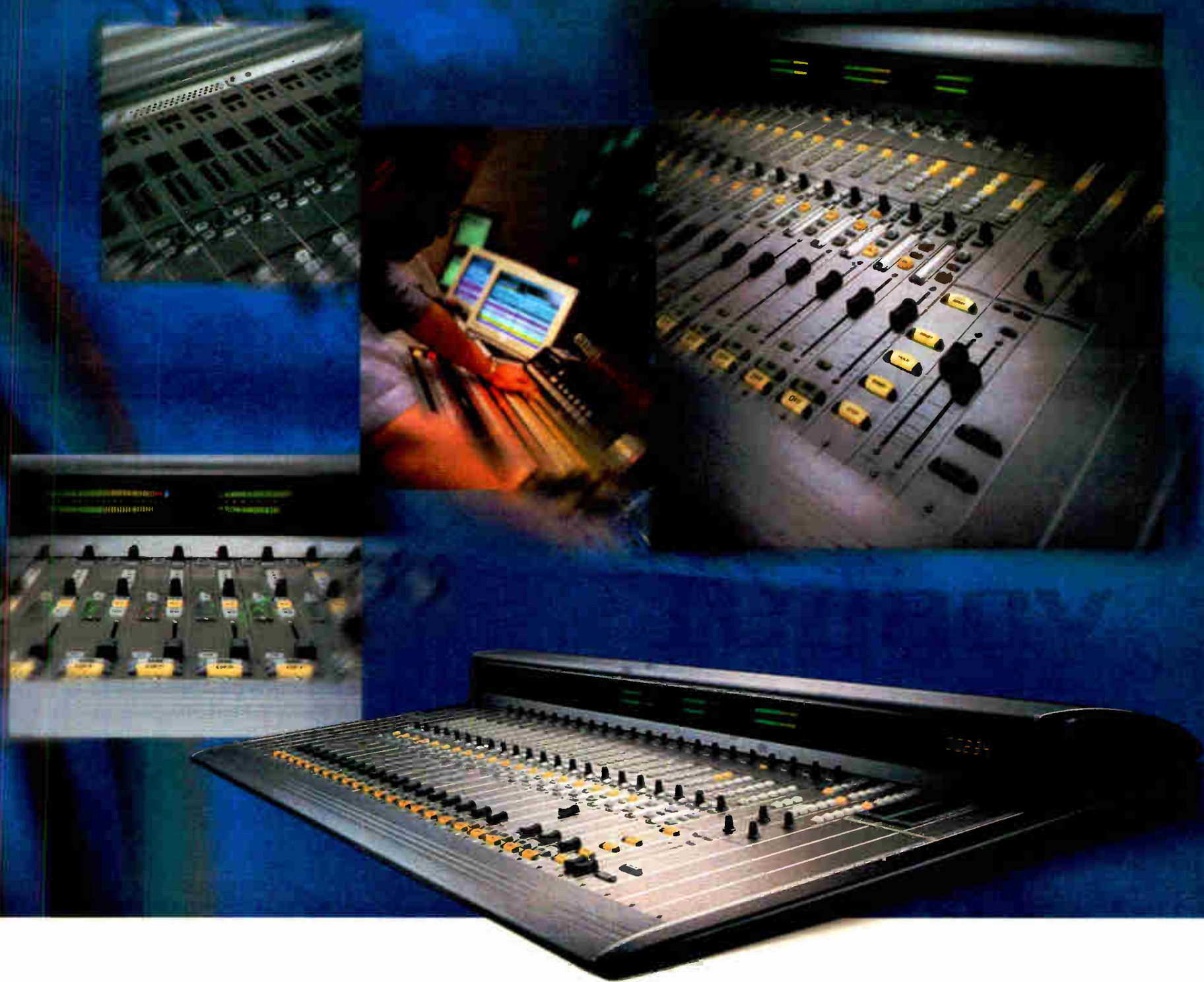
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**HARRIS**

# Media

► Continued from page 10

"My old equipment has worked for years," says the typical money-minded general manager. "Why do I have to buy this new stuff, anyway?"

Contract engineer Michael G. McCarthy, CSRE, is based in suburban Chicago. He offered several reasons.

"Getting rid of cart machines will save you at least \$1,000 a year in maintenance and replacement parts," he said. "Driving over to Wal-Mart for a replacement hard drive is easier than calling around trying to locate a capstan motor."

He said if a station opts for a digital studio that is computer-based, it could also tie into the station billing, accounting



Challenging the traditional analog cassette format are devices like the Sonifex Courier portable recorder, which uses PCMCIA hard disks (PC cards) to store digital audio.

and traffic systems if planned properly.

"And if you have an automated station, a digital logger can record your station's air signal for many days and easily prove that a spot ran when you

claim that it ran," he said. "The downside of a fully-digital station is that you have to consider security and virus issues."

McCarthy said switching to digital players, recorders and storage devices would save managers money in the long term.

"But you have to have a plan and ask some questions," he said. "Will you still be in the same facility in three years? Will you operate a cluster of stations? Will you be able to support not only the acquisition of the new equipment, but the support for it as well? Computer systems are less forgiving than consoles for power disturbances so you'll need back-ups, generators and UPSs (uninterrupted power supplies)."

*Ken R. is a former broadcaster who is the proud owner of a digital watch.*



WLIU(FM), Long Island University Public Radio, acquired new staff: **Jim Asendio** joins as news director. **Jamie Berger** is director of administration and operations and **Dan Cox** has taken over as bureau manager. **Bonnie Grice** was named music director, but continues as program host and producer of daily and special programs. **Nancy Marksbury** will head up PR as director and **Nancy Montgomery** was promoted to business manager.

**Michael Fischer** joined Denver's KJCD(FM) as program director.

NBG named two members to its board, **Peter Bourdes**, founder and co-CEO of



Jay Martin

Dave Lewty

Empire Media, and **Stanely Wunderlich**, president of Consulting for Strategic Growth and managing director of KCSA Public Relations Worldwide.

**Clear Channel Radio** named **Jeff Wyatt** to the new position of regional VP of programming, which heads the program management team for the Washington-Baltimore Trading Area. **Bill Barker** has taken over as VP/director of sales in Chicago. **Mary Pultorak** is now national regional VP and will oversee sales and service for the Midwest region. **Jim Richards** moved up to become regional VP of programming for the San Diego region, where he was the director of FM programming.

**Harris** added **Matt Gillion** to the Broadcast Communications Division as manager of field sales.

**Mark Thompson** was elevated to director of engineering and facilities in AAA Entertainment's corporate staff.

**Joe Gauci** and **Emily Frankfurt** were signed by **Oink Ink Radio** to staff its New York production studio, 38 Greene.

**Infinity Radio** appointed **Jeff Garrison** as PD of Houston's country radio stations, KILT(FM) and KIKK(FM).

**Dave Garland Media Brokerage** now employs broadcast executive **Burt Perrault**.

On the supplier side, **Jay Martin** was appointed VP of TV product management by **Dielectric Communications**.

**Dave Lewty** filled the position of applications specialist at **Allen&Health USA**.

**Digigram** promoted **Paul McClellan**, former business development manager, to worldwide marketing director. **George Butts Jr.** is now OEM sales manager.

**AEQ** named **Lars Beyer** responsible for project-oriented sales worldwide and sales manager for Europe.

**Rodolfo Bracho** took over as director of sales and support for **Fairlight** for the south-eastern states and Latin America.

**Dielectric** appointed **Mansour Moussavian** to vice president, HF/MF Product Management.

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## MARKET PLACE

## V3.0 for Optimod-FM 8400 Is Out

Orban has released Version 3.0 software for the Optimod-FM 8400 processor. It ships with new units and is available as a free download for existing users.

A highlight of this version, Orban says, are a batch of "Gregg" presets and a control that lets the user switch the band 1/2 multi-

band crossover frequency between 100 and 200 Hz. This lets the processor emulate the bass of the Gregg Labs 2540 analog FM processor, which Greg Ogonowski produced in the 1980s. He is now Orban's VP of new product development.

The software also supports Orban's 8400HD FM, an add-on or upgrade that provides multiple outputs to drive the Ibiqity HD FM exciter's analog and digital HD Radio transmission inputs, which operate simultaneously in HD Radio operation.

"Each output's processing is optimized

for the channel it is driving, resulting in highest subjective quality on both the analog and digital channels," Orban states. The digital channel output is also suitable for Webcasts and Eureka-147.

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

## Harris Multiplexer Opens IP Options

Harris Corp. offers the Intraplex IntraLink-IP streaming multiplexer, designed to give broadcasters IP transport alternatives to dedicated communications links.

The multiplexer can open audio transport options to most Ethernet jacks. The

system provides transport over 10/100BASE-T circuits and can transport over LAN/WAN corporate intranets and packet-switched networks such as ATM, frame relay and the Internet.



Features include 22.5 kHz stereo audio frequency response using a variety of Intraplex plug-in audio modules, the ability to transport multiple audio and data channels through one IP stream and multipoint distribution, plus forward error correction and packet delay jitter compensation.

For more information contact Harris at (513) 459-3408 or visit [www.harris.com](http://www.harris.com).

## SiteSafe Touts RF Compliance Surveys

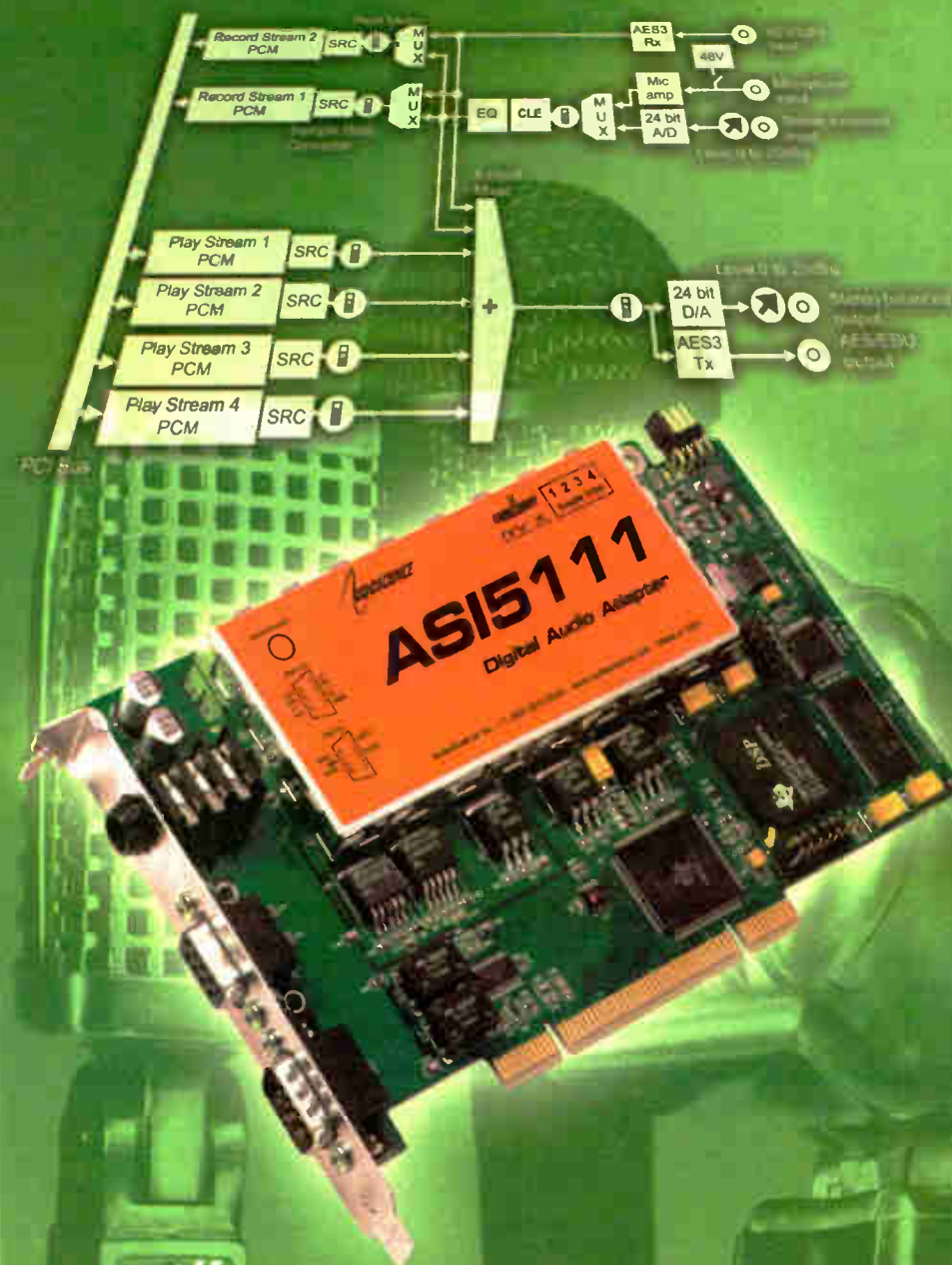
RF compliance experts are stepping forth to offer their services more aggressively, now that the FCC is stepping up enforcement of its emissions regulations.

Among them is SiteSafe Inc., which is increasing its efforts to educate the industry about itself. The company says it has done some 7,500 compliance studies in the past five years, and can help a station ensure that its transmitting facilities are classified correctly and meet the OET No. 65 requirements.

"Recently, the FCC handed down a fine of \$28,000 dollars to an FM station in the Southwest, due to that station's non-compliance with these regulations," the company noted. "Specifically, areas that the FM station believed were within 'Occupational Limits' could not be classified as an occupational environment, and therefore were out of compliance with the more stringent 'General Public' limits."

For information contact the company in Virginia at (703) 276-1100, or visit [www.sitesafe.com](http://www.sitesafe.com).

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Here



## Ten Years Ago

"In a recent speech to the Louisiana Broadcasters Association, NAB CEO Eddie Fritts warned that FCC authorization of satellite digital audio broadcasting (DAB) will destroy local radio.

"Fritts said that allowing one satellite (DAB) provider to control 30 or 60 channels in a market 'would represent a dramatic departure from the Communication Act's foundation principles of localism and diversity...'

"The NAB opposes pending FCC applications for satellite digital audio service by five companies."

— "Satellite DAB Could Ruin Local Radio, NAB Says" Feb. 24, 1993

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# Workbench

Radio World, January 1, 2003

Past columns are archived at [www.rwonline.com/reference-room](http://www.rwonline.com/reference-room)

## Starting the New Year Off Right

by John Bisset

I've been fortunate during the past year to receive and share a number of pictures of problem sites with readers of this column. To be fair, these sites are in the minority. So to give balance, I'd like to focus this column on things that were done right.

Admittedly the pictures aren't as much fun, but I hope they'll give you good ideas on ways to improve your facilities.

Lewis and Regina Moore own an FM in Jonesville, Va. Lewis, who works for the phone company, knows all about cable trays and specified a

tray (Fig. 1) from the manufacturers of his pre-fab concrete building, VFP ([www.vfpinc.com](http://www.vfpinc.com)). The vertical run of his rigid line was cut to permit the flex line to lay in the cable tray. The cable tray provides adequate support of the line till it exits the building.

★★★

Support of transmission line is important. Fig. 2 shows Mark Bohnett's support system at WESM.

This line isn't going anywhere. Using Kindorf and other electric supply hardware, typically used to sup-

port conduit, the support systems eliminate any chance of line sag. Note how Mark used rubber bushings inside the clamp assembly, to prevent any damage to the outer conductor of the rigid line section.

★★★

Rigid line assembly and routing inside the transmitter building (all unpressurized) is simplified using couplings held in place with hose clamps. Having to cut and solder flanges on each end of an inside rigid run is time consuming, and though the finished

product looks nice, measurements must be precise.

The clamp-type couplings, shown in Fig. 3 on page 16, are more forgiving with regard to measurements, in addition to being easier to install. When using these couplings, it's important to clean both the inner and outer conductors with Scotchbrite, removing the oxidation, and leaving shiny copper surfaces. Push the ends together, center the coupling, and tighten the hose clamps.

★★★

Clear Channel Harrisonburg's Jeff Caudell worked with his regional engineering manager, Ben Britzner, to plan

See WORKBENCH, page 16 ▶



Fig. 1: This cable tray supports the line until it exits the building.

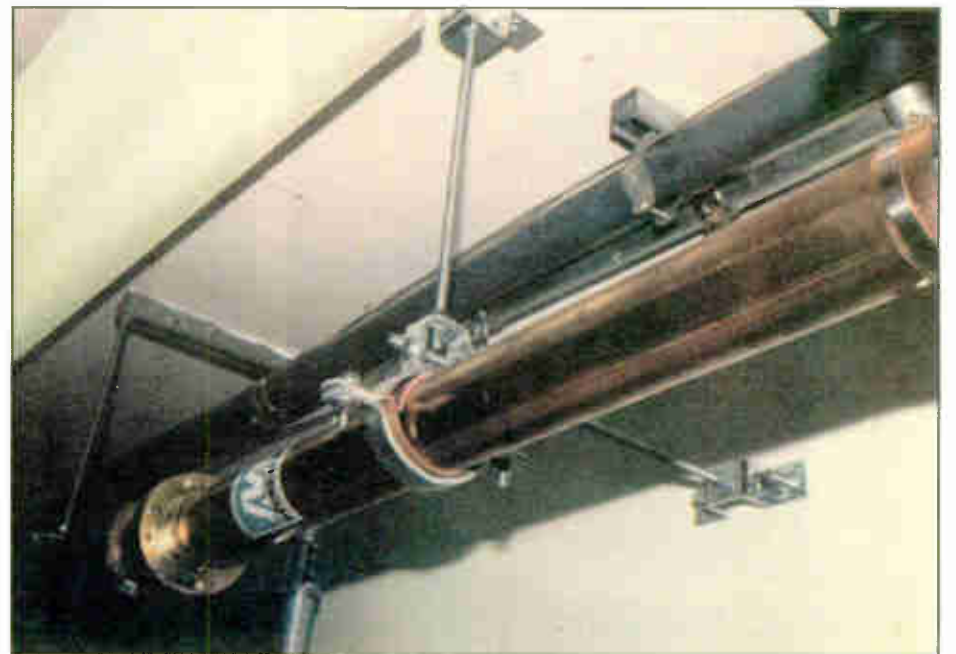


Fig. 2: Kindorf and other electric supply hardware eliminate any chance of line sag.

Plug-in installation.

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Fig. 3: Clamp-type couplings simplify installation and measurement.



Fig. 4: Jeff Caudell, shown, and Ben Brinitzer planned this Class A FM site.

# Workbench

► continued from page 15  
 the Class A FM site shown in Fig. 4. Note that Jeff also used the ceiling cable tray to manage some of his rigid line as it goes to the transfer switch.

The back of Jeff's equipment rack is shown in Fig. 5 — some really nice wiring. Because the station upgraded transmitter power, Jeff brought the transmitter remote control wiring out to an interface panel (below the remote control). This allowed pre-wiring of the remote control cabling before the new transmitter was set in place, reducing downtime while the transmitter swap was made.

★ ★ ★

The time it takes to wire a system properly and neatly can pay dividends when troubleshooting. Fig. 6 shows a series of DA distribution amp racks wired with multipair cable. Note the P-touch labels that identify each multipair line. Lacing or tying wires once the installation is complete makes testing or removal of a DA simpler. You're not reaching into a rat's nest of wires to sense a signal, and the ties usually hold wires in place, so nothing gets incorrectly connected when the DA is returned to service.

★ ★ ★

Labeling machines are inexpensive enough that every engineering department should have one. Note how the label on Fig. 7 stands out, quickly identifying the disconnect.

★ ★ ★

Inexpensive shelving, found at Lowes or Home Depot, can be used to organize your shop as well. There's no question where test equipment is located in the shop organized by Orlando, Fla., broadcast engineer Dennis Sloatman.

Looking for respect from your management? It's harder to earn that respect if your shop is a haphazard mess. You may be the best engineer in the region, but if your shop is a disaster, you're sending the wrong message to your manager. As we start with a new year, set aside a day to organize your shop and office. Watch how it pays off for you.

*John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is a district sales manager for Harris Corp. Reach him at (703) 323-8011.*

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

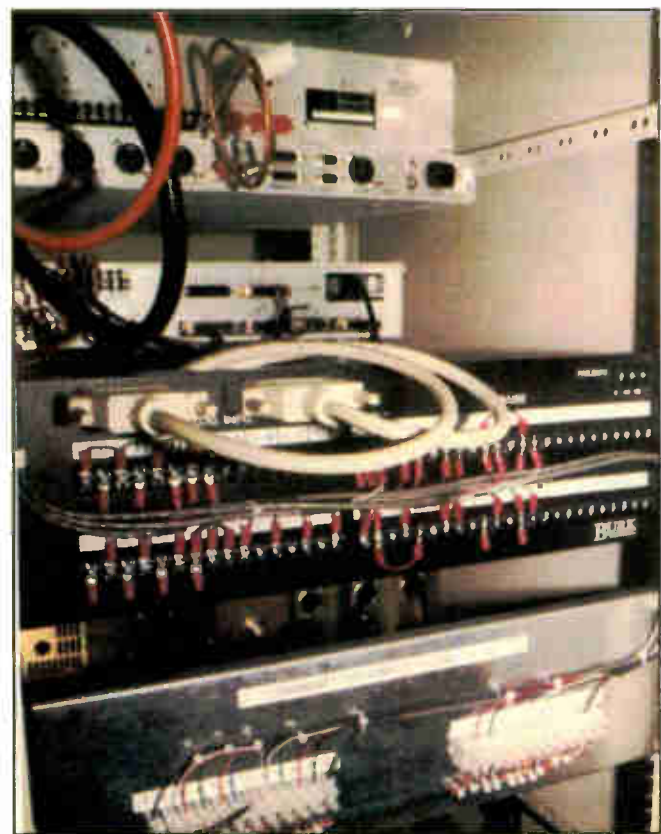


Fig. 5: Nice job on the wiring.



Fig. 7: Use a labeling machine to identify disconnects and other important locations.

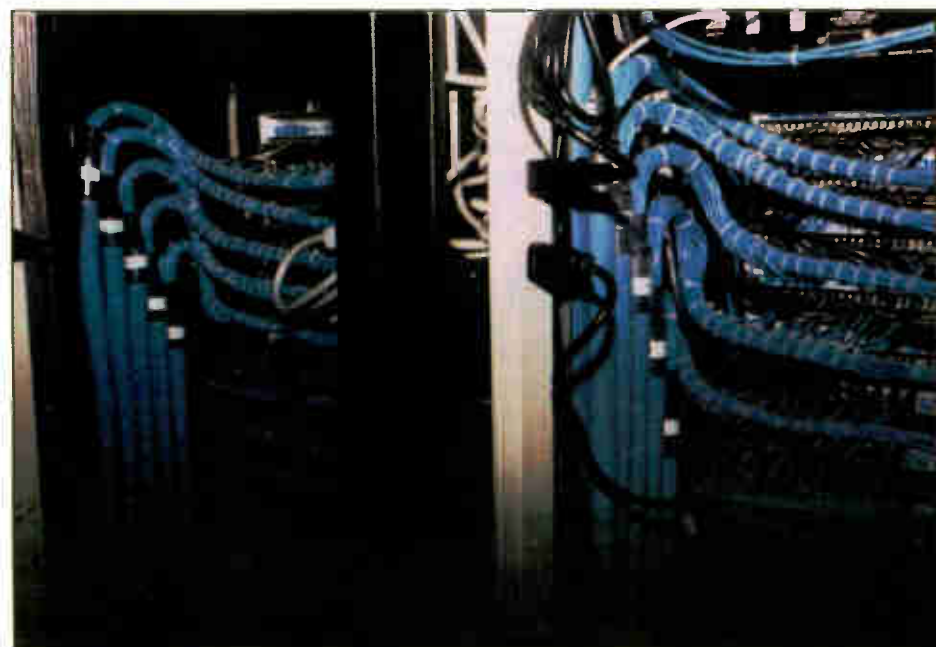


Fig. 6: P-touch labels and wire ties make it easier to work on these distribution amp racks.



Fig. 8: A neat shop makes you look good.



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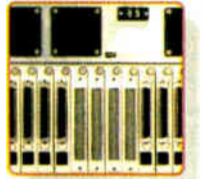
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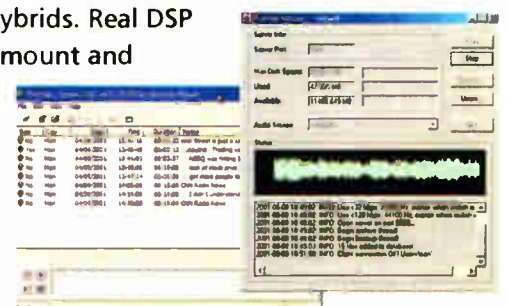
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# Happy New Year. It's About Time

*Keeping Track of Time Around the World Requires a Complex Algorithm*

by Skip Pizzi

One of the most common elements of broadcast continuity is the time check. Listeners have long considered radio stations to be primary keepers of accurate time (along with the phone company), relying on broadcasts frequently throughout their day in order to keep on schedule.

Yet as local broadcasters serve ever-widening audiences via consolidation, networking and the Internet, another chronological challenge arises, in which the tradition of addressing listeners only within a single time zone has given way to a broader range of possibilities.

As the world thus grows smaller, it behooves broadcasters to understand the workings of the world's clocks. This is harder than it sounds. While we all understand the theoretical concept of time zones, in actual practice, international time seems to have more quirks and anomalies than the U.S. tax code.

## Origins

The concept of dividing the world into 24 slices of 15 longitudinal degrees each, and setting each of the resulting zones an hour apart, is attributed to the Canadian engineer Sanford Fleming (1827-1915).

Born in Scotland and trained as a surveyor, he immigrated to Canada and eventually became the chief engineer of its Northern Railroad. He was the first to propose a transcontinental railway for Canada. As he later led its construction, he realized that in order to manage track usage efficiently and avoid collisions, a standardized method of timekeeping would be required from coast to coast. (Previously, each town had set its own local time based on the sun's position there; as we described in the Dec. 18 issue.)

His thinking led to an international

proposal for standardized zonal time, based on the observation that the earth's rotational speed was 15 degrees per hour. His plan was adopted by 27 countries in 1884, and earned him knighthood by Queen Victoria in 1897.

## International time has more quirks and anomalies than the U.S. tax code.

The 1884 agreement also set the world's time reference and Prime Meridian (0 degrees longitude) at Britain's Royal Observatory in the London suburb of Greenwich, England. This selection had the additional advantage of placing the 180 degree meridian, which would serve as the day-boundary (later named the International Date Line), out in the mid-Pacific, where it would cause the least possible upheaval. Today the Greenwich Mean Time (GMT) reference is synonymous with Universal Coordinated Time (UTC) or Zulu time.

## Does anybody really know...?

Since then, Fleming's original plan has been amended to accommodate political boundaries and commercial requirements rather than adhering strictly to the 15-degree zonal alignment. Britain had been the first country to set a national standard time in the 1840s (no doubt having some influence on Fleming's later thinking), and following the 1884 accord, all countries began to set such national policies — although with great variation among them.

Most notable among these today are the no less than nine regions of the world that offset their time with some non-integer relationship to the standard.

Closest to home among these is "Newfie Time," the half-hour variant that is the earliest North American continental time zone (UTC-3.5h), observed only on the island of

Newfoundland, Canada. Half-hour offsets also are observed in the entire countries of India, Iran, Afghanistan and Myanmar, along with the central time zone of Australia and a few island groups in the South Pacific. Strangest of all is Nepal, which uses a 15-minute offset (UTC +5:45).

Large countries generally establish multiple zones, typically along provincial boundaries. Most notable in this respect is Russia, which has 11 distinct time zones (UTC +2 to UTC +12). At the other extreme is neighboring China, which is the largest country to observe a single national time (UTC +8). Normally such a territory would occupy at least four time zones, so this creates strange daylight hours in some areas (e.g., sunrise at the equinoxes around 5 a.m. in the country's eastern regions but not until after 9 a.m. in west).

These variations don't always mesh well, meaning that some time-zone intersections are non-consecutive (i.e., there is more than a one-hour time change when crossing them). Extreme among these is the Bering Strait, where the Russian side

## The Big Picture



Photo: Gary Hayes, BBC

by Skip Pizzi

is three hours different from adjacent U.S. territory. To make matters worse, the International Date Line also runs along this boundary, so when it's 9 a.m. Monday on Russia's Big Diomed Island, it's noon Sunday two miles away on Alaska's Little Diomed.

## Saving the day

While zonal time attempts to deal with variation in *longitude*, Daylight Saving(s) Time accommodates differences in *latitude* and the resulting seasonal swings in daylight differential.

Also known as "Summer Time" in many parts of the world, the concept has its roots in a 1784 essay by Benjamin Franklin. Inspired by his well-known penchant for thrift, he half-facetiously suggested the DST idea as a way to save candle wax and lamp oil. He was in Paris at the time, where the daylight differential is greater than in the United States, due to that city's more northerly location.

This brings up another frequent misconception of Americans, who generally assume that Europe and the United States occupy similar latitudes due to their fairly matching climates from north to south. Actually, a quick check of the globe will show that there is almost *no* overlap in latitudes, with only the northernmost tier of U.S. states sharing latitudes with the southernmost parts of Europe. (Boston and Rome are at approximately the same latitude.) So in fact, Europe and *Canada* share similar daylight differentials.

DST is also subject to numerous anomalies. First, tropical locations generally do not observe it, of course, because sunrise and sunset times there remain essentially unchanged year round. Next, those areas that use DST don't all change at the same time, producing a week or two of semiannual temporal confusion between certain regions.

Even within a single country, not all jurisdictions observe it uniformly. For example, Hawaii, American Samoa, Guam, Puerto Rico, the Virgin Islands and *most* of the Eastern-Time portion of Indiana stay on Standard time year-round, along with Arizona — except for its Navajo Indian Reservation, which follows DST.

Commuting across such a boundary must make life interesting for people who must cope with the seasonal shifts between the time at home and at work.

There are many more interesting idiosyncrasies to the world's timekeeping practices, and new rules continue to be adopted (Remember "Nixon-time"?). Perhaps the best answer to the simple question of "What time is it?" is, "It depends."

Skip Pizzi is contributing editor of *Radio World*.

## MARKET PLACE

### Seminars Delve Deep Into AM

AM transmission may seem like a dark science. But one consulting and engineer firm is offering specialized instruction in the mystical art.

John Furr's Paradigm Associates presented its second symposium on "Advanced AM Engineering" in San Antonio this fall, and plans more seminars in the future.

This isn't a quick hour-long session, but four days of hard-core AM issues, including allocations, directional antenna designs, designing matching and phasing networks, directional array tuneups, AM proofs and FCC filings, diplexing, coping with re-radiation, and moving or upgrading existing stations.

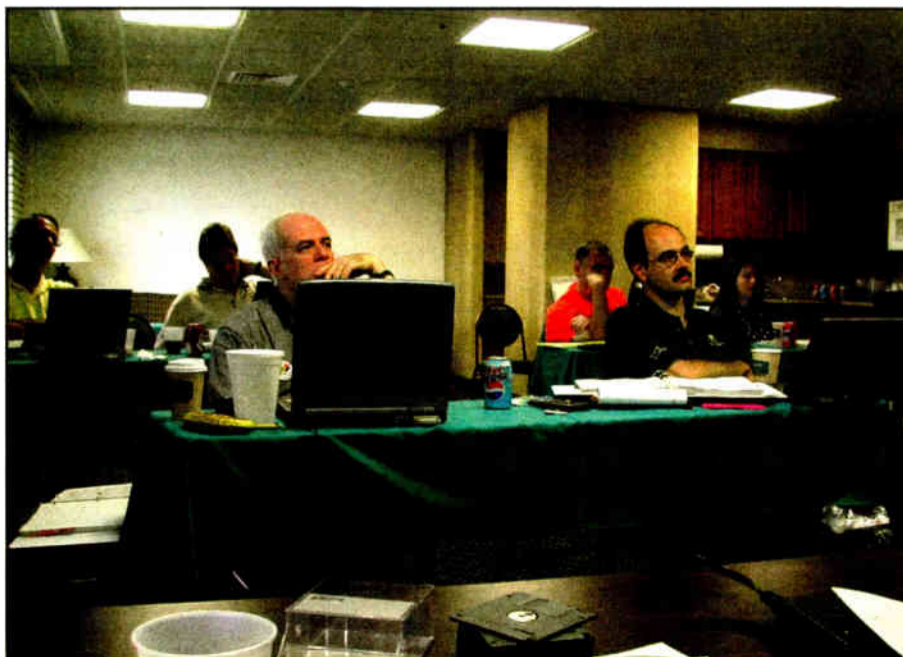
The instructors this fall were Cris Alexander, director of engineering for Crawford Broadcasting and a contributor to *Radio World*; Charlie Gallagher, P.E.; and John Furr.

"The seminars are part of an ongoing effort to gather, preserve and disseminate detailed knowledge about AM engineering," said Gary Keener of Paradigm Associates. "The advent of

AM IBOC and pressures on existing sites due to urban encroachment and re-radiation have sparked renewed interest in solving AM problems." The price for this year's seminar was

\$1,350.

For information about future seminars, call the company in Texas at (210) 828-4555 or send e-mail to [gkeener@pdigm-inc.com](mailto:gkeener@pdigm-inc.com).



Among those in attendance were, from left, Mike Vanhooser of Nova Electronics; Steve Davis of Clear Channel; Gary Keener of Paradigm; Tom Cox and Jeff Littlejohn of Clear Channel; and Amanda Presley of Paradigm.



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## NEWS MAKER

# Wood Touts Simplicity and Value

*This is one in a series of occasional interviews with the suppliers of audio processing in the radio industry.*

In 1972, the year Inovonics was founded, a first-class stamp cost 18 cents, a gallon of gas was 36 cents and Richard Nixon was president.

Since that time, Inovonics has been a staple in the broadcast equipment industry, its products known for their simplicity, low cost and ease of operation and repair. The product line — including audio processors, modulation monitors and RBDS encoders, as well as tape-recorder electronics — have long been favorites of budget-minded broadcasters.

Nixon and the 18-cent stamp may be long gone, but Inovonics just enjoyed its 30th anniversary in 2002.

Jim Wood is the company's co-founder, CEO and chief engineer. An alumnus of the University of California at Berkeley and San Jose State University, he holds a bachelor's degree in theater arts.

In the 1960s Wood worked for Pacific Telephone & Telegraph, now called PacBell, as a "toll transmissionman," maintaining carrier and microwave long-distance facilities, and in administrative work. He moved on to Vidar Corp., a manufacturer of instrumentation/data acquisition equipment, as a production engineer, developing test fixtures and procedures.

He then became senior development engineer for GRT Corp., which made prerecorded tapes. There, he designed high-speed tape duplication systems before co-founding Inovonics in 1972.

Wood spoke with Radio World Technical Adviser Tom McGinley about the history and the products of his durable company in Santa Cruz, Calif.

**RW:** How did you get started in broadcast equipment design and manufacturing?

**Wood:** A friend and I found ourselves out of a job when the audio tape duplicating facility we worked for closed its doors in the early 1970s.

This was during an economic slump, and we found it easier to start our own business than to find gainful employment.

**RW:** Your co-founder was Mark Drake. Is he still involved?

**Wood:** No, Mark left the company in about 1978. He quit the technical realm and affiliated with an Eastern religious culture in northern California.

**RW:** Why a theater degree?

**Wood:** I'd always been drawn to the technology of the entertainment industry, but as a student I lacked the self-discipline and the patience to pursue a math-intensive technical education. My degree is in theater arts, though the emphasis was radio and TV producing and directing.

**RW:** Your first products, I recall, were aimed at the recording industry. What attracted you later to the broadcast market?

**Wood:** Inovonics' first product was a solid-state replacement electronics package for the still-popular Ampex 350-series tape recorders.

As we still had contacts in the music

business, the studio market was our first target, but we soon discovered a much larger user base among broadcasters. And just as important to our continued success, broadcasting was a more stable industry; recording studios were in and out of business almost overnight.

**RW:** Up until about 1990, most recording studios and radio stations used reel-to-reel tape recorders heavily. The Inovonics model 375 and 370 replacement electronics for Ampex reel equipment had become a staple. How many of those units were sold?

**Wood:** Over the nearly 20 years we manufactured tape-recorder electronics, and among the several models and versions, we shipped between 4,000 and 5,000 channels. About 60 percent were monaural, 30 percent stereo and the rest were for custom multi-track machines or for magnetic film recorders used in motion-picture production.

We still respond to the occasional request for help in keeping these running.

**'I don't ... pretend that our low-cost alternatives "trounce" the other guys. But at a fraction of the price, and with surprisingly competitive performance, I like to think we provide an excellent value.'**

**RW:** You entered the processing marketplace with the 201 and 210 audio limiters and the 220 Audio Level Optimizer in the mid-1970s. What was driving your design philosophy? I still see stations and studios using these units.

**Wood:** Those three initial processors utilized a unique VCA circuit that had been patented by our defunct previous employer. Initially it had been used to control high-frequency program content when mastering for audiocassettes. Ownership of the patent reverted back to us, and it proved ideal for FM pre-emphasis protection limiting. Back in those days, about the only other processor that dealt with this properly was the CBS Volumax.

**RW:** Inovonics jumped into the early multi-band processing arena with the model 230, or as some called it, the MAP I, and then later the MAP II for AM radio.

**Wood:** The MAP-I was developed almost overnight as a "do-all" processor for both AM and FM, and proved a compromise that, at best, was marginal for either service.

It was replaced in short order by our MAP-II, intended exclusively for AM. This was in the late 1970s, early days for multiband processing. The only other product on the market at the time that I was familiar with was Mike Dorrough's very successful DAP 310.

Compared with Mike's smooth-sounding DAP, our "MAP-II" imparted an unusually dense and "busy" sound, which was rejected by a significant segment of the broadcasting industry at that time as

being entirely too aggressive. This was an escalating period in the "loudness wars," and FM broadcasters, in particular, wanted something similar but less brutal. Our Model 250 evolved from this requirement.

**RW:** The model 250 five-band FM processor has been a popular product for two decades. Describe the secret to its success.

**Wood:** By the early 1980s, FM stations also were caught up in the loudness game. "Burn a hole in the dial" was a common phrase.

The 250 did not match Bob Orban's Optimod 8100 in that respect, but was an unqualified success in Europe, which at that time remained several years behind the U.S. in the technical side of radio programming practices.

The 250 used feedforward pulse-width modulation in the gain control stages, a technique that is predictable, adjustment- and drift-free, and virtually colorless. The resultant "sound" (or lack thereof) appealed to European broadcasters, who at the time still maintained a spirit of

responsibility to the music arrangers, artists and producers.

Though our U.K. distributor independently introduced a "loudness mod" for the 250 in the last few years of its availability, the design remained essentially unchanged over the 18 years the product was sold.

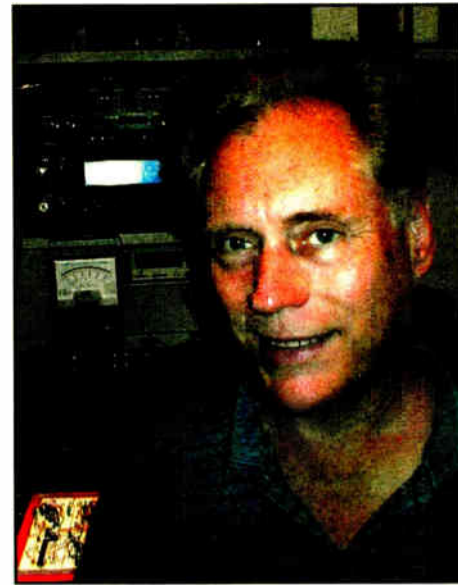
**RW:** In the 1990s Inovonics introduced the 705 and 706 FM stereo generators, followed by the David I and II integrated FM processors. The David models were a great low-cost alternative to Optimod. Tell us about those units and their target market.

**Wood:** Bob Orban's Optimods certainly defined the "single-box" approach to processing and stereo coding, and a splendid job they did, too. Integrating these functions makes a lot of sense, both in terms of installation logistics and for technical reasons as well.

Our standalone stereo-gens, the 705, 706 and 708, were companions to our various standalone audio processors. Our David line was named after the biblical battle of David vs. Goliath, in which the smaller guy trounces the much larger opponent.

I don't like to think of Inovonics as having "opponents" in the marketplace, nor do I pretend that our low-cost alternatives "trounce" the other guys. But at a fraction of the price, and with surprisingly competitive performance, I like to think that we provide an excellent value for smaller markets and emerging nations.

**RW:** In addition to processing, Inovonics offers the popular 530 FM



Jim Wood of Inovonics

modulation monitor, the 520 AM modulator and the model 711 RDS encoder. Describe the design philosophy and capabilities of each unit.

**Wood:** The keynote of the design philosophy of any Inovonics product has to be simplicity. We use this term in our advertising as well, but always with an attached qualifier claiming, "consistent with maintaining quality and performance" or words to that effect. Our designs are straightforward and, to the greatest extent possible, utilize component parts that are, and will continue to be easily and readily available.

Like our David processors, the FM and AM mod-monitors are devoid of a lot of bells and whistles. They may have limited application in a plant that's strung together entirely with CAT-5 cables, but rack them up in a typical studio or transmitter environment and they will give honest modulation readings for years.

I hate to think of RBDS as a lost cause just yet; new cars are coming out with RBDS radios as standard equipment. But some of these same cars offer satellite radio as an option too.

It's been said that Inovonics is the perennial champion of lost causes: Magnavox Stereo-AM, CBS's ill-fated FMX system, Noise-Free Radio to name a few. We've offered three different models of RDS/RBDS encoders as well as a digital decoder/reader. Acceptance of RBDS in this country has not been spectacular, but we're hoping that this technology, which is virtually free to the broadcaster, will prove a value-added boost to FM.

I'm surprised that, in the L.A. market where I live, not one station is transmitting song titles and artists. It's so easy. (Subsequent to this interview, Wood noted that several L.A. stations have begun sending not only song title and artist information but weather and stock market figures.)

**RW:** You offered an analog processor for Webcasting two years ago called the WebCaster. What is the future of that business?

**Wood:** The greatest potential for Webcasting seems to be in non-traditional programming by providers other than radio broadcasters, or perhaps for wider distribution of innovative material created by college and other non-profit broadcasters.

"Simulcasting" worldwide over the Internet does not particularly serve a broadcaster's local advertiser base, and simply multiplying the sources for

See WOOD, page 23 ►

# Wood

► Continued from page 22  
 identical play lists couldn't be much of a service to listeners, either.

**RW:** With the advent of digital broadcasting, Inovonics has developed the Omega FM. What kind of challenge does this technology using DSP present to a company like yours that has been known almost exclusively as an analog-based enterprise? What does the Omega offer in the way of advantages against other digital processing products and do you think processing attitudes will change as DAB is implemented?

**Wood:** In its present form, our Omega\_FM processor is intended almost exclusively for FM, replacing our Model 250 analog box. As the Omega\_FM doesn't use DSP chips, relying instead on the bare-bones number-crunching power of a Pentium-class CPU, software revisions can reconfigure the product for whatever digital transmission system ultimately perseveres.

DAB-done-right eliminates the fundamental need for audio processing; that is, to maximize coverage and overcome a poor S/N ratio. Perhaps processing is best relegated to the listening environment. A noisy car might well use some squashing, whereas a home theater setup would sound most impressive with wide dynamics. DAB ought to level the broadcast playing field from a technical standpoint.

**RW:** Everyone has an opinion about whether analog sounds friendlier and warmer than digital. Many feel that no matter what the resolution or processing, digital will never sound as good. How does Jim Wood answer that claim?

**Wood:** When someone cites "CD-quality," I like to counter with, "CD? Why, that's a consumer format, isn't it? Certainly no match for a good 16-inch professional transcription."

Just joking, of course. But we do live in an analog world. If it weren't for the cumulative effects of noise and distortion, it would make sense to keep program material in the analog domain. But today's generation of digital converters, coders, recorders and transmission links is superior to those of digital's early days.

I believe that many of digital's detractors speak from initial experiences. As far as I'm concerned, current digital recordings that do not use any bit-rate reduction techniques sound fantastic. I don't miss tape hiss at all.

**RW:** Your company has seemed to offer affordable products using innovative design concepts usually seen in those of more expensive competitors. What has been your secret to keeping costs so well behaved?

**Wood:** Inovonics has always based product selling price on what it costs to manufacture and market the product, not on what the market will bear, or what seems to be the going rate for a competitor's equivalent. And we attempt to use common component parts rather than esoteric ones that quickly become obsolete.

**RW:** Where do you see your company headed — competing with the likes of Urban/CRL, Aphex and Omnia? Will Jim Wood ever get tired of building broadcast

The technology of audio processing, for example, is so subjective that there will always be room for alternatives. Just like automobiles, there's no single "right" model. Excluding a major upheaval, either in

agers, as given at NAB and other shows. And, no, barring a major economic calamity, we'll keep plugging away as long as we can. It's more than a job; it's a whole lot of fun. 🌐

**'Barring a major economic calamity, we'll keep plugging away as long as we can. It's more than a job; it's a whole lot of fun.'**

equipment under the Inovonics banner?

**Wood:** Rather than "competitors," I prefer to think of the firms you mentioned as companions in the industry.

technology or the broadcast industry, our products will continue to follow broadcasters' wants and needs. We rely a lot on input from station engineers and man-

## Inovonics Vital Stats

Company name: Inovonics Inc.  
 Headquarters: Santa Cruz, Calif.  
 Founded: May 1972  
 Founded by: Jim Wood and Mark Drake  
 Employees: 12  
 Ownership: Private  
 President/CEO: Jim Wood  
 Sales contact number: (800) 733-0552  
 Web site: [www.inovon.com](http://www.inovon.com)

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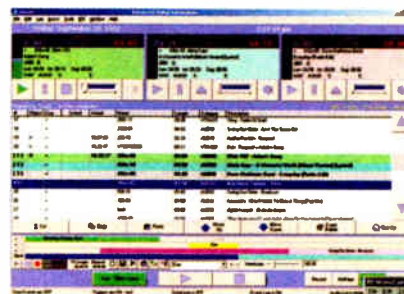
WaveCart, Stinger, Speedy, Skimmer and WebConnect can all work together to make your station function professionally and sound amazing. In addition to the software that we have created, we offer partner products like AudioScience sound cards, Natural Broadcast Systems traffic and billing software, Syntrillium's new Cool Edit Pro 2.0 and various other hardware accessories.

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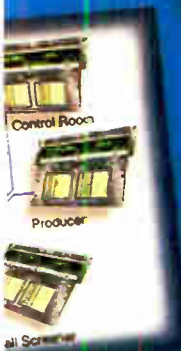


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M25PKG

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WS912PACK

\$24.00



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The HMD 280 is perfect for broadcasting in high-noise environments. The headphone pads are tightly sealed around the ear and the noise-compensating supercardioid microphone rejects external noise. Features: hard-wired XLR and 1/4" connectors; very good attenuation of background noise; headphone frequency response 8 Hz to 25 kHz; impedance 300 ohms; mic frequency response 50 Hz to 13.5 kHz; impedance 200 ohms.

HMD280 List \$299.95 \$199.00



HURRY, Sale Ends 1/31/03

World Radio History

## Tower Approval: Do Your Homework

by Barry Magrill

The process for getting a new tower approved can be scary. Let's take a look at steps that will improve your odds for approval.

Speaking broadly, you will first do your homework. Then you'll make preliminary contacts with the zoning board, assemble your team, prepare your application and finally appear for your meeting.

Why is the site you chose the best? You will need to convince the board that you only have a limited area in which to move, that you have considered alternative locations and that you ruled them out for good reasons.

Your engineer will be helpful; he can tell you the boundaries of where your AM will fit. It needs to serve the community of license and protect other stations. In many cases there is only a limited area

tion should be noted. In many applications more than one station is affected.

Does your station support emergency services? Will the antenna be available for police or fire service repeaters? Does the station have a track record for serving the public? There may be FAA constraints. Be sure to secure a copy of their "determination of no hazard" to include in your application.

It is relatively easy to show that a proposed tower will not depress property values by noting home sales in similar areas before and after a tower is erected. This typically is documented by a certified land appraiser who can answer questions about his findings. Alternately, you may find documents about towers and land values already on file with previous tower applications.

### NIMBY issues

Learn as much as you can about the commissioners who will hear your application. Their vote usually is a matter of public record. You can ask for the transcripts of past tower cases and read the comments of each commissioner. Look for pet peeves and usual questions posed to prior applicants. Also note successful responses to those questions.

You will need a copy of the locality's tower ordinance and a site plan. Look through the ordinance. Does it have different approaches to broadcasters and wireless providers (cellular or PCS)? The needs and requirements for broadcasters and wireless providers generally differ. Most of the time, cellular applicants are subject to far more stringent rules. In many cases, pointing out that you are a broadcast applicant will work to your advantage.

I have noticed that successful tower operators maintain good rapport with local government staff and board members. It never hurts to start off as friends.

See ZONING, page 28 ▶

## How to Build Your E-Mail List

by Mark Lapidus

As the need to grow cash flow and suppress expenses grows, stations continue to slice outside marketing budgets. Most of the major broadcast companies cut marketing expenses in third and fourth quarters. Stations are then required to do the next year's budget based on actual expenses and zero growth.

### Promo Power



by Mark Lapidus

Where does this lead us for now? We proactively must consider less expensive methods of marketing ourselves.

Event marketing — or as some managers call it, street marketing — has become one of the most popular tools for drawing attention and actually generating more money. Yes, all stations should expose themselves to the public this way. However, don't kid yourself; in a major market of over a million people, this

See PROMO, page 31 ▶



Local boards are looking for a showing of need, public benefit and harmlessness. They also want to know how your structure fits in with the current and planned zoning for the area. Will it be aesthetically pleasing? Does it pose any threat to the safety or disturb the peace of the neighborhood?

You will be arguing that your tower is the best way to achieve your goal, that your tower serves the public interest and that it will create no harm for your neighbors or workers.

Suppose you have an AM station.

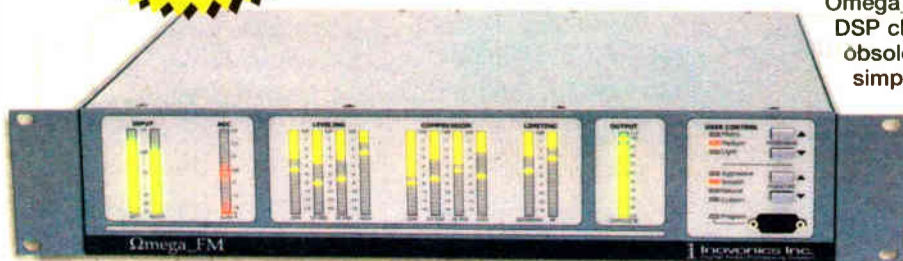
where the station can go. Would a move from your proposed site reduce the number of people served? Will it reduce the coverage of your community of license?

Depending on the antenna height, the number of properties on which you can build likely will be limited. Taller towers normally mean larger parcels of land to satisfy the fall zone and setback requirements. In most cases, collocation will not be feasible because tower operators will not accept the potential interference from an AM. The public-interest aspect of the sta-

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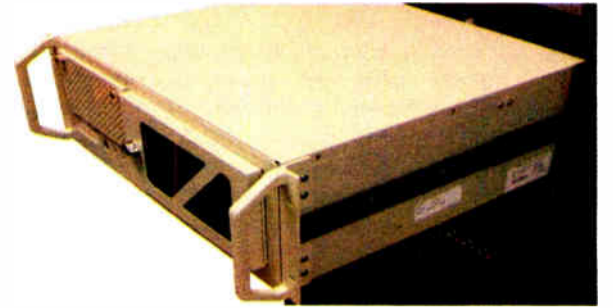
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SS32's built-in phone recorder has an easy-to-use jog wheel and adds auto-sequencing features you can't get anywhere else.

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# Zoning

► Continued from page 26

You will need to determine the current zoning on the proposed property. Depending on the county, you may be able to find this information on the Internet. The tax collector, zoning office and the GIS (digitized mapping system) office are likely candidates. A quick phone call to the zoning office will get you started in the right direction. The fastest way for them to help is via your legal description, which is normally part of your site plan drawing. A street address is also a good start.

Once your research is done, contact the zoning administrator for an informal meeting to discuss your proposal.

A map showing the location of the property, a sketch of the tower and a site plan are essential. During this meeting you will be able to determine whether or not the tower will receive favorable reception. Bring along a "people" person who is good at reading others.

Some local governments have RF engineers on retainer or staff. Such a person can be an excellent resource. He or she can evaluate your proposal and give you information concerning the outlook and possibly how to overcome weaknesses in your application.

Be prepared to justify the tower's height and location from a technical standpoint. Saying "it's proprietary" will immediately arouse suspicion and may turn victory into defeat. Remember that documents filed with the FCC and FAA usually are a matter of public record.

Depending on the importance of the project and the perception of difficulty, consider hiring a good local attorney. When interviewing an attorney, ascertain that he or she has a good working relationship with the board and has a history of success in tower applications. If you do not know a good one, the site acquisition department of your local wireless company may help in some instances.

One word of caution: Don't go to the board meeting and threaten a lawsuit. Board members earn brownie points for defending the public against absurd tower applications. If your attorney thinks it's necessary, let her proclaim the news.

Your attorney probably will wish to assemble a team of specialists. Most experts offer sworn testimony while your attorney normally does not. Your attorney will control the presentation and may cut it short or ask for a continuance should she feel it is in your best interest. Reasons to continue (postpone) your presentation may include the absence of a board member known to be friendly to tower applications or the general mood of the board.

Your attorney may shorten the presentation if she believes she has enough votes. As with any sales presentation, too

much can ruin you.

The typical "dog and pony show" will consist of an attorney, RF engineer, property appraiser and site acquisition manager. The RF engineer will explain the necessity of the tower location and height. He will answer questions as to why alternative sites and alternative technologies were rejected.

He should be prepared with exhibits of propagation studies both at the proposed site as well as alternate sites. He should be prepared to answer questions about potential interference to other services such as telephone, stereos, TVs, etc. The board is not a technical body, so anything your engineer can do to simplify the facts will help.

Common questions involve the safety of RF and the effect of towers on birds and their migratory paths. Questions about nesting locations of endangered species can be answered by state and federal fish and wildlife services. Note that the Audubon Society is opposed to lighted towers. If you contact them for information they may show up to oppose your application.

There are eight FCC categories that would trigger an environmental impact assessment. If there is any question in your mind about these categories, write to the appropriate agency. Their response, in letter form, generally dispels doubts in the mind of the board.

It normally takes some time to get a response so write as soon as you are committed to build on the site you have selected.

## The board is not a technical body, so anything your engineer can do to simplify the facts will help.

Wilderness areas are handled by the National Park Service. Questions concerning wildlife preserves and endangered species should be directed to the U.S. Dept. of Interior, Fish and Wildlife Service. Floodplain questions can be answered by the Federal Emergency Management Agency (FEMA). Questions about Indian religious sites and historic sites generally are answered by your state historic preservation office. The Army Corps of Engineers usually answers questions concerning surface features such as wetlands and floodways.

You may select an environmental firm that will contact these various sources and report the findings.

### Property values

The property appraiser will answer the question, "Will this tower adversely affect the value of my home?"

One of the most common objections raised by private citizens is "The tower will cause my property to lose value." Boards must balance the potential damage with the public interest. A certified appraiser can show that there is little or no

potential damage to nearby landowners.

Other experts include land planners, structural engineers and environmental engineers. The land planner will help show that the proposed tower is consistent with the master land development plan. The structural engineer will answer questions about fall zones. In many cases the tower manufacturer will provide a letter sealed by their professional engineer answering those questions prior to the meeting.

In cases where a lengthwise fall of the tower would endanger a residence or a building used by the public, you may wish to retain a registered engineer to attend the meeting or at least write an opinion letter. This will be a call you need to make after preliminary discussions with the zoning people.

Environmental engineers and biologists can answer questions about sensitive environmental issues.

### Next step

At this point you should prepare your application. If you have an attorney, he will prepare the legal portions and request help from your engineer on the technical points.

Many communities use an essay-type application. The usual response is to restate the ordinance and provide your answers after each subsection. This helps you avoid missing areas that are important to the staff or board.

Your answers should be clear and stick to

the points in the ordinance. It should be neatly organized. The use of color is helpful.

The application is where you will include such items as FAA determinations, fall zone letters, tower drawings, environmental impact statements, warranty deeds, lease agreements, balloon test photos, photo simulations, statements from your RF engineer, maps of nearby towers and propagation maps.

If you do photo simulations or balloon tests, coordinate with the community government. Use their contractor. This will improve your credibility.

If you are renting land, make sure the landowner is informed of any conditions that may be placed on his land as a result of the tower. Most local governments require you to have a notarized authorization to act from the applicant if you are leasing the land.

You will probably not need all of the data assembled by the team. However, you should be prepared to answer all of the questions raised by board members. You or your attorney should meet with the zoning and planning staff to work with them answering their objections and questions in a courteous manner.

### You can do it!

You can take on the responsibilities of the team. Some applicants do present their own cases and are successful.

During your initial meetings with the staff, you should begin to sense whether you need help.

Regardless of whether or not you assemble a team, you must comply with the public notice requirements in your area. This normally means mailing notices to neighbors within several hundred feet of

the site property. Check with your local zoning department about the requirements. They must be followed exactly or a favorable ruling can be struck down.

This is when your neighbors find out about your plans for the first time. I wonder how much bad blood could have been avoided if the applicant had been on good terms with his neighbors before asking for approval. Your neighbors can make or break a tower application, unless your attorney is very good.

Understand the county's perspective on this matter. Government officials have been burned on a number of occasions by speculators stating that they needed towers. Now approved towers stand with no occupants. Sites that had been approved for 150-foot structures end up with towers more than 200 feet tall.

These experiences, coupled with a five- to 10-fold increase in tower applications, have degraded the credibility of tower applicants.

Fortunately for the broadcast applicant, many tower ordinances are directed at the wireless telecommunications services as a reaction to the number of lawsuits arising out of the 1996 Telecom Act. The boards generally are sympathetic to broadcast applicants unless they have had bad experiences.

The tower industry has moved from speculation towers to "build to suit." This move generally has been met favorably by most boards. Some of the more sophisticated boards are amending ordinances, to favor more, smaller towers as opposed to fewer, taller towers with collocation potential. Smaller structures are easier to camouflage. Surprisingly, there do not appear to be any studies that indicate that the general public even notices towers.

There is a lot of resentment by nearby landowners. Keep in mind that local elections are won or lost by narrow margins. A 200-vote swing is not uncommon.

One way to lose a commissioner's vote is to have a number of irate neighbors from his district show up at a meeting. Being a good neighbor and interacting with the adjacent landowners before you decide on a new tower can pay off. If your tower can fall on your neighbor's land, consider purchasing an easement. This can turn an adversary into an ally.

Remain positive throughout the meeting. Remember that you need only convince a majority of the commissioners you are right in order to gain approval. Your answers to the board's questions should be short, simple and to the point. Reinforce important points with graphics during your initial presentation.

Normally, the applicant — you — will speak first. Members of the board may ask questions during or after your presentation. Next, members of the public will be invited to make comments or pose questions. Then the applicant has a short period for rebuttal and closing statements. This is your chance for damage control.

Once your rebuttal closes, the board will discuss the merits of your application and vote on its approval or denial. If during the meeting, it looks like you are losing by a wide margin or if a board member friendly to your case is absent, you should consider a continuance. A "maybe" is far better than a "no."

Attempt to be cordial and candid. Overcome the temptation to argue with the public or board members who do not agree with you, and don't gloat should you win.

Barry Magrill can be reached via e-mail to [barry@atlantic.net](mailto:barry@atlantic.net).

## Zoning Resources

Your local ordinance can be found online at <http://fws.municode.com>.

A hardbound copy of your local code generally is available by request from the zoning department.

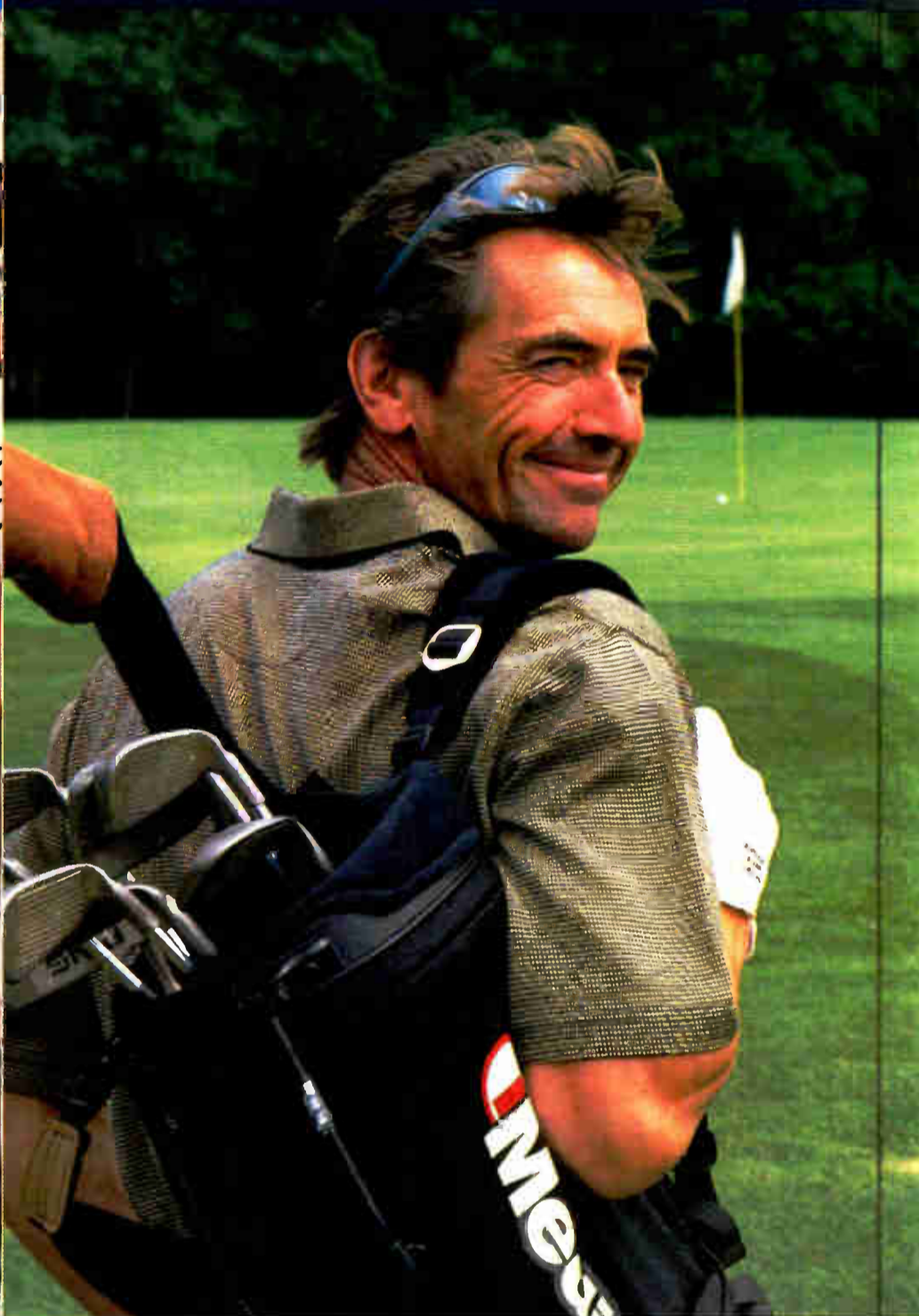
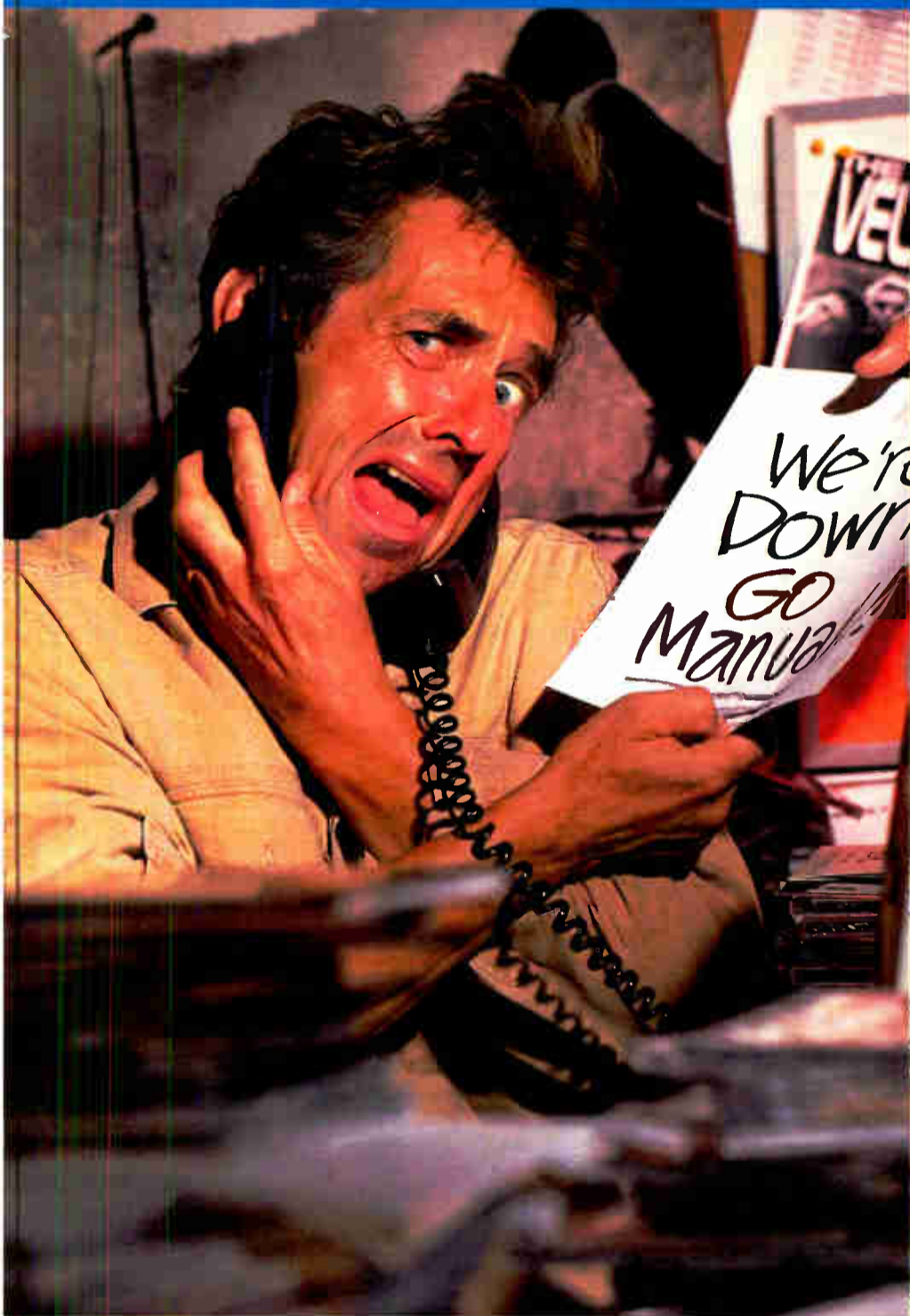
The FCC Towair program locates nearby public airports. Find it at [http://gullfoss2.fcc.gov/cgi-bin/ws.exe/genmen/tow\\_air.htm](http://gullfoss2.fcc.gov/cgi-bin/ws.exe/genmen/tow_air.htm).

Nearby towers in the FCC tower base can be found at [www.berkana.com/tower.php3](http://www.berkana.com/tower.php3).

Many counties maintain a map of the towers in their area. This information is available through their GIS department. You may find any AM stations within two miles (or any other radius) at [www.fcc.gov/nmb/asd/amq.html](http://www.fcc.gov/nmb/asd/amq.html).

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# Newsflash: Web Watcher Was Wrong!

by Craig Johnston

When Web Watcher wrote last year's January episode, he saw the future quite clearly: The Copyright Arbitration Royalty Panel would deliver its recommendations in the first few months of the year, and certainly within 2002, Internet radio would have certainty in its royalty fees.

Web Watcher was wrong.

Well, there is some certainty. Thanks to a deadline laid down by the lame-duck 107th Congress in its final hours, small Webcasters and the recording industry came to a mid-December agreement.

Webcasters that qualify as "small" under terms of the agreement now may opt to pay royalties based on a percentage of their revenues or expenses, whichever are greater. This replaces per-song, per-listener-based royalties that had been mandated through the CARP process. Those had threatened to bankrupt small Webcasters, who had garnered plenty of listeners but little revenue.

Those wishing to take advantage of the Small Webcasters agreement have until Jan. 15 to file paperwork with SoundExchange.

Broadcasters simulcasting their over-the-air programming on the Internet have no such certainty, for two reasons.

First, because of how "small" Webcasters are defined in the previously discussed agreement with the recording industry, few broadcasters could qualify. Media-related, though not necessarily Webcast-related, revenues count toward the revenue ceiling.

Unless a radio broadcaster's Webcast

activities were set up under a separate business, in most cases the combined revenues push the broadcaster-Webcaster out of the "small Webcaster" category.

(Web Watcher notes that broadcaster-Webcasters are probably better served paying a per-song/per-listener fee for their Internet streaming. Because other related media revenues are also subject to the percentage-of-revenues fees in the small Webcaster deal, and because broad-

**Unless a radio broadcaster's Webcast activities were set up under a separate business, in most cases the combined revenues push the broadcaster-Webcaster out of the 'small Webcaster' category.**

casting revenues currently dwarf the Webcasting revenues, broadcasters have the better deal paying the per-song/per-listener fees.)

The second reason broadcasters don't yet know what their fees will be is that they have stuck to a strategy that the copyright-royalty issue isn't really about them. They claim that Congress exempted broadcasters years ago from such royalties for their over-the-air music play. They've argued that the Internet simulcasts are royalty-free as well, insisting that the governing Digital Millennium Copyright Act does not specifically include them.

The U.S. Copyright Office ruled

against that position in 2001. Since that time, the NAB and several major radio groups have marched through the Copyright Office and the courts to appeal that determination, losing at every turn. A ruling in the Court of Appeals for the Third Circuit in Philadelphia is expected several months into 2003.

Waiting for that ruling leaves broadcasters in a dilemma. Copyright royalty rates set by the previous CARP were in force only

through the end of 2002. The Copyright Office set Dec. 23 as the deadline for Webcasters to declare themselves a party to the next CARP proceeding, which will recommend copyright royalty rates and terms from 2003 through 2007. At press time, the NAB had not indicated whether it would join in that next CARP round.

(Web Watcher notes that small Webcasters will not be subject to the new CARP rates for the term of their agreement.)

One more group will remain uncertain about their copyright royalty obligations well into 2003: the noncommercial Webcasters. HR 5469 suspended copyright royalty fee payments for noncommercial Webcasters until June 20 to allow them to negotiate with the recording industry.

The small Webcaster bill defined "noncommercial Webcasters" as those who qualify as nonprofit under Section 501 of the Internal Revenue Code. This could include both hobbyist and college Internet radio stations.

Both of those groups could certainly benefit from lower royalty fees, but there's a second area they're likely to negotiate just as strongly: the record-keeping process.

While many modern radio broadcasters and commercial Internet-only radio stations play their music from a server-based system, which can keep track of what music played when and to how many listeners, hobbyists and college Webcasters are usually much more low-tech. Several noncommercial Webcasters say the record-keeping is as much an issue as the fees themselves.

So is Internet radio worth all the hassle? Those looking for an end in sight should be buoyed by Arbitron's MeasureCast ratings for the first 10 months of 2002. They show the total time spent listening to Internet radio climbed by 172 percent.

Web Watcher is not a business-school graduate, but it seems to him that if Internet radio can get its expenses in line and establish credibility with advertisers, the listeners are there. In droves.



Orrin Hatch (R-Utah) heading the Senate Judiciary Committee because the Republicans took control of the Senate in November's election. Sen. Hatch doesn't represent much of an unknown; he headed the committee less than two years ago, before Sen. Jim Jeffords (I-Vt.) changed his affiliation from the Republican Party to independent, throwing his support (and thus control of the Senate) to the Democrats at that time.

When Web Watcher asked Hatch's staff what to expect from the Utah senator, they said he issues a Technology Agenda early in each term. In the meantime, Web Watcher looked to a revealing speech the senator gave before the Judiciary Committee last May.

"For the better part of 6 or 7 years, since creating a digital performance right in sound recordings in the copyright law with the Digital Performance Right Act of 1996," Hatch said, "I have repeatedly expressed hope that we were on the verge of a well-stocked, ubiquitous and user-friendly 'celestial jukebox' that not only would allow music fans easy access to music they love, but provide artists greater freedom to interact with their fans and increased income from the exploitation of their works."

"Let me suggest, with some substantial understatement, that we are not there yet."

Hatch went on to lay out five courses of action he thought Congress should take:

•"First, artists ought to be able to exploit or benefit from works that are not being exploited by the labels that currently hold the copyright, such as out-of-print works."

•"Second, artists ought to be paid their online revenues directly and those revenues should not be unfairly discounted because of traditional, but inapplicable, offsets."

•"Third, artists should be able to keep their own online identifiers, their domain names, so they can more directly control their relationship with their fans online."

•"Fourth, we need to explore how to make copyright ownership information available through the Copyright Office more accessible and usable through the Internet."

•"Fifth, we must help ensure that market power in content is not unfairly aggregated to the detriment of other legitimate distributors of online music who seek fair licensing opportunities."

Look for Hatch to hold the recording companies' feet to the fire to help musical artists recover at least some rights to their music. Webcasters of any sort will need to frame their arguments in terms of what will help those musical artists.

As to broadcasters in general, Web Watcher's sources note that Hatch has a mixed record with their issues.

★ ★ ★

Broadcasters and other Webcasters are likely to try to make their case in the new 108th Congress. They'll find Sen.

★ ★ ★

While we're on the subject of making money, the recording industry has made See WEB WATCH, page 31 ►

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## Web Watch

► Continued from page 30

no secret that they've seen their profits shrink in recent times. They've been quick to point the finger at the music-thieving file downloaders, the Napsters and their brethren. But policing in an industry where new players instantly replace the old has proven tough as filling a bucket with no bottom.

One label, however, is augmenting the Whack-A-Mole enforcement strategy with a radical addition to its business plan. Vivendi Universal SA's Universal Music Group made more than 43,000 tracks of music available to consumers who can purchase and download the music for 99 cents a track, or \$9.99 for a whole album.

Universal partnered with 28 Web outlets that receive a transaction fee each time a purchase is made through one of their Web sites.

Though no radio stations were outlet partners at the venture's launch, both terrestrial-broadcast and Internet-only radio, with their legions of listeners, would seem to be obvious sources of customers. In mid-December, it was rumored that Clear Channel Communications was about to strike such a deal with Universal.

## Promo

► Continued from page 26

exposure simply is not enough to move the needle by itself.

What's the second-least inexpensive method managers are likely to employ for marketing? If you're not hearing about it yet, you soon will. Time to scrub that e-mail database of yours and figure out a way to grow the number.

Although focusing on e-mail database marketing sounds like a simple task, I'm fearful that most marketing managers will fail to grasp the basics, thereby not only failing, but alienating their most loyal listeners.

First, let's discuss growing your e-mail database.

One of the fastest methods is direct mail. Odd, huh? Here's how it works: Rent a list for your target demo. Do a direct-mail piece that offers a great prize — the smallest I would consider here is a free car.

Require that participants give you their e-mail address. Include a box that they can check to receive offers of other special contests and get your free e-mail newsletter. You'll be pleasantly surprised at how many people will opt in into your database when you employ this method. My theory is that this typically succeeds because you're tapping into contest players who always want to win free stuff.

A direct-mail method using a big prize certainly is among the most expensive options, but it's one of the few methods that offer speedy growth. Yes, you should use only those e-mail addresses of people who have opted in. Do not be tempted to use those who haven't — it's illegal. Also they'll waste your time with complaints, and most will unsubscribe anyway.

The remaining methods of e-mail database growth are gradual and require constant surveillance.

1) *Do on-air e-mail contesting.* Instead of taking the 10th caller for a typical contest, tell your listeners that you are accept-

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For all the criticism Web Watcher has heard heaped on Congress for its 1998 Digital Millennium Copyright Act, the DMCA does offer access to the entire universe of music for Internet radio operators who opt for the statutory license defined in the act.

The statutory license does not, however, include subscription Webcasters. Those

## Listen.com has partnered with Gateway Inc. to put its subscription music and music downloading software on new Gateway computers.

businesses have had to negotiate, label by label, for rights to their music catalogs (in most cases parts of their catalogs). Agreements with the labels have been slow to come, resulting in narrow offerings by individual subscription channels. This lack of breadth has been blamed, to date, for the slow subscriber growth of

subscriber Internet radio offerings.

The Holy Grail has been to garner licenses from all five major labels: BMG (part of Bertelsmann AG), EMI (owned by EMI Group), Warner Music (part of AOL Time Warner), Universal (part of Vivendi Universal) and Sony Music. The MusicNet and Pressplay subscription services were thought to have a head start because the former is owned by BMG, EMI and Warner Music, while the latter is owned by Universal and Sony Music.

However, independently owned Listen.com was the first to score the five-major-label bingo, offering it on its Rhapsody subscription service. Last summer Listen.com CEO Sean Ryan told Web Watcher: "Actually, we think we'll be more successful if we're not part of one of the label groups because you don't

run into those competitive issues."

Competitive issues or not, label-owned Pressplay, and more recently MusicNet, have licensed music to their respective major label competitors, giving each of those services music from all five major labels.

But while that was happening, Listen.com has taken a page out of America Online's playbook. Listen.com has partnered with Gateway Inc. to put its subscription music and music downloading software on new Gateway computers.

With a few clicks of the mouse and a credit-card number, owners of those computers can activate a \$9.99-a-month Listen.com subscription to listen to the quarter of a million songs on the service. Selected music tracks are available for downloading and burning to CD for 99 cents a selection.

This broadening of the marketing shoulders strategy follows on Listen.com's cobranding of their service with the likes of DirecTV and Charter Communications Inc.'s cable service. So far they haven't shotgun-mailed CDs with their software on it, but then Web Watcher hasn't been to the mailbox yet today.

*Craig Johnston is a Seattle-based Internet and Multimedia developer who is a frequent contributor to RW. Reach him via e-mail to craig@craigjohnston.com.*

ing e-mail entries instead. For example: "I've a got a free pair of Shania Twain tickets. If you'd like them, send me an e-mail with your name and phone number. I'll take e-mails for the next 10 minutes and then randomly draw a winner. Our address is [iamawinner@wxxx.com](mailto:iamawinner@wxxx.com). Good luck!"

The difficult part here is clearing out the in-box you use for this contesting daily and then making sure you sort the addresses into a "ask if they are interested" list. Even though this group has not specifically opted in for your database, I suggest (others will argue with me on this point) that you e-mail them once, thanking them for playing the contest and asking them if they'd like to be signed up for other free stuff.

2) *Listener calls.* Every time your DJs take a request, have them ask for an e-mail address. If they have time they can even ask the caller if they'd like to sign up for your free stuff. Otherwise you must e-mail them to find out if they'd like to opt in.

3) *Remotes.* Wherever you do an appearance or remote, make sure folks at the event give you their e-mail address.

You'll collect more addresses if you're offering people a chance to win something. Include a check-box on the form where they can opt in. Be most cautious with e-mails collected using this method. If the people are obviously in your target, you're fine. But if you're in a place like a shopping mall, you'll be getting entries from some folks who are likely not really interested in your radio station.

4) *Your Web site.* It should have numerous points where users are encouraged to give you their addresses. These points can include Web contesting; an "event reminder" section, where listeners may be reminded that you're appearing in their area; and a section that effectively tells users about the benefits of opting-in to your list.

What quantifies success in database size? Everyone's got a different answer to this one. I suggest that if you don't have at least 10 percent of your cume, you're not at a point to effect very much.

Because I've discussed e-mail content

in past articles, I won't go into depth here. I only want to remind you that e-mails you send to listeners must have substance.

Marketing directors usually are great about sending out marketing messages, but need assistance when it comes to including info that's about music on the station, the lifestyle of the listener or something that's funny. If your e-mails are only about your station, over time you will boost your unsubscribe rate.

Speaking of which: make sure to monitor your unsubscribe rate. Check your list size before and after sending out a mass e-mail. Trends will show you what your listeners like and what they don't. Do not generalize these results. They will

vary by format and demo.

What does e-mail database marketing cost? Sadly, it is not free as many general managers suppose. You need the right software, hardware and enough bandwidth. You don't want to send listener e-mail directly out of the same system your staff uses for communication. Most office systems are not set up to handle tens or even hundreds of thousands of e-mails at once. Talk to your IT department before proceeding.

In the beginning, start slow, learn from your mistakes and never rely on automatic spell-checking!

*Mark Lapidus is president of Lapidus Media. Reach him via e-mail to [marklapidus@yahoo.com](mailto:marklapidus@yahoo.com).*

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## Mac-Based Trends in Production

by Ed LaComb

When I first sat down to begin my research on this article, I did a quick Internet search on "Digital Audio Workstations/Software/Macintosh."

I have been a Pro Tools user almost since its inception in the early 1990s, and from time to time I have heard of other systems that come on the scene. Some had staying power; others did not last any longer than the cup of coffee that I am enjoying right now.

### Leading the pack

With that in mind, I figured it might be a good idea to see what was really out there and available today. As a Macintosh user (and fanatic), I hear all the jibes everyday from PC users who claim to have the lead in the software marketplace because "you can get anything you want for the PC, but not the Macintosh."

I am here to tell you, however, when it comes to DAW software/hardware, the Mac leads the pack.

Don't get me wrong; the PC has made some very significant inroads into the DAW world. Most radio stations that acquire a first-time, entry-level DAW usually find a software package designed for the PC because that is the kind of machine already in-house. When the time comes to stepping up to the intermediate or professional level, however, one sees the Mac-based systems take the lead.

The good news is there are literally dozens of DAW software and software/hardware systems on the market

See TRENDS, page 34 ▶

### PRODUCT EVALUATION

## DSP4000B+: Real Time, Real Good

by Alan R. Peterson

I have said it before, I will say it again: When you have a Harmonizer in your production rack, you are one rockin' daddy.

All the musical instrument (MI)-type reverbs and budget-line multi-effect boxes in use today pale in comparison to an Eventide processor. It makes a bold visual statement when bolted in with all the other rack-mount components and still sounds as sweet as anything anywhere.



And it does what software-based audio products do not: it offers a real-time experience that enhances performance.

The DSP4000B+ Ultra-Harmonizer has a quick and easy user interface, lots of programming options and a slew of specialized preset effects, many designed by Boston production god Jay Rose and Andrew Schlesinger, whose nickname "Drew" turns up in numerous presets.

The DSP4000B+ actually is based on the 24-bit/96-kHz DSP7000 platform, hence the "+" in the name. As for the "B," think Broadcast.

Either way, the DSP4000B+ should be on the top of your list when rethinking a production facility or planning a new one.

### Software alternative

All-inclusive computer-based DAW software such as Cool Edit or Pro Tools are fast becoming favorites in production facilities because they often negate the need to purchase an outboard effects device, let alone one that can cost 10 times or more that of the software.

This is a valid point, but equally valid is the need for the real-time experience when recording voice tracks.

Say you need to do a *Suunnn-daaaay* drag race pitch shift on your voice. A device such as the DSP4000B+ Ultra-Harmonizer performs the process live on the fly, allowing you to tweak the settings or the vocal performance itself in real time.

For the voice talent, this often results in a better performance, preferable to capturing a normally voiced track then going in

years or so, running the DSP4000B+ will be a familiar drill.

A large display, a handful of soft keys and that classic Eventide knob take care of almost all navigation through the unit's features. A numeric keypad is present to enter parameter values directly, but experience has shown me that most users still like to give the dial a ride.

A busy back panel is filled with all the I/O options you could want, including 1/4-inch and XLR balanced analog, AES/EBU and S/PDIF digital, a cluster of MIDI jacks, and a pair of wordclock jacks to get your whole house to dance to the same beat.

All internal processing is 24 bit and the system clock sets the sample rate at 44.1, 48, 88.2 or 96 kHz (note the absence of 32 kHz, which is available only with an external clock). An external clock signal can be taken from the digital inputs and is variable from about 30 kHz up to 99 kHz.

Higher sample rates put more demands on processing resources in the DSP4000B+, so several of the more-elaborate presets cannot run at these high rates. The presets that can run at 96 kHz are indicated by small lightning bolts next to their names in the display.

As the requirements of radio production are not as critical as, say, DVD authoring, we can run the DSP4000B+ at 44.1 kHz, take advantage of all presets and still get a great sound.

The fastest way to work your way around the DSP4000B+ is to begin with one of the dozens of outstanding presets. One of the most fun presets is "16mm Projector," which faithfully recreates the old DuKane clunkers from our middle school days. Dial it up, press the Select button or the Load softkey and let the nightmare begin.

The beauty of this preset is the total control you have over parameters you

See EVENTIDE, page 39 ▶

to tweak and render it with a plug-in.

Need proof? If you were voicing a spot that places you in a cavern, a concert hall or in an airline cockpit, wouldn't you want to hear the process happening in your headphones as you are doing it? Singers do it all the time in the studio: a touch of reverb in the cans brings out an enhanced performance.

For me, this remains the strength of the Ultra-Harmonizer — that I turn in a good read or character performance because I can "feel" the part I am doing without compromise. And there is no fan noise, such as you would have with an in-studio computer.

Another major plus: A device such as the DSP4000B+ combines many effects in one real-time pass. In DAW software, you must often add effects one at a time, or do a batch process. Even then, you are not guaranteed a satisfactory result compared to hearing the performance in the headphones as it is being laid down.

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World Radio History

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# Trends

► Continued from page 32

for the Macintosh that pack quite a bit of production power into affordable price tags.

I am going to focus on systems from five manufacturers that all feature Mac-based DAWs — some even feature cross-platform compatibility.

First, we'll look at what I consider to be the market-leader in DAWs: the Digidesign Pro Tools systems. Second, a system that keeps getting my attention, the MOTU (Mark of the Unicorn) Digital Performer 3.0. I will also highlight the Sonic Studio HD, the BIAS Deck 3.5 and the PARIS Pro from Emu/Ensoniq.

Some may call me somewhat biased, but when a system is used more and more in feature-film postproduction, scores more and more albums from the hottest acts of today and is featured in some of the country's best radio stations and production facilities, you pretty much have to give them the title of market leader.

That title belongs to the Digidesign Pro Tools systems. Digi now has a number of configurations of its award-winning Pro Tools platform for both the Mac and PC.

The latest Pro Tools software applications feature a cool feature called DigiStudio, which allows the user to collaborate with other people on the same session in real-time, from virtually anywhere in the world.

## There are literally dozens of DAW software and software/hardware systems for the Macintosh that pack quite a bit of production power into affordable price tags.

The new flagship product of the Digidesign line is Pro Tools HD. With a sample rate of 192 kHz, this system clearly is built for the serious audio producer. As with all DAWs, each new generation of Pro Tools hardware packs increasing processing power into less space.

The M-Box is Digidesign's new attempt to garner entry-level users with a Mac/PC compatible system that costs less than \$500.

M-Box features Pro Tools LE, a virtual look-alike and act-alike application that is compatible with TDM-based Pro Tools systems and software. It connects to your Mac or PC via the USB bus and requires no hardware cards and no external power to do so. A collaboration between Digi and Focusrite, the M-Box caught my attention early on.

To answer the "all-in-one" needs of some producers, Digidesign has created the Digi 002 — a nice, intuitive, all-in-one package with a control surface, Pro Tools software and more. An advantage of the Digi 002 is that you can record in the field, then bring the unit back into the studio, connect it with your Mac via a single FireWire cable and have full-functioning Pro Tools control of your project through your Mac.

Digidesign still sells a fair number of its Digi 001 systems that use one PCI card to connect the 001 interface to your computer. Digi 001 (as well as the M-Box) also uses the host-based Pro Tools

LE software, which now has an impressive number of Real Time Audio Suite (RTAS) plug-ins available to get creative with.

Digi 001 was the company's answer for project-studio musicians who wanted a single interface to connect all their gear to without having a mixer get in the way.



Stylized Screenshot of BIAS Peak software

Overall, the lineup from Digidesign offers something for everyone, whether you are a musician in a project studio, a postproduction facility, a radio station or just a beginner looking to learn the Pro Tools GUI.

Best of all, a session created on the M-Box is compatible with the larger HD system. This permits one to begin the early stages of a project with the smaller, more affordable systems and then complete the master in a bigger studio with the larger HD system. I would give the Digidesign lineup 4.5 out of a possible 5 stars.

### MOTU and Apple believe

So what keeps me from giving Digi a 5 out of 5, if I am such a believer in the system? Easy ... the MOTU Digital Performer 3.0 (DP3). One quick visit to

the Apple Web site will show you that MOTU and Apple clearly believe in each other's products. And with good reason.

MOTU has created a software application in DP3 that is the first to take full advantage of the Dual-processor Macs on the market today. Digital Performer even-ly distributes audio processing across

both CPUs, taking advantage of the dual architecture of the Power Mac G4, and effectively doubles the power of the system where it is needed most: real-time processing bandwidth.

How powerful is this setup? Apple's bench tests show that Digital Performer can run 128 tracks of audio, each with eight bands of parametric EQ and dynamics processing on every track! That's impressive.

What is more impressive to me about the MOTU product line, however, is that its lineup of audio interfaces, such as the 828 and the new 896, feature FireWire connectivity. All that is needed is Digital Performer software and a MOTU FireWire interface and you are ready to kick some major digital audio production butt.

This is what keeps me from giving Digidesign the 5 out of 5 stars as mentioned above. If Digi would create a FireWire audio interface with the I/O capability of the MOTU line, they would have an order from me for four systems immediately.

The one potential drawback in using DP3 comes if you need to bring your session to a professional mastering studio. Pro Tools is by far the more accepted platform in the pro environment.

Alas, my love of the Pro Tools software

keeps me from converting to Digital Performer, but MOTU comes in a very close second in my book with 4 out of 5 stars.

If you are looking to pick up a Mac-based DAW application that will not break the bank, there are plenty of them out there. One such app is the BIAS Deck 3.5 from BIAS, Inc.

Deck 3.5 is a significant new version of BIAS' award-winning multitrack digital audio workstation software for the Mac, which brings full support for Mac OS X, plus some key professional features such as OMF file importing and 5.1 channel surround mixing.

Deck 3.5 is also a "Carbonized" application, which means that it will also run under OS 8.6 or 9.x. It also imports sessions from OMF from video applications such as Final Cut Pro, Avid and others.

On the audio side of OMF, you can import sessions from Pro Tools, Digital Performer and Nuendo. At a suggested retail price of \$399, Deck 3.5 is definitely worth a look.

The PARIS-Pro, a 24-bit digital audio workstation from Emu/Ensoniq, provides all of the hardware and software you need to record, edit and mix digital audio professionally. Together with a 16-channel control surface, 128-track playback, 64 bands of parametric EQ and a boat-load of I/O options, PARIS Pro gives you what the company calls "the most complete integrated digital audio solution on the market today ..."

Four components go into creating the PARIS-Pro system: the software; a PCI card; "The Big Box" interface and the Control Surface.

The PARIS-Pro system does not require expensive SCSI hardware. One can achieve high track counts from off-the-shelf IDE drives. The system is also cross-platform for use on both Mac and PC. And, like the TDM-based Digidesign systems, the proprietary DSP of PARIS Pro gives you DSP power without taxing your host CPU.

I especially like the PARIS Pro 16 channel control surface with full 100 mm throw faders and lots of extras to control the software environment from your fingertips. For all of you all-in-one types out there, this is a system that you should look into.

### Apple only

The Sonic Studio HD system is a combination of hardware processing boards, external I/O unit and application software that runs exclusively on the Apple Macintosh platform.

Sonic Studio HD is built on the HDSP

See TRENDS, page 35 ►

## Peaceful Coexistence Across Platforms

Mac-based production tools are enormously powerful and versatile. Yet Windows-based systems generally are preferred in the radio environment. PCs are plentiful and inexpensive, hardware such as audio interfaces can be as elaborate or as simple as is needed, and nearly all automation systems in use now are Windows-based.

Still, the platforms can coexist just fine. XM Satellite Radio, for example, enjoys a harmonious relationship between Pro Tools production workstations and Dalet on-air systems.

All-in-one Windows software solutions such as Cool Edit Pro, Vegas Pro or WaveLab make use of standards already written into the Windows

DirectX specification, while throwing tricks of their own into the mix. In fact, thanks in part to DirectX and some clever programmers, it is possible to find inexpensive or free multitrack editors on the World Wide Web, with as much functionality as any production director might need.

WaveLab combines an MP3 codec and CD burning/labeling features with a powerful multitrack editor. Cool Edit is now up to 128 tracks and recently has become the editor of choice chain-wide for the Clear Channel stations.

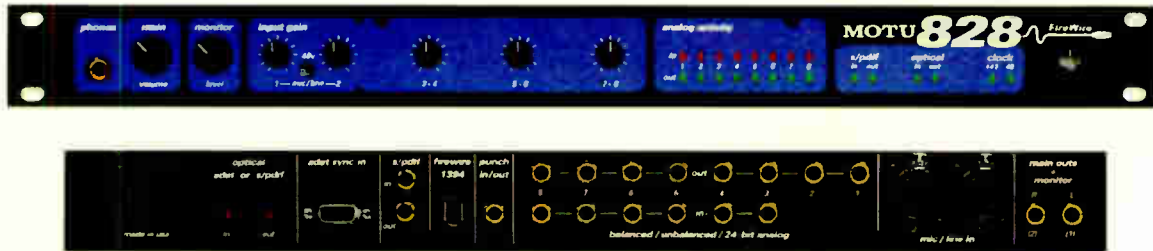
The popularity of Windows is not lost on Digidesign or Ensoniq. ProTools LE software and some Digidesign hardware surfaces are designed to work on Pentium

and AMD-based systems. Digidesign even offers a free version of ProTools for the PC. The Ensoniq PARIS was designed from the outset to work on the Mac or Windows platform.

Remember too that the production world is not limited to Mac or Windows. BeOS has made an inroad as the operating system for the TASCAM SX-1 production environment, and Linux programmers are hard at work hammering out multitrack programs that run under that Open Source structure.

Both platforms have their advantages and both turn in exemplary performance. What works best for you is what works best, period.

— Alan R. Peterson



MOTU 828 FireWire Audio Interface

Processor that incorporates high-power hardware DSP and RISC technology. You can add a second HDSP Processor card that allows for even more real-time DSP power. Producers can assign, queue and batch process in the background while continuing to edit in the foreground.

The Sonic Studio HD is sold in individual pieces or in packages such as the HD 1000 package, which gives you one HDSP MainBoard, one HD3 Digital Interface and the Sonic Studio HD application software. The HD 888 package consists of an HDSP MainBoard, a

DVD888 48 kHz, 8-channel analog I/O and the Sonic Studio HD application software.

Sonic Studio HD packs quite a bit of horsepower into an affordable package.

So, Mac-fans, you can still revel in the knowledge that, at least when it comes to DAWs, the Mac still occupies an important place in the production studio of today and the studio of tomorrow.

This small sampling of the digital audio workstation environments that are out there for the Mac is proof-positive that our beloved Mac is as strong as ever.

Ed LaComb is the owner/executive producer of Ed LaComb Audio Imaging. Contact LaComb at edlacomb@edlacomb.com.



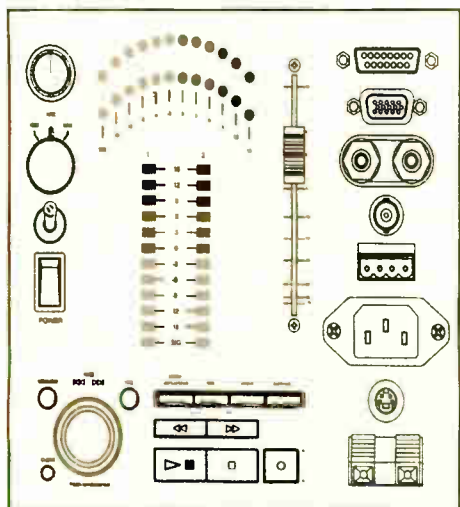
Digidesign Pro Tools Studio A

PRODUCT GUIDE

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Stardraw products are Windows-based Computer Aided Design (CAD) systems that assist in drawing designs or layouts, such as architectural or mechanical layouts, schematics, lighting plots and audio systems.

As part of its regular update process, which is available to subscribers, Stardraw has released approximately 500 symbols, including buttons, switches, knobs, connectors, logos and meters. These symbols were among the most requested component element symbols in the Block Schematic, Rack Layout and Pictorial Schematic environments of Stardraw Audio, Stardraw AV and Stardraw Radio.



The new symbols meet the current criteria used in the production of Stardraw libraries and conform to layer and drawing specs.

The Stardraw library has 35,000 manufacturer symbols but users also generate custom symbols. Access to the component symbols the company uses lets them customize their spec drawings. According to Stardraw, the new symbols are meant to complement its Symbols-by-Request service, through which it prioritizes the creation of requested symbols.

For more information from Stardraw, contact its U.S. offices in New York at (212) 672-1855 or visit www.stardraw.com.

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# Warm, Fuzzy Station Promotions

by Alan R. Peterson

It has been a few months since the big Opie and Anthony shakeout in New York City. You will recall Infinity Broadcasting canceled the duo's syndicated show following a well-publicized sex incident at St. Patrick's Cathedral, as part of a publicity campaign for Samuel Adams beer.

While the Adams people scrambled for spin control, Infinity did what it had to.

I just have to wonder, these many months later, what kind of ripples the event has had on radio elsewhere — if some programmers have suddenly overreacted to the situation and jumped all

the way to the other side of the format spectrum, just to play it safe.

My own broadcast history includes two situations where I came in to smooth the wrinkles left behind by madmen air talent that initially showed a huge ratings spike, then tapered off as they ticked off too many people. I never went the "Mr. Rogers" route, but I did dial back the lunacy a little while keeping a creative edge. Those were jobs I enjoyed.

At the same time, I recall one station that exclusively targeted the 30-year-old single professional female, and I do mean exclusively. The emphasis on "chick flicks" and show prep culled from make-up magazines was a bit much for me to

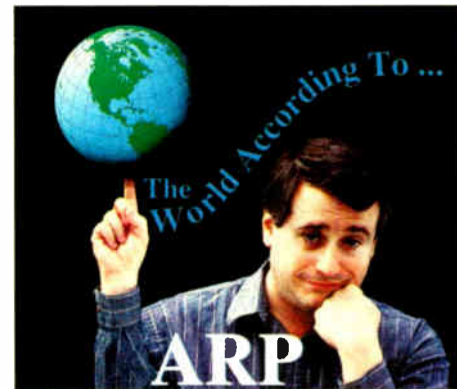
handle. I headed across the hall to the big-band AM side instead.

## Big changes coming

So I wonder now what happens at a station, or even a group, that suddenly shifts from head-banging, eye-popping, in-your-face radio to "comfy old sweatshirt," in the panicky wake of the Opie and Anthony debacle and the potential desertion of audience and advertiser alike.

Think of all those promotional stunts, remotes and sales ideas that now have to be scrapped to make way for a kinder, gentler, more feminine format.

Maybe not. With a little creativity and



the kind of overreaction that radio management is famous for, you can go from any testosterone-soaked male-oriented format to a squishy Soft and Easy one and still pull off those great ideas, just with a new angle.

First, you have to air those TV spots with the toothy lady in the business suit saying, "Good news! ManTalk 108 is now Fluffy 107.7! Your favorite soft hits without the nudity and flattened beer cans!" After that, proceed with the plan.

RW promo columnist Mark Lapidus would never go for these, and neither should you. I guarantee each one of these suggestions will chase away every last listener you ever had in either format.

*What Would You Want to See Us Do for \$10,000?* Once upon a time, we challenged listeners to act like idiots and do the wildest, wackiest stunts for cash prizes or concert tickets. Well, after some 15 or 20 years of stations doing this, it had lost a little sparkle.

It was simpler back then. A silly costume or a funny act won the prize. Now you get some poor shmo cutting work for the day, coming to the station in a diaper and rolling around in some foul concoction in a wading pool. After that humiliation, he is outclassed by a young woman who shaves the side of her head, revealing a tattoo of the station logo.

Now, in our new softer and fuzzier world, listeners get to suggest what they want the morning team to do. Finally, revenge for all those diaper-wearing runners-up!

I can see the giggly co-host buried to her neck in a red ant hill, the wacky "stunt boy" intern trimming hedges with cuticle scissors at the VA hospital, or the formerly abusive host sitting above a dunk tank, his pants filled with Alka-Seltzer and Polident tablets. One dunk in the water and *whoosh!* We have a winner!

*The Hot Model Search.* Here is one promotion that a newly ultrasoft station can still stage hours after the format change. Only now, you will have to lose the Jell-O wrestling pool and the thong bathing suits as the station selects its attractive new street promotions crew.

The competition can now be open to women older than the typical 18-23 range, in occupations like motor vehicle clerk, card store owner or doughnut shop waitress. No bleaching, no cosmetic surgery, no use of "like" or "urr" when they speak. And to keep from offending listeners, all they will hand out at appearances and remotes are station bookmarks and those little fuzzy pompoms with puppet eyes and headphones so popular in the '80s.

*Festival concerts.* Making a mad dash to revamp that summertime concert line-

See ARP, page 37 ▶

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▶ Continued from page 36

up, program directors will be ditching acts that feature female dancers in dental-floss outfits in favor of stronger female role models and male dancers in subservient roles.

Groups that perform songs with misogynistic overtones will be shelved in favor of frizzy haired folkies that harken back to the late '60s. Gone are the groups that routinely destroy their equipment on stage, replaced by Crosby, Stills and Nashy-type performers, teamed up with an old woodworker to the side of the stage who instead spends the day *building* a guitar to give away at the end of the show.

And for good measure, the all-star monster guitar jam at the conclusion is scrapped to make way for an audience participation Appalachian dulcimer sing-along.

*In-studio guests.* Better call the agent to revamp that live appearance with Ted Nugent. Your new target audience will not be enamored by the fact he can take out two deer at once, out of season, with a crossbow.

Better they know other things about him, like what his idea of a romantic weekend would be with his significant other, what he considers his favorite antique shops in New England, and that new album project of his where he covers the hits of Julio Iglesias and Andy Williams.

Say goodbye to the in-studio strippers, exotic performers and Hooters girls.

Time to bring in the interior coordinators, Color Me Beautiful consultants and the pet psychologists. And if you really want to get daring, each Friday you can welcome in bartenders from different local nightclubs to explain how they make the perfect Grasshopper or Long Island Iced Tea.

*Swinging Singles Dance Club Encounters.* You can still do station-sponsored events where singles in your area meet other singles, only now they are square dances. For good measure, your wacky evening jock can bring his accordion.

*Football Nights.* Managers, have you ever looked at the girlfriends of the guys that come out to these events? While he is plunging into the Buffalo Wings with both fists, a big smelly cigar in his yap and cursing at the referees on the TV monitors, her eyes are wandering around the room seeking the quickest method to escape the joint or burn it down. Maybe both.

Time to shift gears and do a sports night for the ladies. Book a night at one of those trendy places with the brass rails and potted ferns, then bring in figure skating on the direct satellite TV hookup. And yes, their boyfriends are obligated to come along.

While the women are whooping and hollering for Michelle Kwan to pull off that triple axel, the guys can sit there, look uncomfortably around the room and plot their own escape.

## PRODUCT GUIDE

### Otari Has Compact Broadcast Mixer

The Otari DB-10 digital on-air broadcast console is based around a control surface that features 10 configurable channel input faders. With its compact format, the console is ideal for small studios and broadcast vehicles.



The DB-10 offers sampling rates from 32-96 kHz. Microphone inputs on channels 1 through 4 are always available and a variety of configurations can be formed to result in 16 active signal paths. Each channel includes a three-band selectable EQ, compressor/limiter, two auxiliaries, two telephone and two program busses and two digital N-1 busses. Up to four DB-10 consoles can be cascaded to pro-

vide up to 64 channels. Talkback and program busses are shared across cascaded consoles.

A recall system allows 99 password-protected snapshots to be stored, plus nine project, or console, settings and 20 compressor/limiter settings. A computer can be connected via RS-232 to permit external storage and retrieval of settings, and allowing consoles in different studios access to common settings.

An Emergency button is provided for

fail-safe operation. If the digital system malfunctions, pressing the panic button connects one microphone and one stereo line to the program bus to feed signal to the main output. With cascaded consoles, this function operates across the combined consoles.

For more information from Otari contact the company in Tennessee at (615) 255-6080 or visit [www.otari.com](http://www.otari.com).

*Vehicle goodies.* I think we all remember those little yellow plastic hands with suction cups that got stuck on car windows and waved at you, often with "Have a Nice Day!" printed on them. It did not take long before some promo-savvy station employee noticed you could snap off almost all the fingers, leaving the remaining one in a crude gesture and saying "(Bleep the competition), listen to B-93!"

Not at our new softer, gentler station. All of the fingers are back, now with manicures, and a legend that reads, "Only the beautiful people listen to Fluffy 107.7."

Although I believe the first person to revive those "Baby on board" warning signs as a radio promotion will be taking some serious lumps.

There are likely many more ideas that

will reveal themselves in due time. These will do for a start.

Of course, the best thing to do is not overreact at all. If you are doing okay, maybe you lucked into some kind of winning formula of music, talent and promotions. In which case, more power to you.

However, if you dove off the deep end in one instance, then think you might be able to redeem yourself by an equally deep dive off the other end, you are probably in for a double whammy that might haunt you for some time to come.

Use your head and don't panic. Make changes that you must to keep your audience and advertisers happy, but avoid the desperate measures.

And we'll see how things shake out in 2003. 🌐

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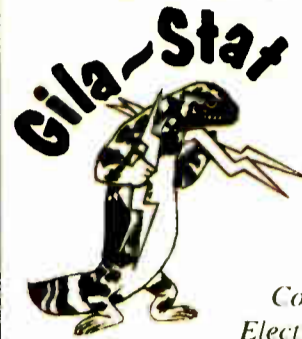
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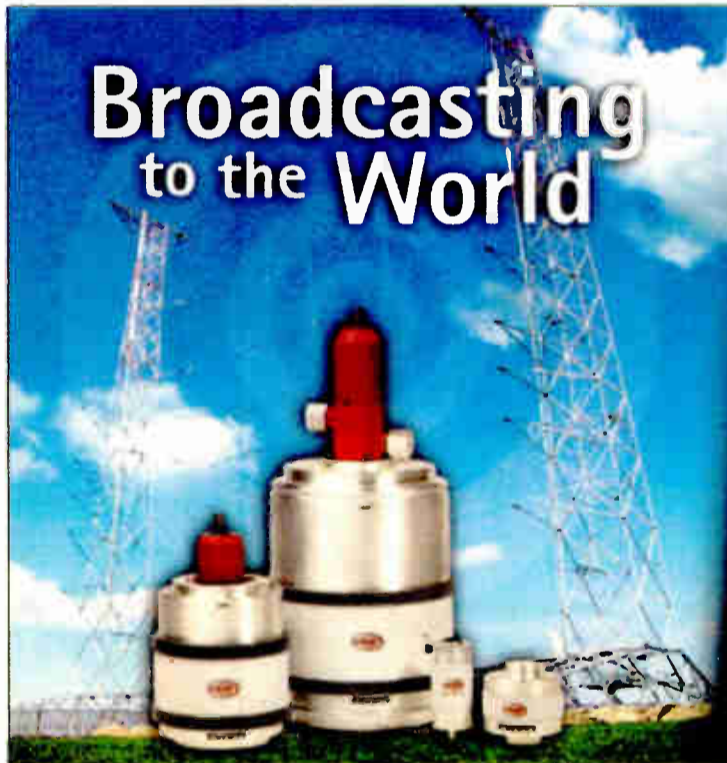
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**8x1 DAS**  
Routes any one of eight AFS/EBU digital inputs to three common outputs.

**10x1**  
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**6x1**  
Passive switcher/router with six stereo inputs and one stereo output, or vice-versa.

**3x2**  
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**SS 2.1/BNC**  
Passive switcher/router with two composite audio, video, or AFS/EBU inputs to two composite video, or AFS/EBU outputs, or vice-versa.

**SS 2.1/TERM**  
Passive switcher/router with two stereo inputs and one stereo output or vice-versa.



SS 12.4



SS 8.2



16x2



8x2



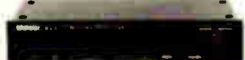
16x1



8x1 DAS



10x1



6x1



3x2



SM-6



SS 3.1



SS 2.1/BNC



SS 2.1/TERM

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## PRODUCT EVALUATION

# AudioScience's Uniform Solution

by Carl Lindemann

Digital audio quickly has evolved into a bewildering array of standards, formats, bit rates and connectors. Typically, tying together satellite feeds, in-house production, and on-air automation creates a patchwork of ad-hoc and often undocumented fixes.

The AudioScience ASI6114 audio adapter card is designed to bring this fragmentation together into a unified solution. Think of it as acting as a universal translator to work with analog or digital signals across a range of formats, including MPEG, PCM and MP3 and the various flavors these come in. For shops that do the dance of mixing and matching these formats, the ability of the ASI6114 to accomplish this makes for elegant simplicity.

## Part of a series

The ASI6114 is part of a series of cards that offer a number of combinations of I/O and format compatibility combinations. For those familiar with the line, this replaces the ASI4113.

It has one mono/stereo record channel matched with four stereo/eight mono out-



puts. The DSPs handle 16- and 32-bit PCM, MPEG Layer 2, MP3 and DolbyAC2 (playback only) audio formats. Analog sample rates range from 8 to 48 kHz while digital signals operate at 32, 44.1 and 48 kHz.

The kit contains a PCI card, two cable snakes (one each for analog and digital connectors) and connector cables to attach the cable snakes directly to the card. The PCI card is a 10-inch form-factor taking up about two-thirds the length of the case.

It is powered by the Texas Instruments TMS320C6711 VLIW DSP chip operat-

ing at 150 MHz and has two external connectors.

The analog cables go through a SCSI II-type Mini50 connector while the digital side attaches to a Mini26. Intermediary cables join these to Centronics 50 adapters that then connect to the cable snakes. Both analog and digital cables terminate in XLRs.

The digital cables are software-selectable between AES/EBU and S/PDIF and include a word clock synch I/O. Individual cards are designed to work in tandem with up to eight other cards so that this solution scales to fit all but the most complex broadcast and entertainment applications. The cards have both WAV and Linux drivers. A Windows WDM driver is in beta.

## Easy install

Installing the demo card was easy although the instruction manual for this package was minimal. The step-by-step details for installation were thorough but documentation on the mixing application was nonexistent.

After tinkering with it, much of what is involved is self-explanatory. Still,

ning Windows 95 and a program called Vsigfile (available as a free download at [www.eventide.com/vsigfile/index.html](http://www.eventide.com/vsigfile/index.html)). It talks to the DSP4000B+ via the computer's MIDI port or the RS232 serial port. If you plan to create deep, complex processing programs, go the Vsigfile route as you will have a tough time programming internally using the display on the DSP4000B+.

Complex processing chains can be creating in this manner, as well as all-original presets that are your own.

A second section of the manual lists the Modules and explains their features. Some have nothing to do with audio; some are math functions that tell the modules what kind of process to follow, such as a logarithmic curve to a volume fade. Some functions address specific groups, such as the filters, the reverbs or the pitch shifters.

Musicians and sound designers will make extensive use of the MIDI features found in the DSP4000B+, especially with external controllers. In the radio studio, these features are not emphasized, hence our token mention here. Still, it is possible to assign pitch bend and delay changes to a MIDI music keyboard and alter these parameters on the fly, should your studio and equipment complement allow it.

## Conclusion

How does one justify the purchase of an DSP4000B+ Ultra-Harmonizer to the big boss at \$3,995 retail?

If all you intend to do is dial up the usual presets, you will not have an easy time selling the idea. Any generic MI-type multi-effects box or budget DAW software will work for you.

But if you have the need to explore, to delve deeply into your audio projects and make them sound like nothing else anyone is doing, this is the processor for you.

The depth of programming and "what-if" scenarios offered to you by the DSP4000B+ is unprecedented in most effect processors. What would a Mixolydian or Phrygian scale sound like in a pitch shift program? How different

Suck on the group's audio console. The parameter titles in the DSP4000B+ are right out of that book.

## Joke's over, son

The presets are fun, but the DSP4000B+ is also a pretty serious audio tool for the heavy work.

One entire preset bank is devoted to dynamics control, with emphasis on compressors. One preset, "4-Band Compress," does an outstanding job on punching up voice tracks without sacrificing the nice high end. The "SemiClassic Squeeze" may remind you a little of the old Urei and dbx jobbies. There is also a bank of capable digital EQs and filters.

A few favorites from the H3000 migrated over, if you missed buying one of those outstanding processors a few years ago. Delays, automatic pitch quantization (once known as *auto-tune* before that term became a registered name) and some "Gregorian chant" pitch calculators that create an instant monastery in your rack.

Do not ignore the collection of digital reverbs in the DSP4000B+, everything from huge infinite spaces to tiled showers, with a cheap spring unit thrown in for that retro feel.

Most of the presets in the DSP4000B+ have been tweaked and peaked for broadcast use, some with serious intent. One preset, "Real Call-in," is meant to be used with a phone patch to clean up phone interviews, even out dynamics, and add ducking so the host can override the guest.

## Program, get your program ...

The big power behind the DSP4000B+ is programmability — being able to take building blocks (called Modules) and tack them together to achieve a desired audio effect.

A 97-page tutorial is included with the DSP4000B+ that talks you through the process of choosing modules, gluing several together to create super-modules, creating and editing programs through the display of the unit or via a Windows PC, and loading them into the processor itself.

The PC can be as primitive as a 386 run-

# Eventide

► continued from page 32

would not even *think* of altering in the first place. For example, few of us ever really noticed the degree of hiss on those old 16mm soundtracks, let alone the amount of exciter lamp hum. By clicking the Parameter button, this preset lets you add as much or as little of either that you can handle.

Need more film gate chatter? You are free to add as much as you want.

There are even presets within the presets. You may choose from theater projectors or A/V club specials, right down to humming, noisy "surplus" type units.

These presets have a magnificent simplicity to them. In trying to recreate a shortwave radio effect in a DAW, you would have to deal with some slight ring modulation (to simulate heterodyning), and perhaps a little panning or amplitude modulation (to simulate atmospheric drift). You would find yourself entering frequencies or decibels to pin down the effect you like.

In the DSP4000B+, you have soft controls right up front that say little else than Drift and Manual, which do the same thing without your worrying about values or ratios.

And then there is that one soft key for the projector that says "Turn Off" — press it and your crummy projector, noise and all, grinds to a slow stop.

This simplicity is spread out over many presets. Sliding a control titled "Awful" adds increasing distortion and filtering. One marked "Key Mangle" alters a pitch-shifting preset in steps from "Yikes!" to "Tin Ear." And a parameter called "Grease" adjusts how long a virtual turntable coasts to a stop after its "plug" has been pulled.

I have wondered if Eventide programmers are fans of the Gary Larson comic "The Far Side," especially the one where a rock band's sound techie ruins a performance by dialing in too much

**Product Capsule:**  
AudioScience ASI6114  
Audio Adapter Card

**Thumbs Up**

- ✓ Powerful DSPs to handle processor-intensive operation
- ✓ Scalable to handle very large setups
- ✓ Easy to install and configure

**Thumbs Down**

- ✓ Nearly nonexistent documentation

Price: \$2,995

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

some of us like to have it written down to make sure that we are traveling the right road.

I did not find myself wandering off into any dead ends. Installing it into a Windows 2000 workstation was simple. Plug and play identified new hardware and I directed it manually to find the appropriate drivers downloaded from the AudioScience site.

The mixer application, too, is

See AUDIOSCIENCE, page 41 ►

**Product Capsule:**  
Eventide DSP4000B+ Ultra-Harmonizer Audio Processor

**Thumbs Up**

- ✓ Open-ended programmability
- ✓ Multiple sample rates
- ✓ Outstanding audio quality
- ✓ Broadcast-ready effects right out of the box
- ✓ Simple interface

**Thumbs Down**

- ✓ Some presets are disabled at high sample rates
- ✓ Vocoder could be better

Price: \$3,995

For information, contact Eventide in New Jersey at (201) 641-1200; e-mail: [audio@eventide.com](mailto:audio@eventide.com); or visit [www.eventide.com](http://www.eventide.com).

would pitch shifting sound from frequency shifting? How much feedback should the comb filter have, and at what polarity?

These are questions that can only be explored by tapping into the programmability of the device, and why the unit costs what it does while a basic multi-effect box costs \$99.

The only weakness that I encountered, if it may be called such, is the ten-band Vocoder. I hope Eventide engineers can sort out a way to make the resolution even greater. The old Bode-Moog analog units pretty much remain the domestic standard in vocoding, and modeling that sound into Harmonizer firmware would be the answer to my own concerns.

As for your own concerns, well, someday a client is going to ask you for a spot where the announcer is floating around in outer space, except outer space is filled with pudding. How on earth (literally) are you going to pull that one off?

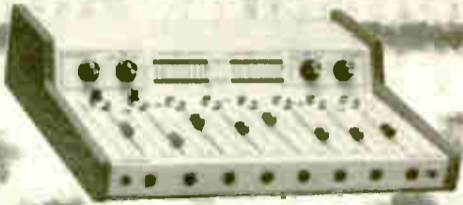
My recommendation: the Eventide DSP4000B+ Ultra-Harmonizer. You could probably even create a slide controller for how *much* pudding you want out there. 🍮

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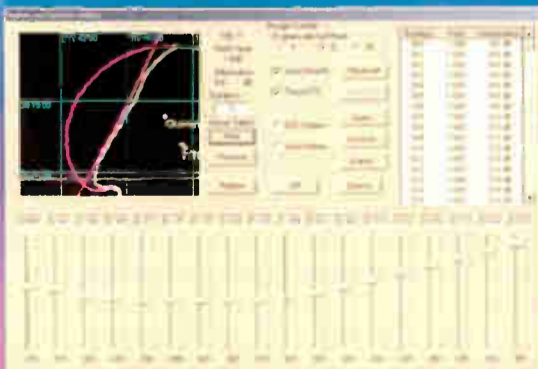
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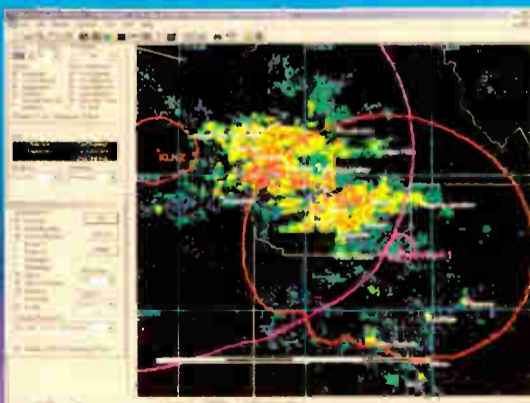
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PRODUCT GUIDE

## Echo Farm Brings Vintage Effects to Pro Tools

Supporting sample rates of up to 96 kHz on Windows XP and Mac operating systems, the Line 6 Echo Farm v2.0.1 is Pro Tools-compatible.

Line 6 uses modeling software technology to provide models based in 12 vintage echo effects — as the company says, without having to deal with ornery, unpredictable vintage hardware. The Echo Farm

plug-in provides classic tape echo, old-school analog delay and filter-swept echo-phonic modulations with the advantages of extended delay time, bpm/note value delay time, setting, tap tempo and automation. In addition to guitar processing, Echo Farm handles vocals, synths and drum tracks.

EchoFarm v2.0.1 requires iLock key and supports Pro Tools|24 MIX and Pro Tools|HD.

Pricing: New customers: \$495; registered customers who purchased Echo Farm v1.0 through retail channels will receive the update kit in the mail; users who obtained v1.0 through past MIXpack promotion can visit the Digidesign Web and download using the same Mixpack

iLock as used with Echo Farm v1.0.

For more information go to [www.digidesign.com](http://www.digidesign.com) or [www.line6.com](http://www.line6.com).

## Lynx LStream Cards Offer More I/O

Lynx Studio Technology is shipping two LStream expansion cards that increase the input and output capacity of the LynxTwo and L22 digital audio cards.

The LS-AES and LS-ADAT cards provide multichannel AES/EBU and ADAT connectivity for Windows- or Mac-based audio or video workstations at sample rates up to 192 kHz. The cards

offer an interface to digital recording and broadcast consoles, multichannel A/D and D/A converters and digital tape and hard-disk recorders.

The LS-AES provides four inputs and outputs that support pro AES/EBU and consumer S/PDIF digital I/O formats. Connections are transformer-coupled with sample rate conversion. The card is compatible with Dolby Digital and DTS encoded formats.

The LS-ADAT ADAT interface provides ADAT lightpipe I/O and an ADAT sync in port; it operates at a 48 kHz sample rate with a 16 channel ADAT I/O capacity.

For more information contact the company in California at (949) 515-8265, e-mail [sales@lynxstudio.com](mailto:sales@lynxstudio.com) or visit [www.lynxstudio.com](http://www.lynxstudio.com).

## Nemal Color Cables Provide Easy ID

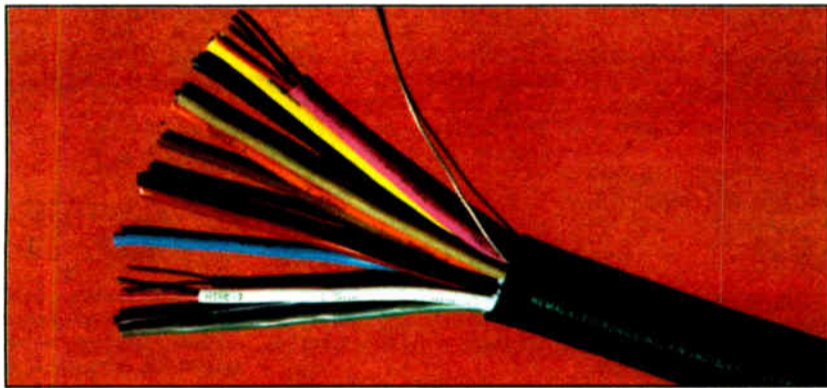
Nemal Electronics International has a series of AES/EBU-compliant digital audio snake cables for use in broadcast applications.

The 110-ohm, UL-CM-approved cables are available in constructions containing two to 24 pairs. For example, the SND2424 cable consists of 24 individually shielded and jacketed pairs with a foil shield and jacket.

Nemal makes it simple to install cables neatly; for systems that require multiple digital audio pairs, individual color-coded jackets provide positive identification at a glance.

Outer jackets are available in black (standard) or other colors by special order. Available on 500-foot rolls or terminated to customer specs. The company also provides connectors and tooling for its cables.

For more information contact Nemal Electronics International in Florida at (305) 899-0900 or visit [www.nemal.com](http://www.nemal.com).



## AudioScience

► continued from page 32

self-explanatory. The same application is shared by all AudioScience cards. The aim of the program is not to serve as an active mixing console. Rather it establishes the layout to match the particular physical environment it is installed in. There is really not that much to it — assigning levels to specific line-outs and the like.

The nitpicking around formats and bit rates is missing as it is automatically handled by the card. This just makes sure that the right signal is going into the right connector with the correct mono/stereo setting and levels adjusted properly. Even with zero documentation, the functionality was clear.

The ASI6114 is designed to ingest audio through the single input and send that out — along with multiple additional streams — through the four stereo and eight mono outputs. The greatest challenge for this is not in taking audio in, but outputting a lot of channels, each requiring significant processing. This can be

enormously DSP-intensive.

Crunching the maximum of eight mono streams of MP3 files into various formats is a drain on resources and can bog the processing down. The best way to handle such heavy-duty needs is to buy an additional card to distribute the task.

In addition to making easy work of the difficult task of matching audio formats, the AudioScience cards are soon to gain additional functionalities through what the company calls TSX — time scaling technology.

Streams can be compressed in real time up to 20 percent. At full-bore, that is about enough to squeeze 29 hours in a broadcast day. Company literature claims that the TSX algorithms do not change the pitch or introduce the usual glitches and distortion artifacts. These added features will come from a driver update, allowing developers to add TSX to their applications.

The AudioScience ASI6114 meets the needs for simplifying today's tangle of audio formats. Designed to work with popular automation systems (Prophet, Scott, BSI, ENCO, etc.), this can simplify the confusion that now defines audio engineering.

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Kathrein-Scala 10 bay log periodic receive/low power xmit antennas. Broadband 88 to 108 MHz. New in boxes, never used. One count H pol CL-FMRXH, \$250; (2) count V pol CL-FMRXV, \$250 ea or \$400/both. John Mulhern, KSCB, 800-373-3891.

Andrew 75-AR-R flanged connectors (2) for use with Andrew HJ-550 7/8" coax cable. New in box, buyer pays shipping, \$100/BO (both). Bob Rivkin, KPLM, 442 S Calle Encilia #8, Palm Springs CA 92262. 760-320-4550.

Shively 6810 CP ten bay FM antenna with radomes, excellent condition on 102.7 MHz. May also be used as two separate 5-bay 50-Ohm antennas. Complete with manual & available now, on the ground ready for inspection, pictures available upon request, BO. Alan Kilgore, WRVM, POB 212, Suring WI 54174. 920-842-2900 or email: [akilgore@wrvm.org](mailto:akilgore@wrvm.org).

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Broadcast Electronics 3203 cart machine with record amp, stereo & three tones, good condition, \$300. Carl Zimmerschied, Bick Broadcasting Corp, POB 1056, Sedalia MO 65201. 660-826-1050.

Broadcast Electronics 5300B playback only, runs, works, fair condition, \$100. Carl Zimmerschied, Bick Broadcasting Corp, POB 1056, Sedalia MO 65201. 660-826-1050.

Broadcast Electronics 5400 3 deck stereo cart R/P with 500 series record amp, good condition, \$350. Carl Zimmerschied, Bick Broadcasting Corp, POB 1056, Sedalia MO 65201. 660-826-1050.

Audicord cart machines, about 15 "E" series PB's at \$100 ea; 12 "DL" series PB's & (2) "A" series PB's at \$100 ea. Most have been refurbished. Also have one "A" series P/R mono, (2) "E" series P/R mono, (2) "DL" series P/R mono & (2) "DL" series stereo P/R at \$160 ea. No connectors are available, will sell "as is", shipping & handling charges apply. Mike Raley, 704-523-5555 or email: [Mraley@bbnradio.org](mailto:Mraley@bbnradio.org).

Two BE R/P cart machines, stereo, "as is" for \$125 ea; (2) mono units "as is" for \$90 ea. Mike Raley, 704-523-5555 or email: [Mraley@bbnradio.org](mailto:Mraley@bbnradio.org).

### Want to Buy

Audicord R/P stereo S26 service manual. Email: [gpmjbcast@aol.com](mailto:gpmjbcast@aol.com) or 508-543-0158.

### CD PLAYERS

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Autogram IC-10, 10 channel, stereo, good condition, \$950. Tom Toenjes, KJTY, 6120 Riley Creek, St Marys KS 66536. 785-640-6047.

Broadcast Tools SM-6 (2) stereo, 6 pair in, 1 pair out with power supplies & books, \$75 each. Carl Zimmerschied, Bick Broadcasting Corp, POB 1056, Sedalia MO 65201. 660-826-1050.

Harris Executive 10 channel, stereo, good condition, \$600. Tom Toenjes, KJTY, 6120 Riley Creek, St Marys KS 66536. 785-640-6047.

Harris Medalist-10 (2), one for parts, one in fair condition, worked when removed from service. Also a Broadcast 5 board with all power supplies & books, BO. Carl Zimmerschied, Bick Broadcasting Corp, POB 1056, Sedalia MO 65201. 660-826-1050.

ATI Vanguard Series sound board, 8 channels, \$300 "as is" +shpg. Mike Raley, 704-523-5555 or email: [Mraley@bbnradio.org](mailto:Mraley@bbnradio.org).

Audioarts A-50 18 channel console, \$3000. Peter Stover, Educational Media Corp, 830 Gunnery Hill Rd, Spotsylvania VA 22553. 540-582-5371.

McCurdy 11 channel, stereo console. Pulled from service in 2001. For donation to non profit organization - you ship. Rick Keefer, KICA, 1000 Sycamore St, Clovis NM 88101. 505-762-6200.

Schafer 5 channel mixer, very nice but goes "as is", ready to ship w/manual, \$100 +shpg. Mike Raley, 704-523-5555 or email: [Mraley@bbnradio.org](mailto:Mraley@bbnradio.org).

Yamaha 03D digital mixing console, \$2000. Peter Stover, Educational Media Corp, 830 Gunnery Hill Rd, Spotsylvania VA 22553. 540-582-5371.

### Want to Buy

Gates Yard console service manual, would buy another Yard too. jpecina@b3hammonds.com.

Broadcast Electronic Spotmaster 906-5301/877 mono series #5301A11312 wanted for parts. Tom, WEDT, 1201 S College St., Winchester TN 37398. 931-967-2201 of fax: 931-967-2201.

### LIMITERS/ AUDIO PROCESSING

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CRL SMP800, SPP800, SG800 stereo FM processors, \$1500. Tom Toenjes, KJTY, 6120 Riley Creek, St Marys KS 66536. 785-640-6047.

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Orban Optimod 8000A in excellent condition, \$750. Rick Keefer, KICA, 1000 Sycamore St, Clovis NM 88101. 505-762-6200.

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Harris vintage remote transmitter control; Harris cart machines, 2 single, 1 record/play; Harris MSP 90; CLR system SPF 300 standard pre-emphasis filter; Harris Mono 5; Harris M1A 1000 watt AM transmitter tuned to 1490. Call 237-9500 to make offer on any or all of the above.

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Inovonics Map II multiband processor, \$650 "as is" +shpg. Mike Raley, 704-523-5555 or email: [Mraley@bbnradio.org](mailto:Mraley@bbnradio.org).

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Three 25 HZTP-XT Zercom dual tone detect & notch filter, \$70 ea "as is" +shpg. Mike Raley, 704-523-5555 or email: [Mraley@bbnradio.org](mailto:Mraley@bbnradio.org).

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Otari MX5050-BII r-r in good condition with manuals, BO. Andrew Skotland, KRKO, 425-304-1381 or [andrew.skotland@krko.com](mailto:andrew.skotland@krko.com).

Pioneer RT-701, 7" tape deck converted to 2 track stereo, well used, works OK, \$100. Carl Zimmerschied, Bick Broadcasting Corp, POB 1056, Sedalia MO 65201. 660-826-1050.

Dynamax CTR100 series R/P with manual, like new & ready to ship, will sell "as is" for \$200. Mike Raley, 704-523-5555 or email: [Mraley@bbnradio.org](mailto:Mraley@bbnradio.org).

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Comrex Nexus ISDN, very good condition, \$1250. Andrew Skotdal, KRKO, 425-304-1381 or [andrew.skotdal@krko.com](mailto:andrew.skotdal@krko.com).

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Ariel 00100100-001/9402-400126 satellite systems. Satellite receiver contains Scientific Atlanta AD-4229 card & McCurdy Radio FS01 card & Demux card. Buyer pays shipping, \$250/BO. Bob Rivkin, KPLM, 442 S Calle Encelia #8, Palm Springs CA 92262. 760-320-4550.

Comtech 5.5m dish & mount. Originally purchased back in 1983 but in good condition, will sell "as is", buyer responsible for removal & shipment, \$5500. Mike Raley, 704-523-5555 or email: [Mraley@bbnradio.org](mailto:Mraley@bbnradio.org).

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## ◆ READER'S FORUM ◆

**The history of FM**

Another great piece about IBOC by Skip Pizzi (Nov. 20, "To Look Ahead, Try Looking Back"). I refuse to call it HD Radio.

Skip is quite right. The growth of FM was driven mostly by programming unavailable on AM. All the ping-pong stereo didn't get the job done. Progressive rock and beautiful music were the real drivers early on.

Also driving FM growth were much lower commercial loads. The typical Schulke beautiful music station ran 6-8 minutes an hour and the progressive rockers didn't run much more. The typical AM station of that era ran 18 minutes, the max allowed by the now-defunct NAB Code.

Since the analog and digital programming has to be the same, or at least Ibiqumy says it does, there will be no exclusively digital programming to drive adoption and growth.

So, why should listeners care and why should broadcasters write the checks to prove that listeners don't care?

AM is another story for another time.

*Julian Breen  
Proprietor  
Breen Broadcast  
Pennington, N.J.*

Skip Pizzi's article completely omits the primary reason for FM radio's growing success beginning in the mid-1960s: FM in the car.

Prior to the all-transistor car radio appearing in 1963, we were limited to the hybrid tube-transistor models that did not feature FM. Those who really wanted to hear FM in the car had to resort to additions from Motorola and Arwin. While state-of-the-art in hybrid tubes, most users would agree they didn't work all that well. When the major car manufacturers introduced AM-FM transistor models in 1963, all of a sudden the listener who wanted to could listen to FM on their way to and from work.

Mr. Pizzi put most of the success on programming; but without a way to listen, the programming is irrelevant. I think most of radio's management who was there when it happened would agree that FM drivetime in the car is what started FM's fast growth. Plus, in the Milwaukee and Chicago areas where I was working as a chief engineer, the programming Mr. Pizzi discussed really didn't start happening until the early to mid-1970s.

There is also a direct correlation to the shift of engineering resources to FM receiver design in the early- to mid-1960s with the decline of AM receiver quality, which also helped FM grow. Remember the infamous windshield antenna used by General Motors and how awful it was on AM? Remember some of the horrible AM car radios of the late 1970s and 1980s? It was as if design engineers were out to bury AM.

*Dave Dzurick  
Retired Chief Engineer  
President, Consult-Ed  
Tucson, Ariz.*

Skip Pizzi takes us for a useful stroll down Memory Lane in his recollections about the AM-to-FM transition. But for my money, the growth of FM was aided by an ally he fails to mention: Japanese carmakers.

Toyota, I've been told, was the first company to make an AM/FM radio standard equipment in a small sedan. That was the Corolla, which Toyota was intent on making the world's best-selling car. Other Japanese car companies quickly followed suit. No doubt embarrassed by criticism of their practice of making such radios expensive "options," the Detroit carmakers finally did it too. The connection between cars and radio listening requires no elaboration.

I remember well my introduction to this phenomenon. I arrived in Detroit one sunny spring morning in the early 1970s to find that the only car available for rental was I one had never driven before, a rotary-engined Mazda sedan. In Detroit!

When I set out for the first of my appointments, I was quickly impressed by two things: first, the abundant, smooth power of that little engine. And second, the stunning clarity of the Mazda's radio. It was preset to an FM station, of course. And it was an ear-opener.

I've been a fan of FM, and of Mazdas, ever since.

*Brad Niemceck  
Adjunct Professor, Communications  
Bradley University  
Peoria, Ill.*

Regarding Skip Pizzi's column on changes in FM radio: He is correct when he writes that the FCC forcing broadcasters to end AM/FM simulcasting in the late '50s/ early '60s started the FM revolution. But once that mandate was handed down, budget-conscious commercial

## Diaries Aren't Going Away Yet

Arbitron continues to invest a tremendous amount of time and effort on its long-promised Portable People Meter. But don't expect diaries to go away anytime soon.

That point was made abundantly clear by Owen Charlebois, president of the company's U.S. Media unit, during a recent meeting with consultants.

While PPM is the way of the future, he said, the company remains committed to its diary service, which has long been the backbone of how radio stations measure their successes and failures. Diaries, he said, will be around for a long time.

Dr. Ed Cohen, the company's vice president of domestic radio research, echoed the sentiment: "More money than ever is being spent to keep it up-to-date."

Good thing, too, for plenty of questions remain about the PPM, a technology that involves listeners carrying a small pager-like device that monitors exposure to encoded media. We're not overly concerned about the recent problem in Philadelphia, which caused the company to extend its market test there (see Newswatch, page 2). But on a broader scale, the radio industry has reservations about the initial results and wants more testing, particularly into "Differential Survey Treatment" audiences such as young males, Hispanics and blacks. And Arbitron has yet to sign a final deal with Nielsen over a joint venture agreement, seen as important to the success of the PPM.

So we won't see PPM deployed widely for at least another year, although Canada may end up using it for TV measurement in some cities late in 2003. Arbitron also is working with partners in several other countries including Australia, France, Mexico, Brazil, and the U.K.

We commend the company for continuing to press its research into making the PPM work. With diary consent rates at their lowest in two decades, with more and more Americans becoming hard to reach by phone, it's important that our industry's main source of data continue to find new ways of doing its job.

Thankfully, the company also is spending a considerable amount of effort into improving its traditional research. It held a "response rate summit," is investigating "e-consent" efforts and is working to reduce the number of callers who hang up during the phone introduction. It also is working to reach the new generation of listeners who own only mobile phones, not land lines.

Arbitron must continue to conduct research about its product, to retain the industry's confidence. Despite its near-monopoly on ratings, it seems to understand this and to respond to the sometimes-heated input it receives from its customers and advisers.

—RW

broadcasters, still not convinced of FM's viability, would sometimes hand over their FM stations to radio "misfits" who often programmed folk, jazz and classical music — then later album rock.

The album rock portion of this came along in the mid-to-late '60s as FM circular polarization was implemented. FM fidelity was dramatically improved and commercial guys started to sit up and take notice. Thankfully for those of us encouraging more creativity on the radio, the "misfits" were able to dabble with the enhanced signals for a few years until about 1973, when Lee Abrams and the gates of control came crashing down on creativity ... and the public has suffered more and more ever since.

What creative radio needs is another window of opportunity like the one it had from about 1965 until 1973, a place where the "experts" will leave the programming to people who actually know something about musical possibilities. Such a chance could be around the corner, given (as Pizzi writes in his most recent piece) how the FCC handles IBOC

and "old" analog signals. But given the current political climate, I'm not holding my breath.

*Pete Simon  
Radio Producer/Jazz Host  
KUVU(FM)  
Denver*

**Streamer moves on**

I wanted to thank you for the awesome writeup in the Nov. 6 issue on my efforts with streaming ("In Orlando, Bosworth Sticks to His Stream").

Recently my position at Clear Channel was eliminated for budgetary reasons, and I am now consulting various radio groups around the country on how to generate increased revenue from their streaming efforts. This medium is an extremely effective one and can show a phenomenal return for any potential advertiser.

*Jeffrey Bosworth  
President  
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