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## Eureka Jump-Start?

Digital radio is stalled in other countries. Two views on what to do about it.

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## Facility Tour: WHTZ

Z-100 keeps an eye on the Big Apple from its beautiful new home.

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Radio World®
The Newspaper for Radio Managers and Engineers
September 13, 2000

NEWS MAKER

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Struble and Suren Pai, former president/CEO of Lucent Digital Radio Inc., are co-chairmen of iBiquity Digital Corp., recently created from their merged companies.

*Photo by Leslie Stimson*

Robert Struble

Shareholders for both USADR and LDR own a stake in iBiquity. Lucent Technologies is the largest shareholder, followed by Viacom, majority owner of CBS (**RW**, Aug. 2, page 1).

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***Above:*** *Lowry Mays*
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See WMAQ, page 8 ▶

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World Radio History

# ◆ NEWSWATCH ◆

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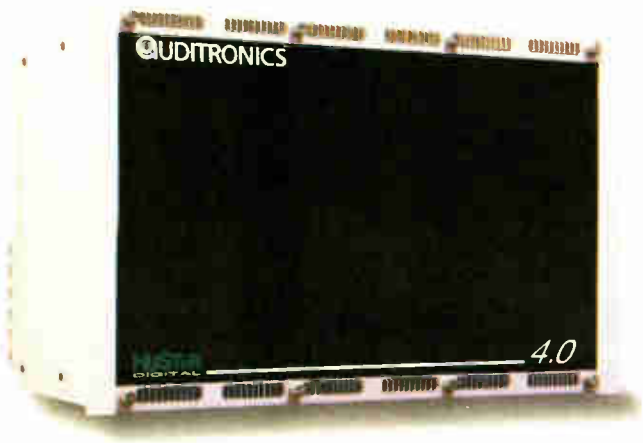


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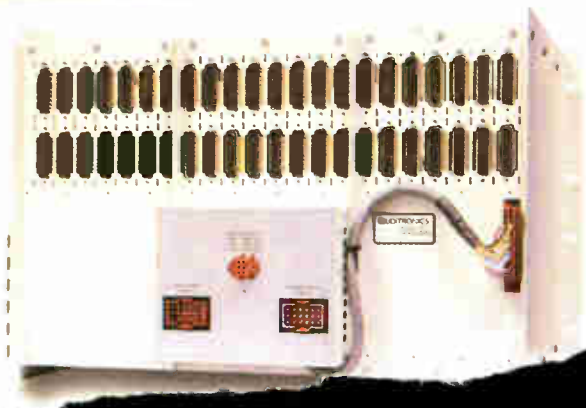

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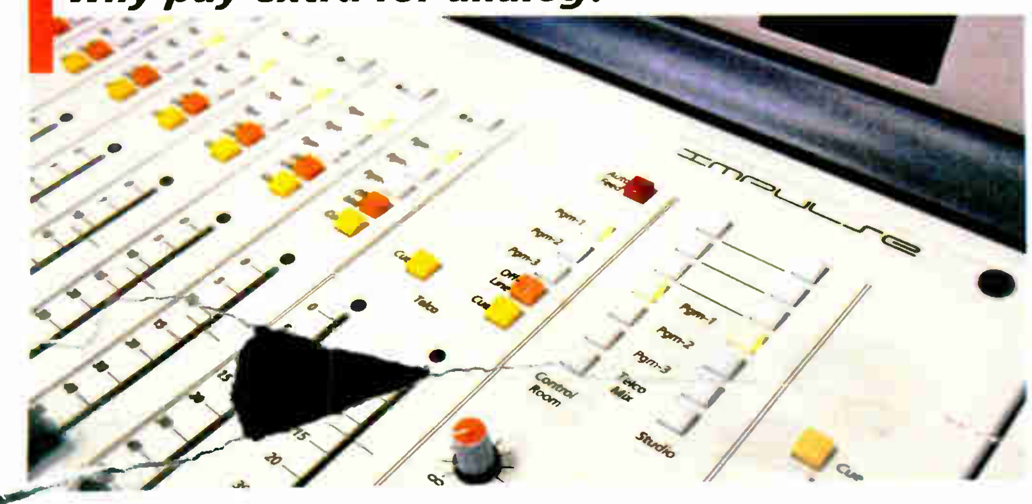

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World Radio History

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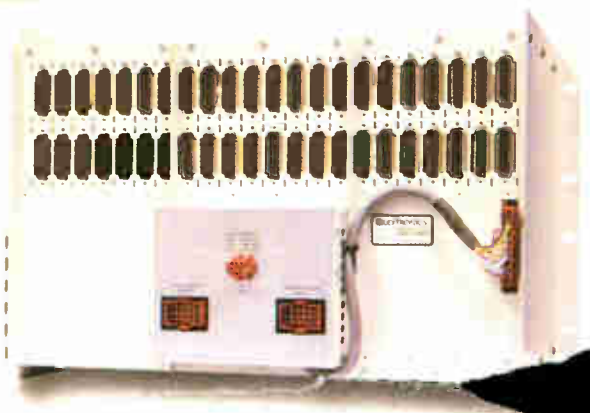

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World Radio History

FIRST PERSON

# A Remote of Olympian Proportion

**by Ross du Clair**

**SACRAMENTO, Calif.** How would you like to be the entire technical team for a 10-day remote of Olympic field trials?

As chief engineer for AMFM-owned KFBK(AM), Sacramento, I was responsible for the planning, installation, operation and teardown for the broadcasts. I also functioned as frequency coordinator for our station and other stations at the events.

Planning for the remote, which began in May, needed to take into account:

- A daily attendance of more than 23,000 track-and-field fans spanning a 10-day period;
- 1,087 athletes;
- Journalists from around the world;
- Seventeen hours of broadcasting from three venues;
- Simultaneous talk shows for two stations;
- and 72 hours of full news team coverage of what would prove to be the largest sporting event in Sacramento history.

The 2000 U.S. Olympic Track and Field Team Trials were held at A.G. Spanos Sports Complex, Hornet Stadium, California State University, July 14-23. The trials were the gateway for competing U.S. athletes hoping for a slot at the 2000 Olympics to be held in Australia this month.

The sports complex was the backdrop for the radio broadcast efforts of KFBK News Talk 1530 kHz, owned by AMFM Inc. and soon to be part of Clear Channel Communications Inc.

Planning for our 10-day remote began in late May with an assessment of the assignment. I ordered what I thought would be plenty of capacity: four Integrated Services Digital Network lines and five analog Plain Old Telephone Service lines. Backing up these circuits would be four channels of UHF remote production units.

### The plan

The broadcast remote plan would exist on three levels: Level One would be the main circuit using ISDN lines through our three-week-old Telos Zephyr. Level Two would be the Comrex Vector using POTS; and Level Three would be Moseley and Marti RPUs from our remote van.

Hornet Stadium, where more than 187,000 track-and-field fans attended the 10-day trials

We would be interviewing many Olympic hopefuls and Olympic past heroes. We also agreed to provide ISDN services to reporters of KCBS(AM) News 74 in San Francisco.

Three venues were identified: The KFBK media tent at the INTEL Corp. fan village, the press box overlooking the Hornet Stadium and the AMFM skybox at turn one of the tracks. Additionally, reporters would need to file live updates to our main studio as they happened.

We had to keep audio delay to a minimum and be able to feed interrupted foldback for talent cueing to the three venues and the reporters.

More important, the plan had to anticipate any possible disruptions.

The hub of the plan was the KFBK/SacBee tent holding the Zephyr and a sub-mixer. The production truck was co-located to the tent. The truck housed the RPU transmitter — a Moseley 4010 and a 100-watt linear amplifier — feeding the Scala yagi array topping a 34-foot mast.

If the ISDN circuit failed, the sub-mixer in the tent could be routed to the RPU in the truck immediately. The Vector in the skybox fed a POTS line. Backing up this circuit was a low-power RPU transmitter aimed at the production truck receiver, which was routed to the media tent sub-mixer.

The press box had two POTS lines to support the Vector. Wireless mics were given to the reporters so they could report breaking events back to receivers in the production truck or skybox.

With small tweaks, the plan served us well for the entire event. Only one casualty occurred: The Moseley 4010 failed on the fifth day. A standby transmitter was installed with no loss of programming.

However, the wireless mics were a disappointment. Tests prior to the events suggested that we had good coverage. But once the stadium filled with people and equipment, the range was short and the large Jumbotron video displays blanked the audio from the mics. (Mental note: Next time find wireless mics rated at 50 watts.)

Also disappointing, as Sacramento temperatures hit the high 90s, was the Vector

See OLYMPICS, page 17 ▶

Interior of KFBK(AM) production truck

The RPU circuits used by our reporters from their news cars had to stay in place. While the track-and-field trials were the top story, we still had to cover other news events.

Our coverage had to be versatile and responsive to reporters filing from anywhere in the stadium and perimeter areas. Program Director Ken Kohl wanted the plan to support simultaneous broadcasts during prime morning and evening hours along with live, breaking news as the athletes set records.

We are a four-station complex, KFBK(AM) 1530 kHz, KSTE(AM) 650 kHz, KGBY(FM) 92.5 MHz and KHYL(FM) 101.1 MHz.

Our group owner, AMFM Inc., forged an alliance with the Sacramento Bee Newspaper (which owned KFBK from 1922 to 1987) to feed broadcast audio to the SacBee Web site continuously.

Also, Web cams would feed action from our media tent to the Web site, as

## Clarification

The petition sent to the FCC regarding AM receiver standards (**RW**, Aug. 2) was submitted by Scott Todd of Northwestern College Radio Network, but the bulk of that material was actually written by Larry Langford, owner and CE, WGTO(AM), Cassopolis, Mich.

Also, the AM stereo list group has moved. To join, go to the Web site *www.egroups.com/group/amstereo*

See us at NAB Booth # 1028


World Radio History

# BSI and Other Radio Samaritans

Think the radio business doesn't have a heart anymore? I disagree.

With all of the bottom-line commerce that goes on at an event like The NAB Radio Show, I love hearing about the good deeds people do.

Here are three examples.

★ ★ ★

Broadcast Software International is a supplier well known to the readers of **RW**. The company has launched "Radio Cares," a campaign to raise $1 million for United Way of America. It will seek pledges of air time at the show.

"The broadcast industry has been very good to BSI over the last five years. Our growth has been phenomenal, more than 200 percent per year every year," President Ron Burley told me.

"We felt it was appropriate for us to return something to the communities of the companies that supported our success."

BSI is contributing approximately $25,000 in booth space, manpower and display costs. Its new parent company, Cumulus Media, has made the lead pledge of $100,000 in air time.

"Our entire booth will be dedicated to taking pledges for air time. We will not be demonstrating any products," Burley said; those will be in a suite off-site. "We hope this will be just the first of many such pledges from an industry that has had tremendous growth and financial success over the last few years."

The effort aims to help United Way of America promote a brand advertising campaign, which uses humorous radio spots to change perceptions of United Way and reinforce its role in the community.

BSI is asking radio stations, networks and groups to make ROS space-available pledge commitments to run the spots during the first half of next year. And he says he would love to help create a future "Digital Automation Radio Cares" campaign, in which his peer companies join the effort.

"I'm not sure how that would work yet, but I'm open to suggestions from all corners."

Celebrities will take pledges in the booth, and BSI promises broadcast- and sports-oriented giveaways for pledgers. The BSI booth is 2128.

★ ★ ★

Score one for radio history. Orban, now owned by CRL, is giving one of the last five Optimod-FM 8100 analog audio processors to the Pavek Museum of Broadcasting.

I've told you about the Pavek in this space before. The 8100 will be part of the collection of equipment at the Minnesota museum.

The company will give away three 8100s in drawings during the show, and one via the Internet afterwards. These will be the last five 8100s made. They will have front panels with the signature of Bob Orban. You can sign up in booth 1042.

The gift is part of Orban's 30th anniversary party. It will also sponsor a party on the Thursday night of the show featuring Three Dog Night. Now *that* brings back memories from 30 years ago.

★ ★ ★

Also at the show, the Broadcast Executive Directors Association will hold a Silent Auction to benefit Linda Simmons, executive director of the Alaska Broadcasters Association, who was diagnosed with leukemia in May.

BEDA is a professional society. Its members are the CEOs of state broadcast trade associations. It is soliciting items or services to be auctioned, as well as cash donations. You can get a donor form from the job-bank Web site, *www.careerpage.org*

The proceeds will help defray Simmons' medical expenses. Attendees are encouraged to "bid early, high and often" at the auction in booth 505.

**RW** readers want to hear about more than just hardware. Tell me about your organization's good deeds, and I'll share the news.

★ ★ ★

The lineup for our power engineering panel at The NAB Radio Show is complete.

Mike Starling is the seventh and final participant in the roundtable. He has been vice president for engineering at National Public Radio since 1998, after being promoted from his position as NPR director of engineering and operations. During the 1980s, he was chief engineer of KPBS-FM in San Diego, and wrote numerous articles for **RW** on public radio as well as equipment evaluations for gear that he says he had no other way to try out before purchasing.

Before becoming enamored with all things electronic, Starling was founding station manager of a radio station in Amherst, Va. He has been SBE certified as a CPBE and the new CBNT. Speaking of good deeds, he also is a public board member of the International Association of Audio Information Services IAAIS, the 100+ operators of radio reading services for the print impaired.

If you have a question you'd like me to ask the panel of engineers, drop me a line at *pmclane@imaspub.com*

Better yet, ask them yourself. "Management Tips From the Experts" takes place Wednesday morning, Sept. 20. For more info, see page 20.

## From the Editor

**Paul J. McLane**

## Hello, Wilbur

We in radio love nostalgia, and not just the broadcast kind.

Jerry Arnold, director of engineering for WMGI(FM) and WWSY(FM) in Terre Haute, Ind., is enjoying his barn,

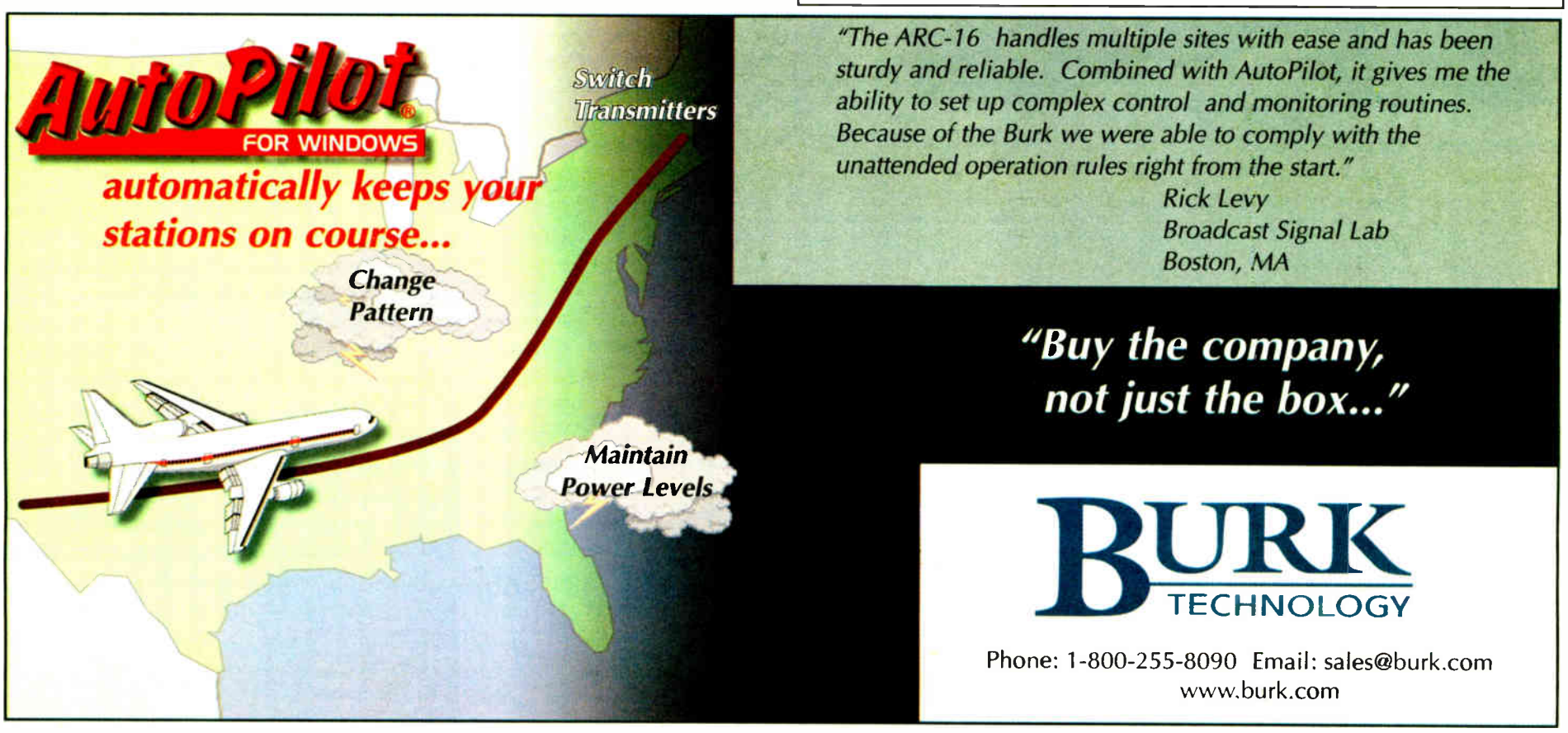
shown here. The Mail Pouch sign is as accurate as he could make it from photos of existing (albeit highly weathered) barns.

The words are in authentic light yellow. Jerry took a closeup of a barn and had the color scanned and matched at a local paint store.

His shed measures 12-by-16, with 8-foot walls, and is used for storage of gardening gear. Jerry had spent his summers on his grandfather's farm in Ohio from the time he was six months old until he was 21.

The Mail Pouch sign recalls his travels as a youth across country by car on Routes 66 and 40, where he saw many barns with such signs.

Unlike those, however, the door of this barn plays the first 20 seconds of the theme to "Green Acres" when you open it. Leave it to an engineer!




See us at NAB Booth # 515

World Radio History

# CFA Test Aimed at Its Skeptics

**by Paul J. McLane**

Developers of the controversial Crossed Field Antenna plan to erect a 1 kW demo unit in the United Kingdom this fall to convince skeptics that it can deliver what it promises.

"It is our goal to demonstrate that without question, the CFA can be an efficient alternative to existing quarter- and half-wave mast antennas," said Robert Richer, president of Crossed Field Antennas Ltd. in Connecticut.

The company has an agreement with CFA patent holder Dr. Fathi Kabbary. This agreement, Richer said, grants the company worldwide distribution rights to the CFA, with the exception of Egypt.

### Availability

The CFA is available now to medium- and long-wave broadcasters anywhere in the world except the United States, where it would have to meet transmission rules established by the FCC for AM radio.

Richer said he hopes to be able to start offering the CFA to U.S. broadcasters within the next 12 months.

**The U.K. site was favored because it is 'clean.'**

"First, of course, we need to take the results of our proposed testing to the FCC for examination, and hopefully, for approval," he said.

The purpose of the test in the United Kingdom, he said, is to satisfy any regulatory questions that might exist around the world, and "to demonstrate once and for all the viability of the CFA to a certain number of skeptical broadcast engineers. ... We chose the U.K. because it is fairly central to the world, it is easy to fly into, and there is considerable interest in the device by many U.K. broadcast organizations," he said.

According to Richer, developers were offered a number of testing sites, including several within the United States, but the U.K. site was favored because it is "clean."

"By clean, we mean one that has no towers and no significant buildings nearby, has decent soil conductivity, and is on a fairly flat piece of land, to allow easy measurements. One of the nice parts of the CFA is that it requires a very small piece of real estate, usually no more than 3 percent of lambda, but we would still like to have a fairly large tract available to us."

Richer said the CFA will be subjected to a number of tests under various conditions, including tests for skywave suppression, antenna efficiency and nearfield radiation characteristics.

"We want an open, clear area so that there will be no questions concerning re-radiation or antenna coupling."

Richer said eight CFAs are operating in Egypt. RAI, the Italian state broadcasting company, has installed a 10 kW CFA in San Remo, Italy, he said.

"Along with the virtual elimination of nearfield radiation interference, RAI has been able to demonstrate that this 9-meter-high CFA, powered with only 3 kW, is achieving as good, if not better, coverage that it had with its former 6 kW, 75-meter active mast antenna."

Two CFAs are being assembled in Brazil, and should go online within the next couple of months.

See past **RW** articles about the Crossed Field Antenna at the Web site *www.rwonline.com*

## ◆ NEWSWATCH ◆

▶ Continued from page 2

eased ownership caps. Limited access to capital, increased competition and high station prices continue to be barriers to minorities who want to become first-time station owners, according to the 1998 report.

NTIA cited a 1995 decision by Congress to eliminate a minority tax certificate program for broadcast ownership and a Supreme Court decision that year that applied a stricter standard for government affirmative action programs, in addition to the effects of the Telecom Act, as reasons for the decline in minority ownership. Minorities owned 322 of 11,475 stations in 1997, said NTIA, a 3 percent drop from 1996 (**RW**, Nov. 12, 1997).

### Nassau Re-Brands Sales

**PRINCETON, N.J.** Coming on the heels of solid second-quarter results, Nassau Broadcasting Partners L.P., with 21 stations, has re-branded its national sales division with a new name and Web site.

Formerly Jersey Radio Network, the new name is Nassau Radio Network to reflect Nassau's expansion into Allentown, Pa.; Westchester County, N.Y., and Fairfield County, Conn.

Nassau posted net revenue for the second quarter of $8.7 million, a 16.4 percent increase over the second quarter of 1999.

Broadcast cash flow increased to $5 million — 26 percent over last year's comparable period.

Nassau recently backed off plans to conduct an initial public offering, citing volatility in technology stocks (**RW**, Sept. 1).

To see the new Web site, go to *www.nassauradionetwork.com*

### Ceridian to Vote on Split

**MINNEAPOLIS** Ceridian Corp. stockholders plan to meet Oct. 5 to vote on the proposal to split off Arbitron into a separate company.

If approved, Ceridian would declare a reverse stock split at a ratio not to exceed 1-for-5 following the proposed reverse spin-off.

The stockholders will meet at Ceridian's headquarters in Minneapolis.

### NRB 2001 Conference Set

**MANASSAS, Va.** The National Religious Broadcasters Convention and Exposition has been scheduled for Feb. 10-13, 2001, at the Anatole Hotel in Dallas.

More than 200 exhibitors are expected to participate in the event, which the NRB touts as "the world's largest nationally and internationally recognized event dedicated solely to assist those in the field of Christian communications."

The 58th annual convention and expo will feature approximately 40 educational sessions and boot camps for radio, TV, Internet and stewardship.

For more information visit the NRB Web site at *www.nrb.org*

### SBE Announces Award Winners

**INDIANAPOLIS** Winners of the SBE's National Awards for 1999 will be recognized at the National Awards Dinner Oct. 4 during the association's national meeting in Pittsburgh.

SBE's Broadcast Engineer of the Year is Clay Freinwald, senior facilities engineer for 11 Entercom stations in the Seattle market. He is active in SBE Chapter 16, Seattle, and writes a regular column for "Waveguide," the Chapter 16 newsletter. He has served as a chairman of the Washington state EAS committee, the National SBE EAS committee and serves on the National SBE board of directors.

The association's Educator of the Year is Steven Keeler, associate professor of telecommunications and broadcasting at Cayuga Community College in Auburn, N.Y. He created and administers the SBE certified Telecommunications Technology Degree program.

SBE's Technology Award goes to Videotek in Pottstown, Pa., for its SpyderWeb Unattended Network Monitoring System for centralized verification, monitoring and remote control of multiple nodes in any location by a single operator.

To see the full list of winners, go to *www.sbe.org*

*— Paul Cogan*

World Radio History

# Struble

▶ Continued from page 1

two staffs were underway.

Struble spoke with **RW** News Editor/Washington Bureau Chief Leslie Stimson about how former USADR and LDR personnel intend to meld their technology, marketing and regulatory plans to move IBOC out of the lab and into commercialization.

***RW:** Where is IBOC technology going to be in one year?*
**Struble:** IBOC is going to be on the air in a year. It's on the air now, but I think it's going to be on the air commercially in a year in dozens, if not hundreds of stations.

The plan currently calls for us to have commercially available transmission equipment by the NAB show in Vegas in April 2001.

***RW:** That's quick.*
**Struble:** It's an aggressive schedule ... and the regulatory process, that's a wild card, but going reasonably well. That will obviously have an impact.

If we find something unanticipated in our technology integration efforts, that might have an impact too, but so far things look pretty good.

***RW:** What are iBiquity's priorities going forward?*
**Struble:** If you're talking about the immediate priorities, it's the smooth integration of the two companies. And what that means is really a couple things: getting the technology integrated, picking the best of the best from both systems and making that happen.

We've obviously got a bunch of strategy issues to work through ... What's our combined strategy with the NRSC? With the FCC? How are we going to do that while moving forward?

We just (need to) be organized as one business. We need to come up with a combined organization structure, one financial system, and one budget. ...

If you look longer term, it's the same things that both companies had as independent companies. You've got three areas of focus: technology, business and regulatory. In technology, again the challenge really is now to get it out of the lab and out of prototype into the commercial arena. We're working with a lot of our manufacturing partners on that technology transfer.

On the regulatory process, there's both the NRSC (National Radio Systems Committee) and FCC, working with those folks, and making sure we are giving them all the data they need to conclude what we have already concluded — that IBOC is a significant upgrade to analog.

***RW:** USADR and LDR had worked together, then split up, and now you're back together. But rather than two separate companies working on one project, you're operating as one company. Why did you decide to merge?*
**Struble:** The combined company is going to be much better able to be successful more quickly than each company would have been independently. ...

We've got every reason in the whole world for the manufacturers and the regulators and the broadcasters to work with us because all of the uncertainties have been removed.

***RW:** The fact that you agreed to merge is giving potential partners more confidence?*

Photo by Leslie Stimson

**Struble:** Absolutely. One of the things that both of us were hearing independently was, "We believe in IBOC. We think it's the way to go. But, we're uncomfortable making a decision before you guys get it worked out and we know how it's going to all play out. Because what if I go with you and the other guy wins?"

Now there's no issue with that anymore.

***RW:** So how did all this come about?*
**Struble:** Suren and I and others had never really stopped talking. ... It was clear that as long as there were two well-respected proponents, it was going to be a long process. And I think neither of us is stupid enough to believe that we were going to beat the other guy over the head with a bat long enough that he was going to go away.

***RW:** But it took how long?*
**Struble:** LDR was formed in May of 1998, and we've been talking since then. When Lucent Digital Radio spun out of Lucent (Technologies, it received) the investment from Pequot Capital. That was very helpful in the whole process because then you were dealing with two separate companies that were not part of bigger companies.

They could, in a sense, control their own destiny. The discussions intensified at that point, which would have been in the fall.

***RW:** Why didn't this happen two years ago when both companies were taking part in the joint development agreement?*
**Struble:** It wouldn't have happened for a variety of reasons, which you've covered, but I think we're better because of it. The two companies pushed each other very, very hard. We got to places a lot quicker than we would have had we not had two proponents vying for it.

***RW:** To combine your systems, would you say the biggest technical decision iBiquity engineers need to make is whether to use USADR's blend-to-analog approach as a back-up to the all-digital approach, or LDR's multi-streaming all-digital approach? Does the fact that iBiquity has chosen to use LDR's PAC audio compression technology mandate that you use Lucent's multi-streaming approach?*
**Struble:** The whole technical fight, if you want to call it that, there was a lot of marketing in that discussion. We're describing ours as the greatest in the whole world and of course theirs is not going to work. They're describing theirs as the greatest in the whole world and that ours is not going to work.

Now in reality, you've got two systems, which are pretty darn close. But for marketing purposes and to feed the interest of people like you who want to have a battle we've tried to be helpful with that. But when you get under the covers and strip it all away, it's IBOC. ...

There are some subtle differences. We'll have to make a couple of big decisions. But in reality, they're just not that different.

***RW:** When will your engineers have it all worked out?*
**Struble:** I don't want to predict for you, but I think it's going to be sooner than everyone thinks. ...

We'd love the FCC to come up with something concrete by the end of this year. If we want to do that, we have to have something to them pretty darn soon.

***RW:** Now that you're sharing information about each other's technology, have there been any eye openers?*
**Struble:** I think the eye opener to me has been again the very strong overlap of plans. I don't mean just on technology, (but) the way that we view the business, how we're going to make money, how we're going to provide to our investors. ...

Our views on technology and requirements are, I would say, 85 percent overlap in agreement, and 15 percent maybe different views, but nothing that's sort of, you know, people throwing things at each other. We have had a ton of meetings. We haven't had a lot of "us against you" debates yet. I don't anticipate we will.

***RW:** How many employees are you going to have with this new merged company?*
**Struble:** I think the number is 86. We've got 46 in Columbia (Md.) and 39 is the latest count in Warren (N.J.). We've actually hired since the announcement of the merger.

***RW:** How do you work out people's job titles and what they'll be doing?*
**Struble:** You work it out like everybody else works it out. ... I've got to eventually to make some decisions and a lot of that stuff is close to being done. This is a very nice situation because the opportunity for both companies is so much greater now that we are together. There's more than enough work for everyone.

Even as a merged company, sure, you're going to have some shifting of roles and responsibilities, but that was going to happen to either company anyway as we moved out of the lab into the commercialization phase.

***RW:** How are USADR and LDR pending technology patents affected by the merger?*
**Struble:** The combined company owns all those patents and owns all those patent applications and as they issue, they'll be our property.

We're an intellectual property company. That's one of our biggest assets and our objective is to have as much intellectual property as we possibly can tied up in the system. One of the major pieces of the merger was the IP.

***RW:** Digital Radio Express is a partner in Cue Corp., which provides data delivery networks for wireless mobile applications. DRE merged with USADR last December. What is its role in iBiquity?*
**Struble:** We have access to their technology and that may as well find it's way into a final system, but it's also part of our intellectual property portfolio. DRE (is) working on data applications.

***RW:** Let's discuss competition from other technologies getting into the car, 3G, the Internet, etc. For example, some DAB observers believe IBOC is dead in the water if it doesn't happen before Sirius and XM get their receivers in the car.*
**Struble:** It's ridiculous. To believe that, you'd have to believe that AM and FM radio are going to go away. ...

Of course (radio is) going to go digital, because it's going to have to. IBOC is going to be the way to go. If we get there one year, one month, one year, 10 years, after satellite, I don't think it makes any difference at all.

***RW:** Even though consumers are probably going to hear digital radio first from Sirius and XM Satellite Radio? Do you think they'll accept IBOC?*
**Struble:** I have to be careful because they're a customer. We're selling PAC to XM. We think it's a great product, but even though both XM and Sirius will tell you they don't believe they're a huge threat to radio. They think they're a niche, serving certain needs.

See STRUBLE, page 7 ▶

**'If satellite radio is widely successful and IBOC is widely successful ... all the receiver manufacturers are going to say, "We need a combined receiver."'**

World Radio History

# Struble

▶ Continued from page 6

*RW: Some radio managers don't believe that.*

**Struble:** Radio broadcasters should be wary of all potential technology threats. In my view it's not just satellite (but) MP3 players, Web phones, Palm Pilots and it's anything people are doing for information for entertainment in a mobile environment. And that's going to be a lot of different things.

Our view, and I think broadcasters accept this, is broadcasters have to move their technology to digital and then they'll be able to fight all these other digital battles on an even playing field technically.

*RW: LDR had the deal with XM to develop PAC for XM's receivers and now all the previous manufacturer alliances translate to iBiquity. LDR's former parent company, Lucent Technologies, had the deal to develop PAC for Sirius. So is iBiquity talking to both XM and Sirius about combined analog/satellite/IBOC receivers?*

**Struble:** There will not be combined receivers in the first generation. Both sides are pursuing their independent paths. My view is the market will drive that. If satellite radio is widely successful and IBOC is widely successful, in a very short amount of time, all the receiver manufacturers are going to say: "We need a combined receiver." ...

Is it difficult to do it technically? Of course not. It's very easy. You're going to take second generation, what maybe was a $20 satellite radio chip and take a $20 IBOC chip and you're going to put them together and it won't be $40, it'll be $25 because you're going to share a lot of components.

*RW: XM and Sirius are paying receiver manufacturers something toward the cost of developing receivers. Will you?*

**Struble:** This is not a niche product. This is AM and FM radio. There's 600 million AM and FM radios out there, 60 million sold every year. The receiver manufacturers we are working with, the chip manufacturers, the transmitter manufacturers, are doing this because they believe IBOC is going to come and they see a great market opportunity. ...

So our pitch is a little bit different. It's sort of: "This is the future of radio. Every radio, if you look at cars in 5 years, or 10 years ... will be an IBOC radio. You guys want to sell radios in 5 or 10 years, you *have* to build IBOCs or you need to work with us."

*RW: You plan new uses for IBOC technology in wireless applications for mobile portable devices, so-called personal digital assistants. Tell us about them.*

**Struble:** While you're listening to radio, you'll also have stock quotes, sports scores, headlines, weather and traffic and whole bunch of things scrolling info. (We can include) station call letters and lyrics. We've got a lyric one mocked up.

A lot of new data content, same as you see on Web phones, or the wireless PDAs ... all that can be sent over the airwaves. We've thought of it as an addition to radio receivers. But there's no reason it couldn't also be in standalone devices.

A Palm Pilot, for example, could have an IBOC chip in it in two or three years. That Palm is IBOC-enabled. That means it could receive radio if you put a little speaker into it. ... And it also means it could get data from whatever radio stations are broadcasting IBOC data.

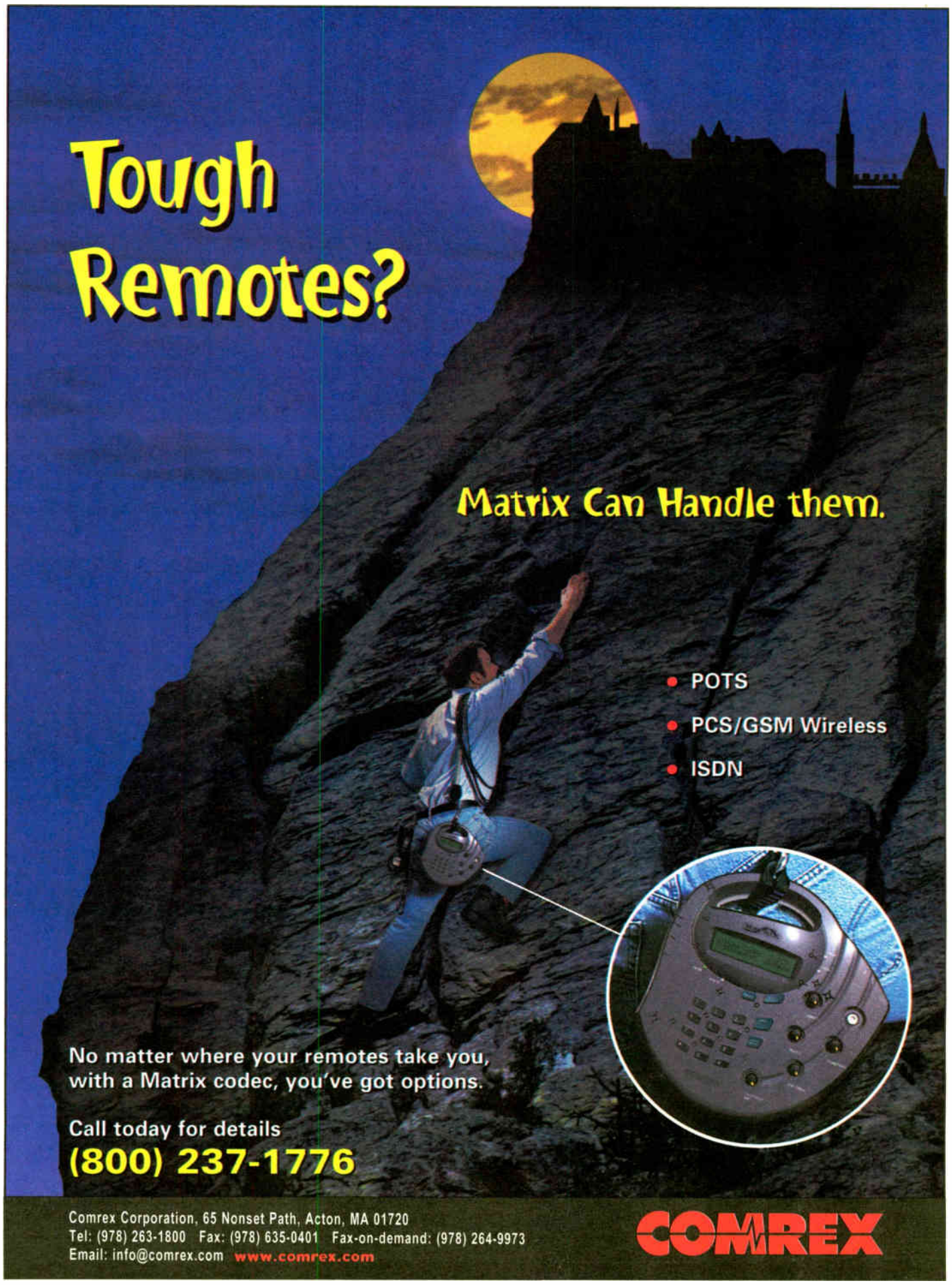
**'A Palm Pilot, for example, could have an IBOC chip in it in two or three years.'**

*RW: Both USADR and LDR have your individual test systems operating on stations, but what happens now? Do you have to test a combined system? Or does the NRSC get an independent test group to do it?*

**Struble:** There are certain things that have to be proved about IBOC. One of the most important ones is the compatibility with the existing analog. We've been up and testing now, combined iBiquity, for tens if not hundreds of thousands of hours. ...

Our hope is that we can use many of the test results from the separate companies in going forward to both the NRSC and the FCC. Would we have to test some things on a combined system? Yes.

*Ed. note: Since USADR and LDR announced plans to merge, automotive component and integrated systems supplier Visteon said it invested in iBiquity and would work with the company to develop receivers and make its digital signal processing technology available to chip manufacturers.* *See page 10.*



See us at NAB Booth # 820

World Radio History

# WMAQ

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call letters WXRT(AM).

The Score's new 50 kW signal means a bigger coverage area for the all-sports station. Infinity management felt WSCR's format was handicapped by a 5,000-watt nighttime signal at 1160, even though it operated at 50 kW during the day.

### Ownership limits

Infinity must divest a Chicago broadcast signal to conform to FCC station ownership limits in order to win federal approval of parent CBS Corp.'s merger with Viacom Inc. Infinity is negotiating the sale of the license for 1160 kHz, which it must sell by Nov. 1.

Infinity owns eight radio stations in the Chicago market while Viacom owns WBBM-TV. FCC rules prohibit owners from having more than eight broadcast signals in the largest markets, including Chicago.

WMAQ's broadcast studios in the NBC Tower near downtown Chicago are not completely dark. Rod Zimmerman, former vice president and general manager of WMAQ and current vice president and general manager of Infinity's WBBM(AM), said WMAQ's main studio will be used as master control for broadcasts of Chicago Bears games this fall on WBBM.

Zimmerman said Infinity hopes to move WXRT(FM) and WSCR, which share facilities on Belmont Ave. on Chicago's north side, to the NBC Tower suite formerly occupied by WMAQ. Plans are for WBBM to remain in its current facility on McClurg Court.

"(The move) will be contingent on the sale of the 1160 license and whether the new owners will want property and equipment, or just the frequency," Zimmerman said.

**It simply cost too much to run WMAQ for the return (Infinity) was seeing.**

— GeorgeAnn Herbert

The move to take WMAQ off the air was made despite Arbitron ratings that showed WMAQ beat WSCR in the spring 2000 ratings period for listeners 12+ overall. WMAQ also billed more than The Score last year, a reported $24 million compared to WSCR's $10 million, according to BIA Research.

GeorgeAnn Herbert, former operations director of WMAQ and current operations director for WBBM, said those billing numbers do not show the bottom line.

"People forget those billing numbers are not profit numbers. It simply cost too much to run WMAQ for the return (Infinity) was seeing. The move also opens up the potential of additional market share for news station WBBM," she said.

### Signal strength

The plan rids Infinity of its weakest AM broadcast signal in the market by eliminating the Score's relatively weak nighttime signal. Infinity officials hope The Score will be able to take advantage of its 50 kW 24 hours a day with higher ratings and profits.

"That certainly is the hope and I think we'll see that. The company took a long-term view and believes the potential is there for big things to happen with (WSCR)," said Herbert.

Bob Roberts, a 12-year news veteran at WMAQ, said its staff of nearly 60 employees went through some tough weeks.

"It's sad to see it come to an end. Especially considering the heritage of (WMAQ). We're not talking a 500-watt daytimer here," he said. Roberts was one of eight WMAQ newsroom personnel to move to the all-news WBBM.

WMAQ employees were informed of the decision on July 10. Roberts said months of rumors had left employees expecting the worst. "We were still all shocked when the announcement came. We were all proud of what we accomplished."

Mike Krauser, former news director of WMAQ who now has that position at WBBM, said WMAQ's contribution to Chicago radio is legendary. It lays claim to being the first radio station in the United States to broadcast play-by-play transcriptions of baseball in 1925.

"It was home to a lot of firsts. It was just one of those big powerful AM stations we all listened to growing up as a kid, a full-service AM with ball games and information and entertainment," he said.

Krauser, a 12-year veteran of WMAQ, said Infinity tried to accommodate as many WMAQ employees as possible. A total of nearly 30 employees made the switch to WBBM. They include news veteran Pat Cassidy, Sports Operations Director Jeff Joniak, Engineer Don Coleman and MIS Manager Carlos Gonzalez.

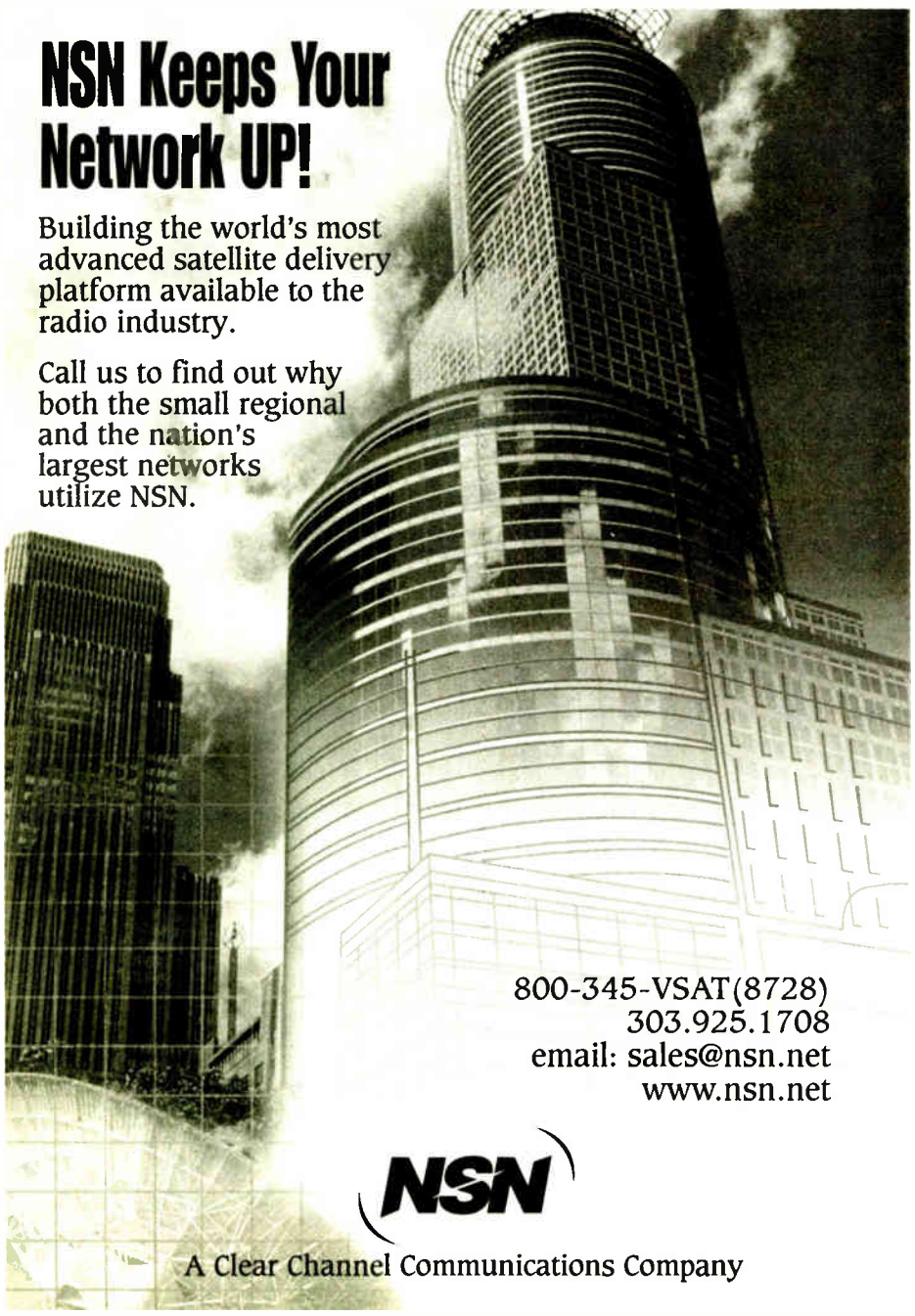
Herbert said that of the 30 ex-WMAQ employees not offered positions with Infinity, a majority had found employment in Chicago with other broadcast outlets.

WMAQ was Chicago's oldest station. It went on the air April 12, 1922, with the call letters WGU. The WMAQ call letters were requested a short time later, with WMAQ standing for "We Must Ask Questions." The station was assigned for wide-area coverage in 1928, the genesis of its clear-channel designation granted in the 1940s.

The radio station was started by the Chicago Daily News. NBC bought WMAQ in 1931 and owned it for 57 years, until selling to Westinghouse Electric Co. in 1988. In fact, according to Zimmerman, the WMAQ call letters still belong to NBC.

WMAQ fell silent after airing historic audio from its 78-year broadcast history. That history included the original "Amos 'n' Andy" and "Fibber McGee & Molly" radio shows.

Newscasters Hugh Downs and Mike Wallace are both alumni of WMAQ.




## FCC Regulatory Fees Due This Month

FCC regulatory fees for fiscal year 2000 are due by Sept. 20.

The fees, charged to all categories of industries the FCC regulates, must be paid in full to avoid a 25 percent penalty. Those submitting their money electronically should send the payment to Mellon Bank in Pittsburgh by Sept. 19 to ensure processing by Sept. 20, suggests the FCC.

The money is used to offset the costs of enforcement, and developing policies and rules.

For broadcasters, some fees were reduced from last year. The fees apply to all commercial broadcasters.

See the new fees in the chart below.

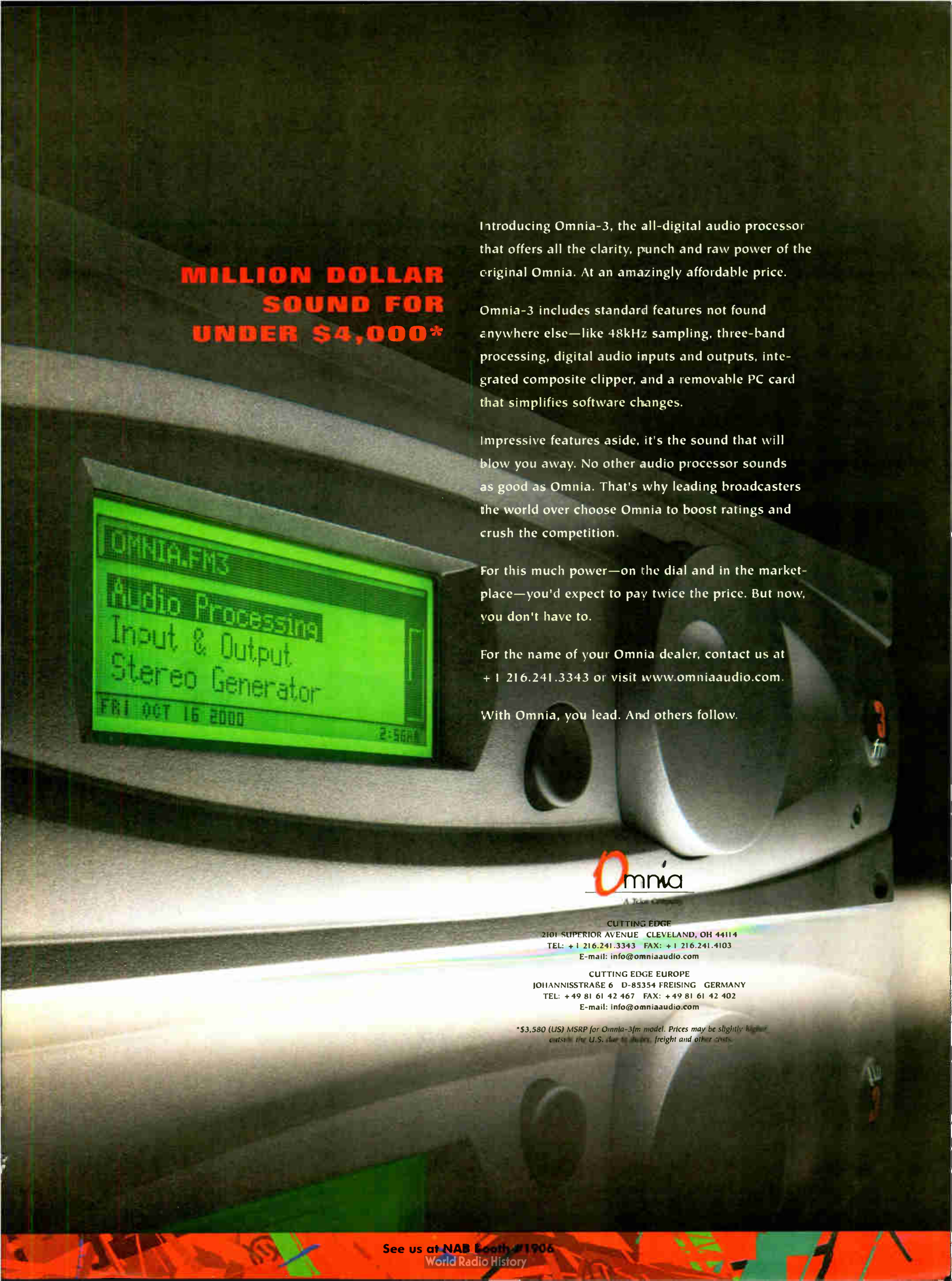
*— Leslie Stimson*

| Population Served | AM Class A | AM Class B | AM Class C | AM Class D | FM Classes A, B1 & C3 | FM Classes B, C, C1 & C2 |
|---|---|---|---|---|---|---|
| Less than 20,000 | $400 | $300 | $200 | $250 | $300 | $400 |
| 20,001-50,000 | $800 | $625 | $300 | $425 | $625 | $800 |
| 50,001-125,000 | $1,325 | $850 | $425 | $650 | $850 | $1,325 |
| 125,001-400,000 | $1,950 | $1,350 | $625 | $775 | $1,350 | $1,950 |
| 400,001-1 million | $2,725 | $2,200 | $1,200 | $1,450 | $2,200 | $2,725 |
| More than 1 million | $4,375 | $3,575 | $1,725 | $2,225 | $3,575 | $4,375 |

| Regulatory Fee Group or Category | Regulatory Fee |
|---|---|
| Broadcast auxiliary station license | $12 |
| Construction permit for new AM station | $250 |
| Construction permit for new FM station | $755 |

*Source: FCC*

World Radio History

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World Radio History

DIGITAL NEWS

## Visteon, iBiquity Team Up

Visteon, which says it is the world's second-largest automotive systems supplier, will develop in-band, on-channel digital audio broadcasting receivers using iBiquity technology.

Visteon, recently became independent from Ford Motor Co., and is a new investor in iBiquity, which was created by the merger of USA Digital Radio and Lucent Digital Radio.

The firm plans to form a business focused on telematics and multimedia. Engineers in this new part of Visteon will develop aftermarket and OEM IBOC radios, using iBiquity technology.

It will license its digital signal processing technology to radio chip manufacturers, so they, in turn, can sell the chips to receiver manufacturers. IBiquity has alliances with Kenwood, Sanyo and Harmon Kardon and anticipates announcing more deals this year.

## WorldSpace Testing System in Cars

The people developing satellite-delivered digital audio broadcasting for third-world countries say they've reached a milestone in getting their signal to mobile and portable receivers.

Engineers from WorldSpace Corp. and the Fraunhofer Institut have tested two techniques: time diversity reception and multi-carrier modulation terrestrial rebroadcast technology.

They say employing these technologies will allow those who purchase WorldSpace receivers to get the signal in a mobile environment within the WorldSpace coverage area. Fixed and portable receivers are available now.

Two satellites have been launched; the final satellite is to launch next year.

For time diversity, the engineers used two channels from the AfriStar satellite. They delayed one channel just over 4 seconds with respect to the other channel. Time diversity, they said, eliminated blockages to the satellite signal from bridges, trees and buildings while they were in a moving vehicle.

Multi-carrier modulation was demonstrated using ground retransmissions of the same channels received from the satellite through three terrestrial repeaters in Europe.

"These tests represent an important step toward expanding our system capabilities to the full range of environments, whether portable, fixed or mobile," said WorldSpace Chairman/CEO Noah Samara.

Additional tests are planned for Pretoria, South Africa, in September.

## Sirius Says First Bird OK

Sirius Satellite Radio has successfully completed in-orbit testing of the first satellite it recently launched.

Payload and signal testing show systems performing to specifications. The second satellite, Sirius-2, arrived at the launch site in Kazakhstan, and was set to go up by the middle of this month.

The company plans to begin offering 100 channels of satellite-delivered digital audio broadcasting by the end of the year.

## XM Funded to Launch

XM Satellite Radio Inc. says it now has the money it needs for commercial launch of its satellite-delivered digital audio broadcasting service.

And it has a new investor: Honda.

XM has closed a $235 million financing deal announced in July. As part of the transaction, American Honda Motor Co. Inc. has joined General Motors, DIRECTV Enterprises Inc., Clear Channel Communications and Motient Corp. as investors in XM.

The investor group, led by AEA Investors Inc., includes Madison Dearborn Partners, Baron Asset Funds and Columbia Capital LLC, which will purchase newly issued preferred stock in the company.

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world radio history

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World Radio History

GUEST COMMENTARY

# Manufacturer: DAB Needs Hype

**by Ronan McDonagh**

*The author is manager of Car Audio & A/V Planning for Pioneer Europe.*

Pity the DAB receiver product manager, the person who, for years, has been promising great things in the rosy future of digital radio. For many, the time for the second-generation product launch is fast approaching, and pressure is starting to grow. This pressure is coming from many quarters:

• From top management, who, in these days of constantly evolving media technologies, have committed precious engineering resources to the development DAB.

• From broadcasters and service providers who, focused as they are on the availability of low-cost receivers, think receiver pricing is just an indicator of the level of greed of manufacturers, rather than a realistic reflection of the cost of building a complex and sophisticated electronic product

## Two Views

*As the U.S. considers how to proceed with IBOC digital radio, other countries are asking how to move forward with their own digital services now that they have been launched.*

*On this page are two points of view about the rollout in various countries of digital radio using the Eureka 147 system. The articles are by a receiver manufacturer and a broadcaster.*

*They are reprinted with permission from the newsletters of the WorldDAB Forum, a consortium of equipment manufacturers, broadcasters, transmission providers, regulators and governmental bodies promoting implementation of the Eureka 147 DAB system. All DAB references are to Eureka 147.*

• From the sales force, who have to go out and try to sell this confounded product to dealers. Dealers who are more interested in selling navigation systems, mobile phone or DVB receivers than DAB tuners, for which there is almost no spontaneous consumer demand.

For the industry, it is on this last point that attention needs to be focused. Poor consumer awareness is the biggest obstacle to the successful takeoff of DAB. Admittedly receivers are expensive and in many countries coverage and service content are issues, but all of these problems are being addressed.

Many manufacturers are preparing second-generation products at more attractive prices, whilst in most countries coverage and service content are being gradually improved.

Given this, now is the time to finally get over the old chicken-and-egg problem of receiver pricing and service availability and for all parties concerned to work together, making a concerted effort to finally get DAB off the ground.

From a receiver manufacturer's point of view, the most useful tool for raising awareness of DAB among the radio listening public is through on-air trailers for DAB services.

• Broadcasters should advertise their own digital services over their existing analog networks.

• When frequency information is provided, the fact that a service is also available on DAB should always be mentioned.

• In the radio listings, availability of services on DAB should always be clearly indicated.

Each of these three things can be easily realized by broadcasters. Manufacturers and retailers can build on the passive awareness generated from this kind of activity, and through marketing activities of their own, can turn it into concrete sales opportunities.

DAB has a credibility problem at the moment. Many people, particularly retailers, have the feeling that radio networks are not really committed to their DAB services.

If broadcasters are not promoting their own digital services, retailers, especially the kind of specialist retailers who are best equipped to sell DAB in the start-up phase, understandably feel reluctant to recommend DAB to their customers, or even to carry DAB products. If the service provider is not confident enough to recommend the service to their listeners, why should a retailer?

Consumers have had their fingers burned many times in the past, by manufacturers' introduction of new media. There have been several instances of manufacturer-developed or -supported media quickly dying in the market, leaving consumers with obsolete hardware, and a feeling of disillusionment. This disillusionment means that it is very difficult for manufacturers to lead the way in the introduction of DAB.

Broadcasters must lead, showing that DAB is indeed their initiative and not just the latest whim of manufacturers. Witness the huge success of digital satellite TV in many markets. In every case, these are perceived as broadcaster-led services, with receiver manufacturers taking very much a back seat, supportive role, rather than being the front-line driver of the innovation.

Ronan McDonagh

This is the way it should be, inspiring as it does confidence in consumers that they are indeed buying into the future of broadcasting, rather than just adding to their collection of obsolete electronic paraphernalia.

So from this DAB product manager the plea to broadcasters and service providers is simple — promote your DAB services whenever possible. Let the public know that this fantastic medium is available, that it will offer better-quality audio, a bigger choice of services and that this really is the future of radio. Once the consumer demand is there, receiver pricing will not be a problem.

■ ■ ■

*Reach the author via e-mail at* Ronan_McDonagh@pee.pioneer.be

***RW** welcomes other points of view.*

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BOOTH 947

GUEST COMMENTARY

# *How to Open the Global DAB Market*

**by Dr. Stephan Ory**

*The author is general manager of the Association of Private Radios, which represents 183 local and regional private radio stations in Germany. This article is reprinted with permission of the WorldDAB Forum newsletter. The forum is a consortium promoting implementation of the Eureka 147 digital audio broadcasting system. All DAB references below refer to Eureka 147.*

Dr. Stephan Ory

In 1995 the world was bright. In Berlin at the Internationale Funkausstellung, (the biggest consumer electronics show in Europe) radio broadcasters listened to the manufacturers who explained how fast the market would grow with cheap and easy-to-use receivers.

All DAB enthusiasts listened eagerly to David Witherow (former president of the WorldDAB Forum) who told us that we should be front-row penguins. Front-row penguins are the first to dive into unknown waters. Either a front-row penguin comes up with a fish in his mouth or a shark comes up with a front-row penguin between his teeth.

Well, we are now in the year 2000 and the broadcasters have not yet found a fish, but the sharks are pretty close.

Are the manufacturers ready for a rescue operation? What exactly are the broadcasters' problems?

The manufacturers have their own personal agenda, which is to begin sales of DAB receivers in the high-end market and then, step by step, sell new and cheaper receivers.

On the other hand, the broadcasters' interests lie within the mass audience and require low-cost receivers on the market as soon as possible. In Germany, there are programs on the air and there are even new formats that have been created specifically for DAB audiences. These, however, are mainly directed toward young listeners, who do not spend hours sitting in the family car listening to the radio. This, therefore, is hardly a mass audience.

Although it is a known fact that

See DAB, page 15 ▶

World Radio History

# DAB

▶ Continued from page 14

around 20 percent of radio listening takes place in cars (in Europe), 80 percent takes place somewhere else — in the bathroom, the kitchen or the office. In other words, the broadcasters urgently need home receivers in order to be able to earn their advertising revenue.

In spite of the problems facing the broadcasters, the coverage of DAB in Germany is growing and the Regulatory Authority for Telecommunications and Post (RegTP) has begun licensing DAB networks.

This process should be completed by the end of this year. The conditions for licensing set out by RegTP require the operators of DAB networks to cover 80 percent of the area within three years, thus giving broadcasters, manufacturers and the car industry a solid basis on which to proceed with their own plans.

### DAB promotion

A frequent request from manufacturers is for broadcasters to promote DAB on their FM programs. Some did do this, but what was the result? Consumers went to the shops and asked for DAB receivers but the dealer has never heard of DAB.

Dealers have had their fingers burned in the past, and they do not want consumers to return after a year complaining about another obsolete "new system." Since the dealer runs no risk when selling on an FM receiver, he will probably advise the consumer to stick with an analog system until the price of DAB sets drop and coverage increases.

Manufacturers want broadcasts to lead, "showing that DAB is ... not just the latest whim of manufacturers" as Ronan McDonagh, senior product coordinator, Pioneer Electronics Europe, wrote in the February issue of this newsletter.

In my opinion, this is a severe misunderstanding. A few years ago manufacturers told European governments that DAB is an important technology to put European manufacturers back at the forefront of international competition. The broadcasters were led to believe that the manufacturers would lead. Manufacturers must not take a "back seat" as suggested by Mr. McDonagh. They must play an active role in this unique market.

This is not, however, the time to discuss endlessly who should be DAB's savior. Broadcasters, manufacturers and others should work together to open the market, to make DAB a mass product. Otherwise the broadcasters (at least those who don't get public fees) will no longer be able to afford to maintain DAB networks and to continue broadcasting in DAB as they will not be reaching an audience.

The big remaining question is how to lock the best interests of both parties together. This is a very important conundrum to be solved over the next few months if DAB is to be a success. If it fails, it will be difficult to find new penguins ready to take on such an adventure for a while.

■■■

*Ory is general manager of the Association of Private Radios, which represents 183 local and regional private radio stations in Germany. Reach him via fax at +49 6806 920294 or via e-mail to* kanzlei@ory.de

***RW** welcomes other points of view.*

BUSINESS DIGEST

## CE Becomes New Division Of Tech-Sym's Metric Systems

Continental Electronics has become a division of Metric Systems Corp., a subsidiary of Tech-Sym Corp.

Metric Systems has acquired the products, customer base and employees that were associated with Continental Electronics' product lines of high-power transmitters and other FM products.

The transition is designed to be transparent to Continental customers. CE said it will continue to support its product lines, including spare parts and sales for transmitter products. The new division will continue to operate from Dallas.

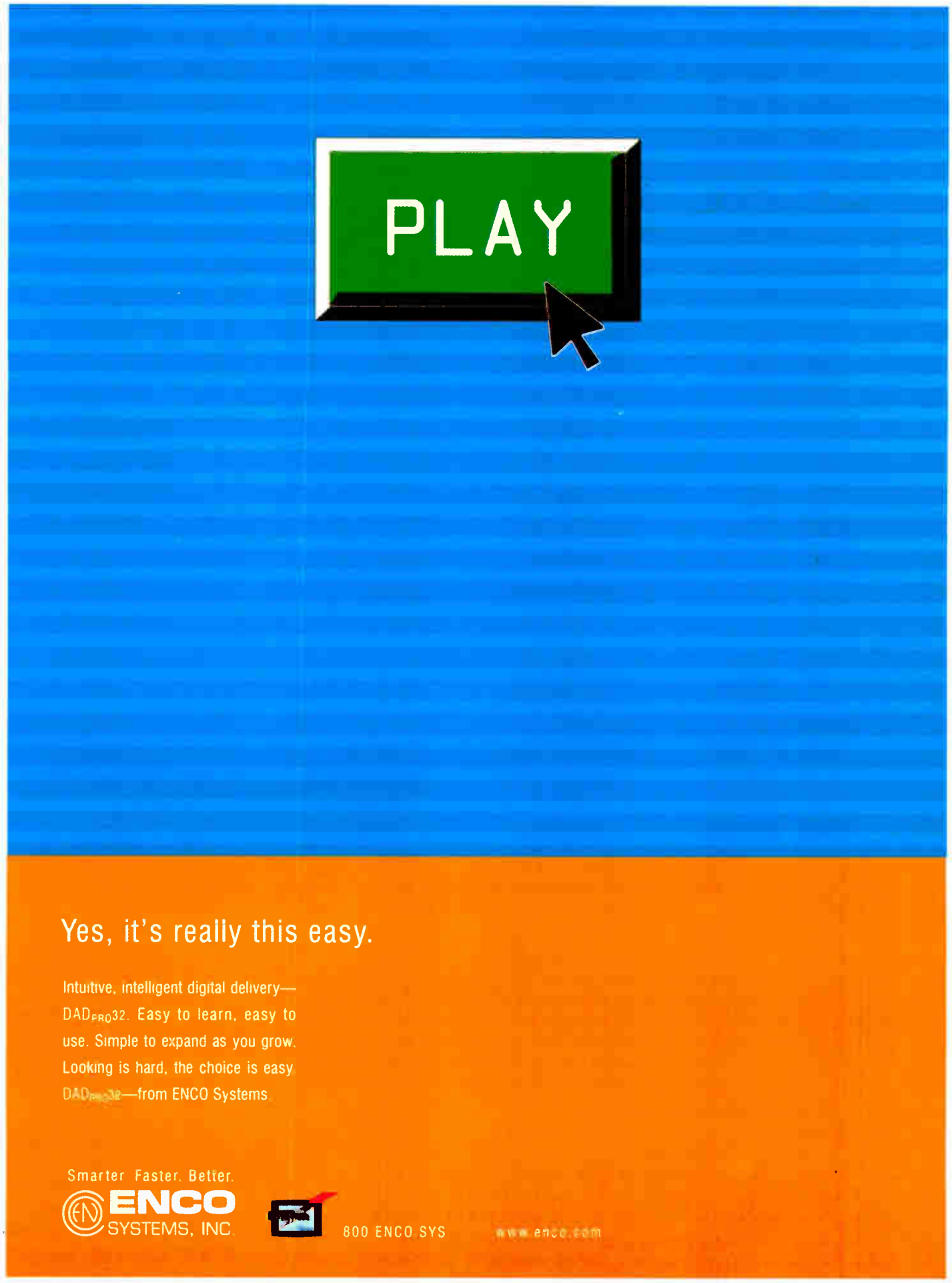
Also, Adil Mina was promoted to general manager of the Continental Electronics Division after more than 34 years at Continental Electronics. Mina assumes responsibilities for the day-to-day operation as well as business development for international and domestic radio broadcast markets.

The company named RF engineer George Woodard as director of engineering. He will lead Continental R&D and oversee the design, production and implementation of all domestic and international installations.

Woodard spent the first two decades of his career at Continental Electronics as the principal design engineer for high-power broadcast, scientific and military radio products and projects.

Most recently, he was with the International Broadcasting Bureau in Washington, D.C., where he spent five years as the director of engineering.

*— B. M. Cox*

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World Radio History

REMOTE broadcast ACCESS
COMREX
Special Edition 2000

## COMREX comments

*by Lynn Distler*
*President, Comrex Corporation*

About a year ago, we received a call from Jimmy Buffett's producer with the news that they were using our Vector POTS codec to send live audio from their road shows back to the radiomargaritaville.com web server. At the time, we thought that was a cool although somewhat unique application. But then we started to notice more .coms on the box labels leaving our building.

A couple of months ago, I was reading a column by Holland Cooke of McVay Media in *TALKERS MAGAZINE* entitled "You dot com, or else." Cooke tells his talk host readership: "Seen those compact broadcast-anywhere-on-a-regular-phone-line boxes Comrex advertises here in *TALKERS*? I'll bet that in 2000, they sell more of 'em to people whose work is heard on the Internet than people whose work is only heard on radio."

While Mr. Cooke might be jumping the gun a bit on this prediction, we certainly are seeing a trend in this direction. In this issue, we profile a couple of our .com customers. eYada & Westwind Media are good examples of what is becoming mainstream. Meanwhile, Comrex continues to do its job of bringing live, high quality audio into the studio, no matter whether distribution is over the airwaves or through the web.

*"The more things change...."* ●

## New Matrix POTS/ISDN/GSM Codec wins 2 Awards at NAB2000

We try to provide the readers of this newsletter with useful information and to avoid excessive bragging; however, we are REALLY proud of our new Matrix codec and can't help doing some shameless boasting! At the recent NAB show, the Matrix was the recipient of Radio World's "Cool Stuff Award" and also BE Radio's "Pick Hit" award. The winners of these awards are chosen by panels of judges consisting of radio professionals and are indicative of true industry choices. Here are some key Matrix features:

* The Matrix is a versatile, light-weight codec with the ability to send high quality, full duplex audio over POTS, ISDN or wireless service. There's nothing remotely like it.

* The basic unit delivers 15 kHz audio on a single POTS line and is compatible with the popular Vector and HotLine POTS codecs.

* A "store and forward" feature permits audio cuts to be sent in non-real time over POTS or wireless service. Useful when a circuit won't sustain adequate or stable enough data rates for real time codec use.

(continued on back cover)

## ISDN via satellite - Portable terminals have come a long way!

There are new players in the portable satellite uplink business. Thrane & Thrane from Denmark and Nera from Norway are offering portable satellite phones that can simulate a 64 kb/s BRI ISDN channel. These phones use Inmarsat's Global Area Network Service (M4) at a cost of roughly $8.00 USD per minute and the satphones run around $10K. This may seem pricey, but they might be a lifesaver for broadcasters that have really tough jobs to do! (Ever needed to deliver a remote from a cruise ship?)

ABC Radio news recently used these terminals for live news reports from Israel and India where they were unable to get ISDN land lines on short notice. They tested both terminals and found that the Comrex EuroNexus worked well with either one.

It is important to remember that these uplink terminals have an "S/T" interface, so a codec or terminal adapter that presents a "U" interface (like the Nexus and most US codecs) can't be used. Our new Matrix codec will also be a perfect match, since it supports the EURO S/T standard, and the ISO/MPEG Layer III featured in the Matrix will deliver 15 kHz on the available 64 kb/s channel.

(continued on page 2)

World Radio History

## PLAN Y3K

Fred was our Y2K project manager. If you've left your bunker, you realize that life has continued pretty much as usual since January 1, 2000. This is no accident, but due to the tireless efforts of people like Fred.

Fred saw all this coming years ago. Knowing that it would be the subtleties of electronics, not stupid programming short-cuts that would bring the broadcasting world to its knees, he became an expert in the field of "component psychology." Don't chuckle! Electronic parts have feelings and anxieties, you know. And with the greatest of all technological calamities just around the corner, Fred spent the last few years studying the digital and analog pieces that make up Comrex products.

Digital stuff was quite easy, according to Fred. When you've only got two states, on and off, the only issues are in feeling jittery switching from one to the other. With proper visualization techniques ("*feel* the one, *become* the zero"), the circuitry can be trained to anticipate change and land with both feet.

Fred really earned his stripes with analog parts, though. Just think of it – transformers are in a state of flux, resistors resist, capacitors get all charged up, diodes do things one way...you get the idea. Who else would have faked out the nervous transformers by putting January, 2000 calendars on the wall while the TCB-1s were assembled? Or counseling that 100nF capacitor from jumping off the ledge and rupturing his dielectric. Or that unconventional herbal therapy (it's OK for resistors to smoke a little pot...).

All of this frankly and sadly cost Fred his personal life. By January, he just had nothing more to accomplish, and nowhere to go at night. That's why he volunteered for our **Y3K** project. He became so concerned that in another 1000 years there would be no component counselors that he offered to have himself frozen, and thawed out in time for the next big crisis. We already miss him, but as Comrex employees we'll keep a stiff upper lip (not as stiff as his, of course). We only have one big worry. And those of you who have worked in offices can easily appreciate our concern: *What happens when someone eventually gets around to defrosting the office refrigerator?* ●

## ISDN Via Satellite

*(continued from page 1)*

**The above photo shows a "tailgate" test of the Nera World Communicator recently performed at Comrex. The Nera was loaned to Comrex by GMPCS, a US dealer. Setup took only a few minutes. We then called the Comrex ISDN test line from the EuroNexus, establishing a 64 kb/s link from outside our front door, up to the AOR-W satellite, back down to French Telecom and finally to the Nexus in our demo rack via ISDN. We had a crystal-clear link for the 10 minute call, which was ended by simply pressing the HANG-UP key on the EuroNexus.**

**Note that the delay time through the satellite system is around a half second each way, so the normal 6 mS G.722 delay is considerably lengthened. A mix-minus return feed will be necessary. Use of audio coding systems with longer delay times will require more caution.**

***Please use the attached reply card to request further details on the satellite phones, GMPCS and the EuroNexus, or email us at techtips@comrex.com.*** ●

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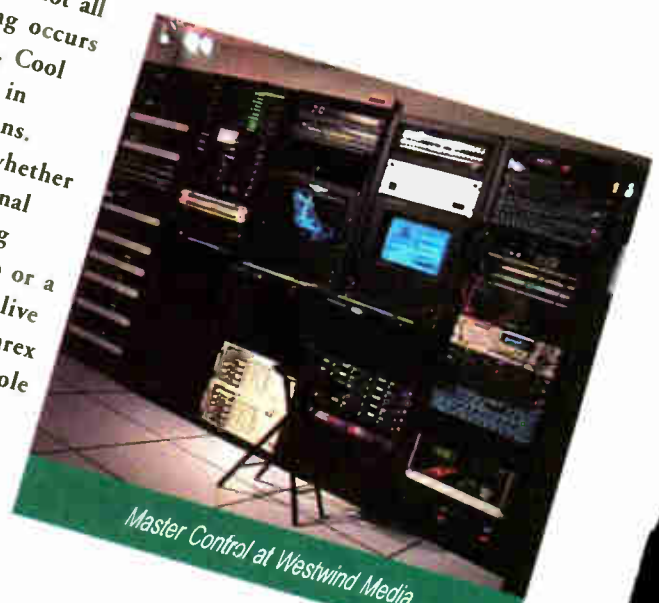
**One given in broadcasting is that not all programming occurs in the studio. Cool stuff happens in remote locations. Regardless of whether you're a traditional broadcaster airing audio on the radio or a website that offers live audio content, Comrex plays an important role in program contribution. Here are two examples of how our codecs are being used for internet applications.**



*Master Control at Westwind Media*

*(continued on page 3)*



World Radio History

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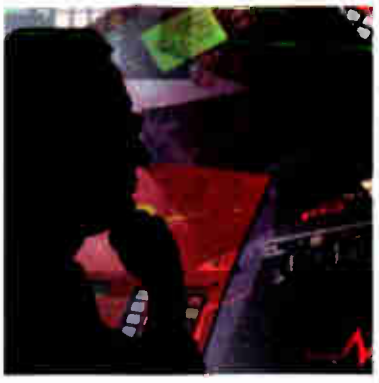
*(continued on page 3)*



World Radio History

# Ask the Codec Answer Guy



Q. Somewhere around the eighth inning of our last two baseball games, our Vector has "renegotiated," with a corresponding hole in our play-by-play.

A. The modem in your Vector (or HotLine) works by negotiating settings based on all kinds of electrical characteristics of the phone circuits through which your call is routed. After a couple of hours of use, those figures may change, and you might do yourself a favor by redialing the call during a break in programming. This isn't a hard-and-fast rule; just a suggestion that may save you some troubles. It is also a good idea to set a MaxRate for the modem. Further details below.

Q. How can I find out about upgrades for my Comrex unit?

A. Ask us! All upgrade information is now on our web site: www.comrex.com in the TechTips section. If you prefer, send the model names and serial numbers to us via fax (978-635-0401) or email (techies@comrex.com), along with your phone number, and we will let you know whether an upgrade is recommended.

Q. How can I get 33.6 kb/s modem connections?

A. Your goal should be to achieve the highest speed *at which the modem operation will be stable.* Since slower connect rates are more tolerant of errors, some judgement is required to hit the right spot. In fact, the Answer Guy is partial to speeds of 28.8 kb/s and lower, as all V.34+ modems seem to be more stable at those rates. Use the MaxRate to set a ceiling that works in your area. And ignore those Internet weenies who try to tell you that "faster is better." Sex and modems do have something in common... ●

*(continued from page 2)*

eYada.com is an exciting website that delivers live talk shows 24/7 on the net. Vector POTS codecs have played a critical part in their programming. Most of eYada's shows are generated in their main New York City studios, but eYada's Vice President and Director of Programming, Dave Herman, informed us that virtually all audio contributions from other sites are delivered via Vectors. Herman states, "They're fabulous! We've done shows in Australia and Victoria, B.C. We air daily programs from LA, San Jose and Vegas. The Vectors deliver virtually all off site shows, whether they are daily programs or one shot remotes." Herman indicated that their Vectors allow eYada ultimate flexibility to broadcast from anywhere, enabling them to produce compelling programs.

Westwind Media provides content solutions to the internet community. They specialize in adding interest and depth to clients' sites with high quality streaming audio and video. Their customers include ivillage.com, Eritmo.com, BET.com, TheStreet.com, and BOL.com. Andrew Rosenberg, Director of Studio Engineering, states that Comrex Vector and HotLine POTS codecs are used to deliver live voice content from a remote site to the main Westwind studios, where the program is assembled and delivered to their clients websites at the highest possible quality for air. The POTS codecs are also used as back-up for their ISDN remotes. We found it interesting that these are the same types of applications traditional stations and networks have been doing on Comrex for decades! ●

# TECH Tips

## Connecting to a Sound Card

We are starting to get more calls from users who, for one reason or another, need to connect the audio inputs and outputs of Comrex codecs to computer sound cards. So we thought we'd outline some of the technical details here:

All sound cards are not equal, but most are similar. They typically send and receive audio over 3-conductor, 1/8" stereo mini plugs and have audio levels which are lower than those used for professional applications.

Most sound cards have two different input jacks, one for line level inputs and one for connections to a microphone. Under most circumstances, noise levels will be lower if you use the "line" level inputs. Many sound cards also have a pair of stereo outputs, one for powered speakers and another for unpowered speakers or headphones. Both of these outputs are usually ok, but there may be slightly less distortion on the "powered speaker" output.

Keep in mind that while most of our codecs are mono, computers by nature handle stereo audio. Therefore, accommodations will need to be made. We have published a detailed document that describes how to adapt mono codecs to stereo sound cards and also addresses the following issues:

← Dealing with the fact that codecs have balanced ins and outs and sound cards have unbalanced ins and outs.

← Coping with variability in levels between codecs and computers.

We would be happy to send you the complete document *Codecs and Sound Cards*. Just fill in the reply card, give us a call or send us an email to techtips@comrex.com. ●



World Radio History

# Matrix POTS/ISDN/GSM Codec

*(continued from page 1)*

* Can be used in Plain Telephone Mode for easy connection of microphone and headphones to a POTS line.

* Two inputs (one is mic/line switchable), one headphone output and one auxiliary output are featured.

* Optional modules may be purchased that slide into the bottom of the Matrix. These modules offer connections to different types of circuits.

* An ISDN module converts the Matrix into a powerful ISDN codec, including ISO/MPEG Layer III, G.722 and Turbo G.722. This gives the user maximum industry compatibility as well as the ability to transmit 15 kHz at 64 kb/s or to deliver a very low delay 15 kHz at 128 kb/s.

* A different Matrix accessory includes a pcmcia slot enabling connection to a GSM wireless phone.

*Matrix POTS/ISDN/GSM Codec - Shown with optional GSM module, optional battery kit and phone (not included)*

* An optional battery pack is available for the Matrix.

***For more info on the Matrix, fill out the reply card, visit our website at www.comrex.com or contact us toll-free at 800-237-1776.*** ●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IN THIS issue


- ISDN via Satellite
- Vectors on the Internet
- Ask the Codec Answer Guy
- New Matrix POTS/ISDN/GSM Codec



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# Olympics

▶ Continued from page 3

power supply and control unit. After three days of these temperatures, they both warmed up, making them unstable. As bright sunlight hit the Liquid Crystal Display, it washed out and then turned solid blue, making it unreadable. Towels holding ice cubes under the power supply and control unit returned them to life.

A Comrex engineer said this problem is typical when graphical LCDs are exposed to intense heat. While this does not affect the operation of the unit, Comrex recommends shielding the Vector from the sun.

KFBK reporter Kami Lloyd files over a Vector from the AMFM skybox

Just days before the trials began, I was beginning to wonder when the requests for frequencies would come in.

As the frequency coordinator for the Sacramento region, requests to clear a particular RPU frequency, or channel pairs, usually were made well in advance of an event such as the NBA playoffs between the L.A. Lakers and Sacramento Kings at the Arco Arena.

I knew that NBC would be televising the trials, and there would be other broadcasters needing frequencies for wireless mics and other such equipment.

Just five days before the opening events, Peter Larson from Broadcast Sports called wanting to clear 14 frequencies. Most of those needed frequencies were already licensed in Sacramento. I met with the NBC production manager, Steve Raymond, and we worked to find four pairs in the 450 and 455 MHz range.

Fortunately his RPU equipment was frequency-agile and could be reprogrammed. Not so lucky were those production people who "assumed" there would not be any problems; there were. One outfit wanted to use a set of frequencies already licensed to McDonald's to take hamburger orders.

I posted my name and number everywhere so I could be contacted and then installed an IFR service monitor to verify that everyone was where they were supposed to be. For the entire run of the events, no one reported any interference or frequency conflicts.

Another part of the event coordination was arranging adequate telephone service. Pacific Bell could bring service to the minimum point of entry; however, the cables running from the MPOE were owned by the college and, during this event, administered by the City of Sacramento.

### Complications

Complicating this multi-layered telecommunications setup was the addition of the Sacramento Sports Association, which decided who would get the already limited cable pairs.

During the five weeks prior to opening day of the track-and-field trials, I regularly confirmed with PacBell and the city telecommunications systems analyst that my service would be installed by Monday, July 10. The first day of broadcast would be Thursday, July 14.

Early Monday, I received a call from the PacBell technician at the stadium who said that no cable pairs were available, and no service of any kind was possible.

An immediate meeting was scheduled with everyone who had anything to do with telephone service on Tuesday, July 11 at the stadium. Every possibility was discussed to get me the wire pairs needed. While everyone involved was sympathetic to my problem, no one would budge to give me what I needed.

What I needed was some heavy artillery. My "fire mission" came in the form of putting the AMFM Operations Manager Ken Kohl together with the CEO of the Sacramento Sports Association. Ken reminded everyone that KFBK had contractual agreements to broadcast this event. KFBK was also one of the event sponsors and had spent some very big dollars. Therefore, dire consequences would occur if KFBK failed to fulfill its agreements.

2000 U.S. OLYMPIC TEAM TRIALS TRACK AND FIELD SACRAMENTO

M[illegible]ere found late[illegible]ed to my venues. My [illegible] Currington, a service technician for Pacific Bell, who worked hard right up to the final moments of the track-and-field trials.

Aside from telecommunications, getting enough power to air the many events I needed to coordinate was important.

The Sacramento Sports Association contracted for diesel generators with power levels ranging from 25 kW to 50 kW for users such as KFBK, NBC-TV, vendors and track-and-field organizers.

The author is amazed that this power distribution panel works at all

Our area was fed by a branch from one of these generators, and terminated at a protected panel. The panel feeds separate outlets protected by a 20-amp breaker. A good plan, but the breakers were the Ground Fault Interrupter Circuit type and extremely touchy. The GFIC breakers were always "popping."

While my production truck only consumes 630 watts, far below the capacity of the 20 amps available, I had to be careful how the load was distributed and careful how my grounds were tied.

Also, the generators had a "run schedule" that did not accommodate my broadcast schedule. After all, the generators ran on fuel, so why run them when there're not needed?

### Power problems

But my broadcasts were hours before actual opening and sometimes hours after closing. There was no power for the first morning of feeds from the stadium for morning drive. The power wouldn't be on for at least four hours.

I pulled the starter rope on my 3.5 kW gas generator and we were on the air.

The gas generator is a standard piece of equipment with our production truck. Next time, I'll be less complacent with supplied power and I will insist that the GFIC breakers be changed out for standard breakers. The contractor did change the breakers, but only at the final two days of the assignment.

A gadget that turned out to be handy was a three-neon lamp tester, which plugged into electrical receptacles. Using this tester, I discovered a reverse polarity problem at an NBC camera tower where our press box Comrex Vector was connected. NBC was happy to know this problem prior to its broadcast coverage, as that would have played havoc with cameras and monitors.

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# Dot-com Biz Will Dominate Show

From IBOC DAB and LPFM to streaming, satellite radio, syndication and sound systems, The NAB Radio Show, touted by the NAB as "the largest radio-show-only convention anywhere in the world," is set to bring together consumers, suppliers and industry leaders in a networking atmosphere.

According to the NAB, more than 6,000 people are expected at the conference. Last year, approximately 5,600 attendees showed up in Orlando, Fla., at The 1999 NAB Radio Show. With 250 companies taking up 60,000 net square feet of exhibit space at the Moscone Convention Center in San Francisco, attendees will have plenty of products to check out.

Water cooler talk on the floor is expected to center around the recent marriage of USA Digital Radio and Lucent Digital Radio creating iBiquity Digital; LPFM concerns; the continued move toward consolidation of radio operations and what that means for management, talent and engineers; the broadband revolution and satellite radio, which presents some competitive challenges for the industry.

Moscone Convention Center

### Still local

According to Dennis Wharton, senior vice president of corporate communications for NAB, localism is not lost in traditional radio, despite those who criticize trends toward syndication and voice tracking.

"Localism has always been the hallmark of radio," said Wharton. "While you may have (Don) Imus in the morning or (Howard) Stern for two hours a day, a large percentage of the program day is still local ... local traffic reports and weather. Those stations that are committed to local programming and audiences will do just fine."

The Internet and related topics are expected to be a major focus of the show. The number of first-time exhibitors may be indicative of this trend.

"More than 60 new companies are exhibiting at The Radio Show, and of those, a majority are Internet-related," said Ann Marie Cumming, director of media relations, NAB.

According to George Bundy, CEO of BRS Media Inc., more than 4,000 radio stations worldwide are streaming their signal via the Net. A year ago at this time, there were slightly more than 2,600 stations streaming their signal. So will this trend continue?

"That's definitely the case," said Bundy. "We've been keeping statistics since 1996 and the growth curve continues to show significant improvement month to month and year to year."

Webcasting and the Internet are everywhere in radio, and the show reflects it.

Special sessions and exhibit offerings are devoted to helping radio exploit the Net and managing its special problems,

See OVERVIEW, page 27 ▶

## About the Show

*Conference:* Sept. 20-23
*Exhibits:* Sept. 20-22
*Cost:* $435 full convention rate for NAB members; the association is offering a "buy one-get one free" incentive to members; $735 for non-members; engineering packages $335 to $635; spouse and exhibit-only rates available.
*To register:* Visit *www.nab.org/conventions* or call (800) 342-2460

# *Is This Your Next AM Antenna?*

*It's Called the EH Antenna. Its Unveiling At NAB Is Likely to Add to the Debate Over New AM Designs.*

**Ted Nahil**

A new AM antenna design is looming on the horizon.

Its inventors plan to unveil test data on its performance and publicly discuss its design and underlying mathematics for the first time at an NAB Radio Show session, part of the "AM/FM Antenna Certification Workshop" on Wednesday afternoon, Sept. 20.

"The EH Antenna — Could It Be the Ultimate AM Antenna?" will be moderated by Dave Wilson, manager of technical regulatory affairs for the NAB. The presenters will be Ted Hart, CEO, and Bob Zimmerman, vice president of engineering, both of EH Antenna Systems in Eatonton, Ga.

Theirs aren't the first recent claims for a revolution in AM antennas.

More than two years ago, the Crossed-Field Antenna was introduced to the radio engineering community in the United States. Although the antenna has been in development and test in other parts of the world since the late 1980s — mainly in Egypt, but also in Italy, Germany and soon in Great

See ANTENNA, page 20 ▶

See us at NAB Booth # 600

World Radio History

# Antenna

▶ Continued from page 19

Britain — the inventors of the CFA have made some remarkable claims as to its performance in areas such as bandwidth, efficiency, low RFI, small size and little induction field.

A broad view of a prototype disc-cone antenna partially finished and a dipole version over a ground plane. The final AM version would be about 8 feet tall.

The CFA has generated some skepticism among U.S. radio engineers. Under an agreement with one of its inventors, LBA Technology in Greenville, N.C., now is constructing a model of a medium-wave CFA and will conduct field tests once a request from the FCC for an experimental license is approved.

According to its inventors, the EH antenna promises to deliver all of the benefits of the CFA and more.

### Plate and cylinder

The concept for the EH antenna came out of work Hart had done on behalf of the inventors of the CFA, Maurice Hately, Fathi Kabbary and Brian Stewart.

Specifically, Hart had heard about the antenna and wanted to write articles for the amateur radio community about it, outlining the physics and mathematics behind the novel concept.

The CFA uses a reversed form of Maxwell's fourth equation as its basis. In greatly simplified form, Maxwell's fourth equation proves that either a current *or* a time-varying electric field can produce a magnetic field. The derivative of the current produced by a time-varying electric field (flux) with respect to time is called *displacement current*.

Using a plate and a cylinder, referenced to a ground plane, the CFA produces electromagnetic radiation by splitting the power from a transmitter and applying it in the proper phase and power ratios to the two sections. The electric field, E, (produced in the cylinder) and the magnetic field, H, (produced by displacement current between the plate and ground plane, which is actually a capacitor) combine in what is called the interaction zone, and electromagnetic radiation is produced.

Components typically used in a two-tower directional array are used in the CFA to divide the power and control the phase relation between the power applied to the plate and the power applied to the cylinder. A phase shift between the plate and the cylinder is required to bring the H field back in phase with the E field.

The EH antenna differs from the CFA in that it is a single cone working against a ground plane. The transmitter power is applied directly to the cone through an inductor. The inductor, chosen to series resonate with the natural capacity of the antenna, provides the proper phase shift between the applied voltage and current.

This causes the magnetic field encircling the cone (due to the displacement current) to be in phase with the electric field that exists between the cone and the ground plane.

The fields combine in the area between the cone and the ground to create transverse electromagnetic radiation. Other factors such as cone angle control the base impedance.

Hart says this design is a true free-space antenna.

"Transmitter power is coupled directly to a transverse electromagnetic field (TEM)," he said.

Hart began working on the design in late 1998. Bob Zimmerman, working for LBA at the time, developed a feed system for the CFA and wrote a paper, which he submitted to the IEEE. He sent Hart a copy, and Hart told him about the EH design on which he was working.

"It was Bob that provided the expertise to fully develop the antenna to what it is capable of doing today," Hart said.

A significant benefit to the EH antenna is its size and weight. A medium-wave antenna and ground plane are small and light. Nominal height for the antenna is about 8 feet.

The completed disc-cone. The developer is assembling a ground-plane version, a single cone over a ground plane.

Because the TEM radiation is developed at the antenna rather than in the far field (as happens with a standard tower), the large reactive electric and magnetic fields that cause RFI problems in standard installations are eliminated. An EH antenna could be placed in a downtown area on a roof top, for example, with less restriction on access to the antenna. (This also applies to the CFA.)

A final, "pre-production" prototype is being fabricated. The EH antenna will be tested against an equivalent typical broadcast tower, complete with a 120-radial ground plane. At press time, the inventors were hoping to have all the tests complete by Labor Day.

The results, as well as the theory behind the antenna, will be presented for the first time at The NAB Radio Show in San Francisco.

"It is my opinion that the AM broadcast version of the EH antenna is by far the best antenna ever developed for the application," Hart said.

■■■

*Read past articles about the CFA at* www.rwonline.com *Ted Nahil is VP of radio broadcast engineering for SurferNETWORK.com, Mount Olive, N.J., and a frequent contributor to* ***RW.***

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## THE NAB RADIO SHOW BEST BETS

Paul McLane

*What:* Power Engineering Roundtable
*When:* Wednesday, Sept. 20, 9 to 11:30 a.m.
*Where:* Moscone Convention Center

Paul McLane, editor of **Radio World**, hosts "Management Tips From the Experts," an informal roundtable of top radio engineers. These experts will talk about the pressing issues that affect the daily life of engineers. How will we keep good people in the business? What does Net radio mean for technical folks? What's next with IBOC? They will offer tips and take questions from the audience.

Andy Butler

Jeff Littlejohn

Frank McCoy

Panelists include Andy Butler, senior director of engineering for PBS and president of SBE; Jeff Littlejohn, VP of engineering for AMFM; Ted Nahil, the new VP of radio broadcast engineering for SurferNetwork.com and a past director of engineering with several major groups; and Frank McCoy, vice president of engineering for American Media Services and former technical executive with Capstar and AMFM.

Charlie Morgan

Ted Nahil

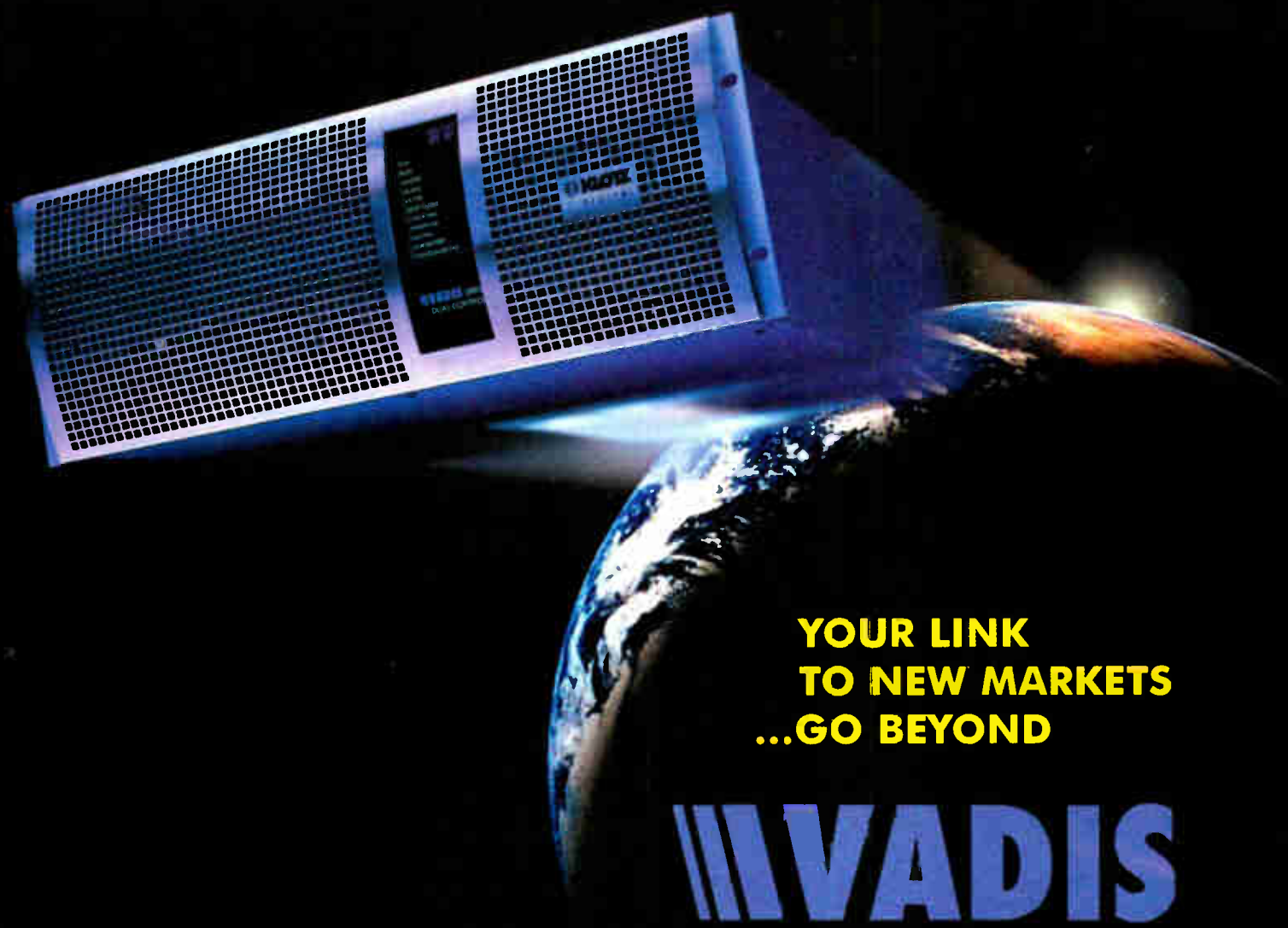
Also Charlie Morgan, chairman of the National Radio Systems Committee and long-time executive for Susquehanna Radio Corp.; Mike Starling, VP for engineering at National Public Radio and a former CE and station manager; and Barry Thomas, DOE of Comedy World Inc., a new media company broadcasting on the Net, who is national secretary of SBE.

Mike Starling

Barry Thomas

Paul McLane is a veteran journalist with experience as a radio anchor, equipment sales manager and marketer.

World Radio History



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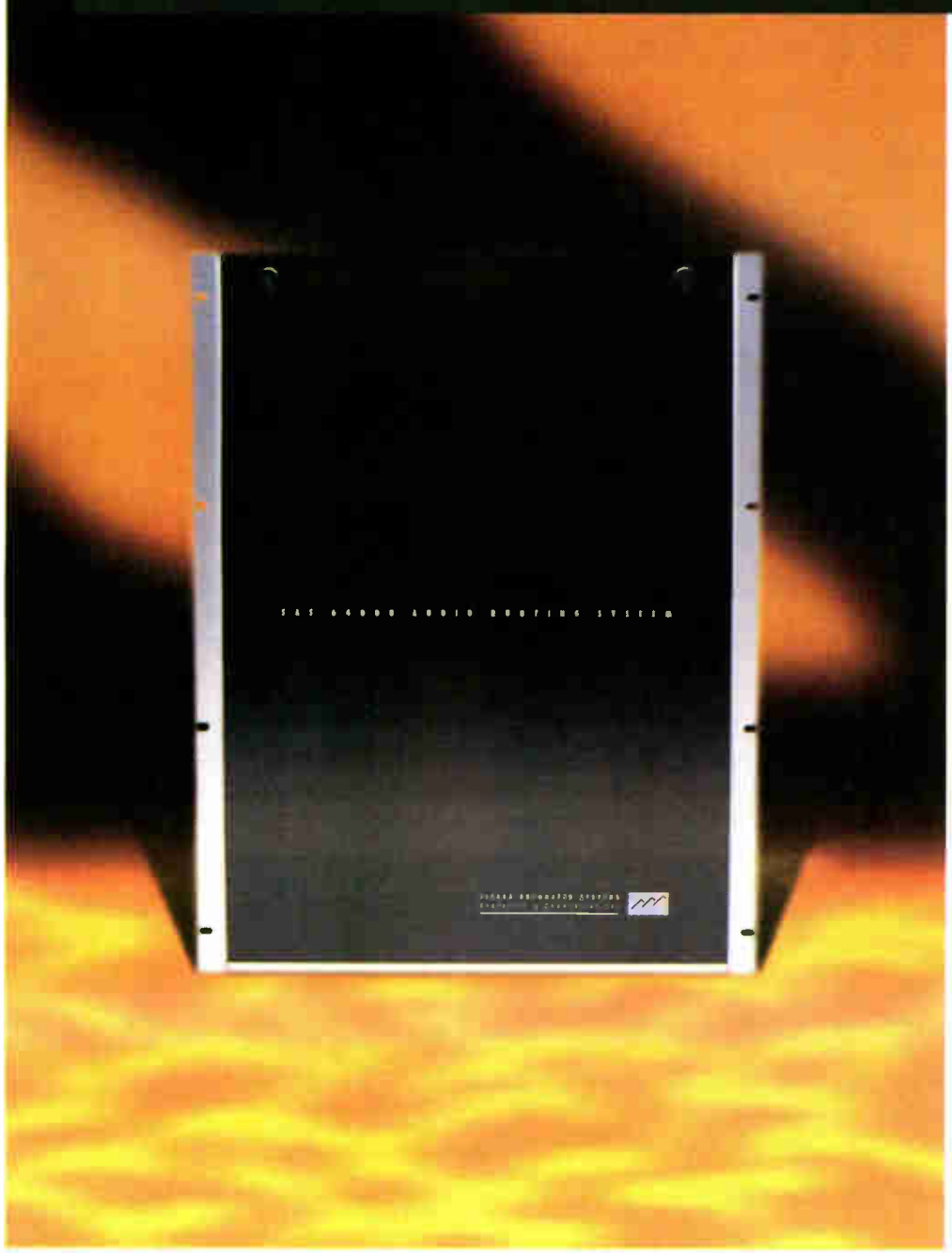

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World Radio History

# Now the Net Really Is @ the Show

## *Proliferating Dot-Coms and Internet Services Angle for Radio's Attention on the Exhibit Floor*

**Ken R.**

Two years ago, most people were aware of the Internet, but few could say for certain how it would interface with the radio industry. Now dozens of companies will have broadcast-targeted products on display at the NAB Radio Show in San Francisco.

Here is a sampling of the Netware that will be at the show, which features the theme "Internet@The NAB Radio Show." See the listings in this issue or check out the on-site program material for more choices.

But take a good look while you're there. Experience suggests that while some of these companies may be the next big thing in serving radio online, others in this rapidly changing part of the industry might not be around by the next show.

John Maloney, vice president of broadcast sales for the eastern region for Adoutlet.com, said his company created an online exchange to buy and sell commercials.

"We target agencies and media planners who establish a profile of their desired demographic and then they can watch the choices pop up on screen," said Maloney. "Stations list their avails and special features and our search engine allows the agencies to match them with their goals."

### The direct ad revolution

Activate CEO Jess Schrock said advertisers are spending about $8 billion a year on Web banners that do not seem to work.

"Activate allows online stations to personalize ads to a specific listener," Schrock said. "For example, if you do a lot of clothes shopping online, the ad that would pop up while you were listening to *www.Z100.com* might be for gap.com."

While Arbitron is best known for measuring traditional radio ratings, MeasureCast Inc. wants to stake its claim as the first company to provide credible third-party streaming audience measurement.

"Our target customers are Internet broadcasters, advertisers and media rep firms," said Bill Piwonka, vice president of marketing. "MeasureCast provides next-day ratings and demographics."

For stations that still have not gone online with their audio, BroadcastAmerica.com can sign them up and provide equipment at no charge.

"We are the largest Internet broadcaster in the world in content and hours, with more than 600 stations streaming right now," said Kim West, director of corporate communications. "All we ask in return is barter time." BroadcastAmerica.com considers radio stations as its partners and has plans for revenue sharing in the future.

Weather used to be an "audio-only" service but now DTN Weather Center can provide audio for your station and graphics for your Internet site.

"This might include severe weather watches or warnings, satellite photography and of course local forecasts," said Rob Carolan, broadcast meteorologist.

"We have an arrangement with the National Weather Service to redistribute their Doppler radar information and provide a menu of services."

Of late, Internet radio stations have become multimedia events. FmiTV is on the cutting edge. "We have the best convergence model for the industry: radio with pictures," said Laurence W. Norjean, chairman/CEO of FmiTV.

Kim West, BroadcastAmerica.com

"We can provide bulletin boards, games, interviews and much more so we can really reach out and touch the listener." Norjean said the Internet allows stations to transcend their signal limitations and make their programming "three dimensional."

Liquid Audio Director of Broadcast Interface Stephen Page said stations should think of the Internet as another revenue source.

"We put together programs that enhance the stations, let them pull in more people and target their audience," said Page. "Then the station can sell their Internet presence more profitably."

Liquid Audio also has software that allows program and music directors to go to a password-protected site and audition the new music released by record companies.

MediaSpike's Direct Air represents a method of replacing broadcast commercials with carefully targeted messages on station Web sites.

"We allow listeners to filter the station for themselves," said Erle Younker, vice president, affiliate development.

"We build a brand-new player for each station, but we are format agnostic." The service can also provide stations with real-time ratings and advertisers with feedback as part of this turnkey service.

MediaRewards.com came up with a way to "incentivize" Web site visitors to do what advertisers want them to do. In exchange for providing data about themselves, listeners collect points toward prizes.

"It's a win-win-win solution," said Kirk Faulkner, business development director. "The advertiser, the listener and the radio station all come out ahead, and if the station doesn't make money, we don't make money."

Rob Striar, director of sales and marketing for AdAcoustics, said radio stations get a higher price for inserted Web commercials if the spots target the specific listener. "And we work seamlessly to integrate our software with whatever system the station uses," Striar said.

One feature of the AdAcoustics software is i-fetch, which launches a pop-up window for direct response to the advertiser.

The Telos AudioActive line offers two products designed for Webcasters. The MPEG Realtime Hardware Encoder can take a broadcast signal and convert it for streaming use without a computer.

The MP3 Production Studio Pro is used for putting commercials or music into a digital delivery system or any other location calling for MP3 files.

Omnia, a Telos company, offers the Omnia-3net, an audio processor designed specifically for Internet broadcasts. "It's a plug and play solution which has presets for all bit rates," said Mike Dosch, managing director.

As one might expect, BuySellBid.com is an Internet classifieds company covering four major categories of offerings: employment, automotive, real estate and general classifieds.

"For radio stations with Web sites we offer local content and Internet tools for capturing more local newspaper dollars," said Robert "Skip" Tash, executive vice president of the radio division.

"Stations are able to sell local advertisers banner and other print or coupon based ads, and listeners can browse at no cost."

Another feature can alert listeners when items they seek become available.

Stephen Page, Liquid Audio

Chad Meisinger, president of Innuity, has a new wrinkle for stations that publish their own Web pages.

"We have the technology to help them design their own site and also allow any designated station employee or advertiser to remotely access or change any aspect of it," Meisinger said.

"This means Burger King can change their on-line coupon with a moment's notice." Innuity also offers data mining and permission marketing capability for e-listeners.

"We can let loyal listeners provide this important information a little bit at a time which increases the likelihood of getting better data," said Meisinger. Other tools offered by this company include ad targeting and tracking features. Innuity provides on-site training and follow-up.

*RW will cover new products and services in full in our show wrapup issues.*

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World Radio History

# Engineers Enhance Careers at NAB

**Alan R. Peterson**

This year, engineers are receiving the red-carpet treatment at The NAB Radio Show.

Besides a complement of certification workshops and in-depth technical sessions at the Moscone Convention Center, engineers get their own hours to walk the exhibit floor and check out new products, with *no* bosses tagging along.

The association also offers special registration packages to engineers.

### Tips and antennas

Station engineers get rolling at 9 a.m., Wednesday, Sept. 20, with "Management Tips From the Experts," moderated by RW Editor Paul McLane.

He said the session would be an informal roundtable talk with leading engineers about the issues of the day and how to leverage technical skills for a more rewarding career.

The panel includes the president of the SBE, the chairman of the NRSC and several radio and dot-com engineers (see page 20).

After lunch, the "AM/FM Antenna Certification Workshop" gets underway at 1 p.m. in the Moscone Center, moderated by John Marino, vice president, science and technology at NAB.

Dave Wilson, manager of technical regulatory affairs for the association, said, "We want to provide engineers with details on the maintenance and performance of AM and FM antennas, to provide a refresher for the experienced professional or a learning opportunity to the new engineer."

The panel consists of familiar faces from the "AM Workshop" sessions of previous years, including Benjamin Dawson, principal with Hatfield and Dawson, and Ronald Rackley, engineer and co-owner of du Treil, Lundin and Rackley.

Thomas Silliman, CEO of Electronics Research Inc., will be joined by Bob Surette, manager of Shively Labs, to discuss the maintenance of FM antennas in the field.

"We will tell folks what can go wrong, what key indicators they should be looking for," said Silliman.

A special timeslot is reserved for the presentation of the new EH Antenna by Ted Hart and Bob Zimmerman, co-designers of the innovative new AM antenna (see story on page 19).

Engineers get to sleep late on Thursday, Sept. 21, as they have the exhibit floor pretty much to themselves for a while this morning.

From 10 to 11:45 a.m., the Moscone Convention Center Exhibit Hall has been kept free of conflicting sessions so engineers can conduct some technical talk with manufacturers, along with some one-on-one demonstrations of hardware and software.

At 1:30, the extensive "Digital Facilities Certification Workshop" begins, with emphasis on in-band, on-channel implementation and facility construction based around networked digital systems.

The session opens with remarks by moderator Glynn Walden, long-time proponent of IBOC. Walden is now with iBiquity Digital Corp., the company formed by the recent merger of USA Digital Radio and Lucent Digital Radio.

The day continues with talks from representatives from AM and FM transmitter manufacturers, including Wendell Lonergan of Nautel and George Cabrera, who has been coordinating research for Harris Corp.

Referring to his talk, "When Upgrading FM for IBOC, Which is Better, Common or Separate Amplification," Cabrera said, "This is an update of a presentation we did in April at NAB2000. We have new data."

Cabrera and his associates ascertained early that there were two ways to

See ENGINEERING, page 25 ▶

**Fresh workshops, special hours and discounted prices are part of the NAB effort to attract engineers to the show.**

THE NAB RADIO SHOW

BEST BETS

Dr. Spencer Johnson

*What:* Super Session With Dr. Spencer Johnson
*When:* Wednesday, Sept. 20, 3:30 to 4:45 p.m.
*Where:* Esplanade Ballroom

Spencer Johnson, M.D., author of "Who Moved My Cheese" and co-creator of "The One Minute Manager," will address the Radio Show. He received his M.D. with a B.A. in psychology from the University of Southern California.

Johnson's most recent book, "Who Moved My Cheese," has been atop best sellers lists including those of The New York Times, USA Today, Business Week and The Wall Street Journal. The book is a parable about the way people adapt to change. It is touted as a guide and training tool for America's corporations and organizations.

His books include "The Precious Present," "Yes or No," and the "One Minute Series," which includes "The One Minute Sales Person," "The One Minute Mother," "The One Minute Father," "The One Minute Teacher" and "One Minute For Yourself."


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World Radio History

# Full Session Menu for Managers

"Hey, **RW**, you told us about sessions for engineers, sales, programmers and Internet geeks. But is there anything for owners and managers on the agenda?"

What, are you kidding?

**"Finding Big Talent in a Not-so-Big Town"**

On Wednesday afternoon is a session about recruitment and compensation in small markets. Tips on recruiting big talent, creative compensation and why building diversity in your staff makes better radio will be discussed.

**"Radio Ownership: How Many Ways Can You Count to Eight?"**

NAB's Jack Goodman leads a session on how the FCC is rethinking just what a radio market is. The Thursday morning panel will be packed with FCC staff and big-name communication law attorneys.

**"Where Is the Money?"**

Entrepreneurs looking to buy in small markets will want to attend the Thursday morning session on how to find money for such ventures. Who is lending, what are alternative sources of funding and funding for minorities are on the agenda.

**"Structure: The Core Values of Clustering"**

Consolidated chaos — that's the situation managers face as consolidation creates more station clusters in every market. A Thursday morning session promises to show you how to structure your stations to be effective in this environment.

**"Taking Stock in Your Future"**

Do you invest in your own industry? Your own employer? The competition?

Radio's successes and failures on Wall Street will be the topic of this Thursday afternoon session. Who's getting in on the action? And alternative compensation via stock options as incentives and rewards will be considered.

**"Ten Commandments of Broadcast Success"**

Doug Harris combines elements of his signature presentations, "Unleashing the Creative Animal in You" and "Developing Your Twelve-Month Promotional Attack" in a Friday morning session. The session will show you how to build a set of instructions for success that are adaptable to any broadcast situation.

**"FCC Rule Enforcement"**

**RW** legal columnist Barry Umansky is part of a panel on Friday morning that tells you how to avoid those nasty FCC Enforcement Bureau fines. The session will tell you which rules you'd better follow or else you'll end up paying thousands of dollars in FCC fines (and possibly forfeit your station).

**"AM Radio: The Road Ahead"**

There's gold in AM radio. This session right before lunch on Friday will show how to turn your AM station into a cash cow. Successful AM managers in a variety of stations will offer advice and share their treasure hunt victories.

**"A Manager's Mission: The Core Values of Clustering"**

Learn how to hire, motivate, compensate and retain an all-star staff in a consolidated world in this Friday morning session.

**"Radio and Congress: A Spectrum of Issues"**

How does Washington view the radio business? Find out a the Friday afternoon session that promises that Capitol Hill insiders will tell you key legislation facing radio.

**"Stepping Your Way Through EEO Compliance"**

Check out the EEO rules session Saturday morning before you go home. With the new EEO rules in effect, this is a good opportunity to review what is required to comply with them.

**"What Industry Are We Really In?"**

Also on Saturday morning is a radio navel-gazing session that promises to examine the impact of new technology and traditional radio — how will we fit in?

**"Radio's Future: From LPFM to Satellite Radio to Terrestrial Digital Radio"**

Is it the end of radio as we know it? Find out Saturday morning.

This is a sampler. The show features sessions on recruitment to financing to new technologies and their impact on radio business.

Visit *www.nab.org* for details.

## THE NAB RADIO SHOW BEST BETS

*What:* Colin Powell Keynote
*When:* Thursday, Sept. 21, 9 to 10:15 a.m.
*Where:* The Esplanade Ballroom

Colin Powell

Former Joint Chiefs of Staff Chairman Colin L. Powell will deliver the keynote address at the Radio Show.

He was the top officer in the U.S. armed services for four years, overseeing military operations including the 1991 Persian Gulf conflict. He is chairman of America's Promise/The Alliance for Youth, a crusade to improve the lives of at-risk youth.

NAB President Eddie Fritts called Powell a true national hero.

## *Engineering*

▶ Continued from page 24

implement IBOC on an FM transmit-

"One was to use an existing FM ansmitter with an add-on combiner. he second is a linear transmitter for oth IBOC and analog signals."

A side effect of digital transmission . the creation of amplitude distortion ver time, where before the amplitude f an analog FM signal essentially emained constant.

"It would require a very transparent, ery linear transmitter to minimize that istortion," said Cabrera.

### Foti findings

The session includes the findings of rank Foti, president of Cutting Edge, egarding the unique audio processing equirements that digital audio broadcasting will demand.

"It's specialized," Foti said. "Folks think of current-day FM as hi-fi and believe that DAB should have the same sound or the same 'texture.'"

Foti said that won't be the case for digital radio.

"DAB does not have the pre- and de-emphasis that FM does now," he said. "And that emphasis really does affect the quality of the signal. So the perceived sound of a DAB processor will be very different."

One big obstacle to overcome might be the mindset of some FM radio broadcasters and a perception factor that could cloud reasonable judgment.

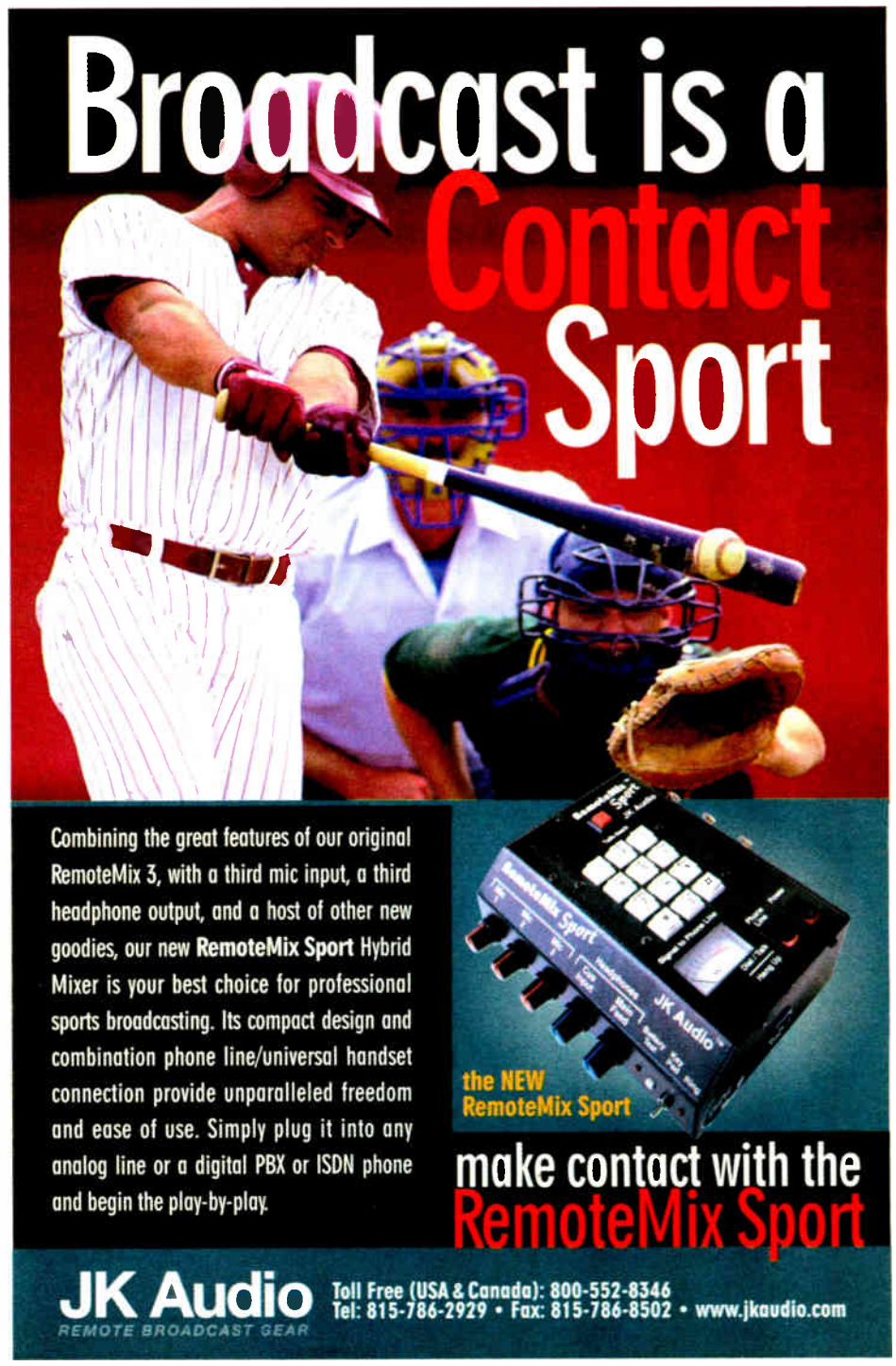
"Managers are still going to tell their engineers to be louder than the guys down the dial," said Foti. "But it takes from five to 10 seconds for a DAB radio to lock in to the next station. By then, the ear's 'memory' will not be able to tell if one station is indeed louder."

Volume wars have been going on since FM emerged as the dominant band for music broadcast, and Foti suspects some programmers will be reluctant to let go.

"I'm speaking of this now before PDs and engineers kill each other," he said.

The session continues until 6 p.m., and includes an explanation of the SBE Broadcast Network Technologist certification by former SBE President Terry Baun, the definition and fundamentals of networking, and a real-world application as presented by Chris Cottingham, engineer of KYLD and KMEL in San Francisco.

Finally, on Friday, Sept. 22, the all-day "AM/FM Transmitter Certification Workshop" commences at 8 a.m., hosted by John Bisset of Harris Corp. and the longtime author of **RW**'s *Workbench* series of technical tips and timesavers. Bisset has offered this workshop for years, and is being joined by representatives from transmitter manufacturers to share technical data of their respective company's products.




World Radio History

# Sessions Put Spotlight on the Net

**Steve Sullivan**

This year's NAB Radio Show will feature what the association is calling "a show-within-a-show."

"Internet @ The NAB Radio Show" features 16 sessions, demonstration areas and exhibits to educate attendees on the peculiarities, pitfalls and promises of this emerging technology.

"There's been a lot of concern and criticism about the development of radio station Web sites," said Steve Goldstein, executive vice president for Saga Communications and a moderator for one of the sessions.

"Because of this concern, there is a concerted effort by the NAB to focus on ways to improve the industry's understanding of the Internet."

Sessions will cover the basics of the technology and offer practical explorations of accompanying complex and crucial issues such as legal ramifications and revenue potential.

### Understanding the basics

Given the rapid saturation of broadband connectivity in the United States, experts say it's important to have a basic understanding of what the Internet means for your station.

Kinetic Strategies, a broadband research firm, reported in June that North American cable system operators pushed past the $3 million mark for cable modem customers with more than 7,000 new customers coming online every day.

Similarly, rapid deployment of high-speed DSL connections and the recent introduction of satellite interactive terminals, which provide homes with direct, high-speed Internet connectivity via satellite, led analysts to predict that we are likely to see 6 million American homes with broadband connections by the year 2001.

For consumers, the Internet is easier to use than ever, offering a high-quality multi-media experience above what listens hear on conventional radios.

Representatives from Coleman and Arbitron will discuss findings of a comprehensive consumer broadband study in "Can Radio Survive the Broadband Revolution?" The presentation will compare and contrast broadband users with "normal" radio listeners, and examine issues such as where Napster, MP3 and Web-only radio fit into the competitive market for listeners.

"Let's Get Sticky: Building a Successful Internet Strategy" will answer the basics about what to do on the Web. Panelists will discuss strategies that stations are using to attract visitors to their sites and keep them coming back. The session will emphasize using a Web site as a visual complement to the on-air product.

Two sessions will explore the concept of streaming.

"The Elements of Streaming: From the First Drop to a Stream" will detail the technical aspects of taking your broadcast from the studio to your listeners' computers. It will touch on issues such as selecting the proper bandwidth and deciding whether you should outsource the streaming operation.

"Streaming: What's In It for My Station?" goes beyond the technology for a look at the strategic and marketing issues you should consider before introducing your programming to the Internet.

Putting your sound on the Web can be easy compared to understanding the legal issues involved. "The Internet, The Law and You" delves into the legal trap doors that accompany new media. Included will be discussions of broadcasters' disputes with the recording industry, as well as rights management, intellectual property and talent issues.

With the limited resources, keeping your Web site compelling can be a challenge. Veteran Web masters share recommendations and warnings in "Managing Your Web Site." The session will present information about running the operation in-house versus outsourcing it, and working with different technology, content, affinity, commerce and creative partners.

"Broadcasters can't ignore the Internet," said Cheryl Evans, author of a study on Webcasting's impact on traditional broadcasting and Mass Communications Department Chair at Northwestern Oklahoma State University.

"The competition is much different now," said Evans. "There can be an unlimited number of personal Netcasters broadcasting on the Internet. There are wireless Internet devices going into cars giving people more listening choices. Radio stations need to learn how to market themselves differently and find ways to make themselves stand out."

Evans will discuss the findings of her research during "Radio + Internet Portal = Super Localism." That session proposes that one of the best ways for radio to leverage assets is to partner in local community portals.

Two sessions will elaborate on the devices that can pull audio streams off the Internet and how they will increase the competitive environment.

"New Media & Autos: Is the Free Ride Over?" will deal with the impact on local radio of in-dash Internet devices and satellite receivers.

"Left to Someone Else's Devices" takes into consideration how these in-car devices, plus others tools such as personal computers, cellular phones and personal digital assistants will enable listeners to choose from thousands of streaming audio sources. Panelists will discuss how each type of device supports new kinds of business models.

### Making money

If you're going to spend money to create and maintain a Web site, you certainly want a return on your investment. NAB has set up several sessions hoping to provide insights into using your site to generate additional revenue.

A potentially profitable revenue stream is online classified advertising. Classifieds were for many years the exclusive franchise of local newspapers and remain powerfully profitable for publishers.

The Newspaper Association of America reports that in 1999, automotive, real estate and employment classifieds brought in more than $15 billion to the industry. However, the Internet now gives you an opportunity to take a bite out of that enormous pie.

"On-line Help Wanted: Beating the Newspapers at Their Own Game" will present a case history of a small-market broadcaster who is competing effectively with his local newspapers for classified advertising dollars.

Other methods of generating online revenue will be explored during "Has the Internet Train Left Your Station?" For anyone charged with keeping abreast of the latest revenue streams, this is an opportunity to hear about many of the ways Web entrepreneurs tapped into a worldwide electronic commerce gusher that topped $107 billion in 1999.

Steve Goldstein

However, before you can effectively capture a part of the revenue bonanza, it helps to know the language, marketing strategies and have an understanding about how to position radio as a prime e-commerce solution. "What You Must Know About e-com Business" gives an overview of how e-commerce can work.

"New Revenue Models" uses radio as a starting point to evaluate business models that the Net presents. A panel of successful Web entrepreneurs will compare models, and evaluate the risk and impact the revenue streams could have on your business.

Should you stop selling spots and start selling your customers Web sites? That's a question that will be explored in the session, "The Internet, Local Retail and Radio: The Birth of New Age Partnerships," a session about how stations can take the lead locally in helping retailers bring their products and services online.

Co-presenter of the session, Dave Casper, senior vice president of Internet services for the Radio Advertising Bureau, said sales staffs often are reluctant to get behind the Internet simply because they don't understand it.

Casper said, "But the reality is that as difficult as it is for people in radio to understand opportunities on the Web, it's even harder for retailers."

Casper hopes the session will he enlighten sales managers on the opportunities that the Internet offers radio stations and their customers. The NAB hoping that this entire "show-within show" will do the same for all attende

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World Radio History

# Overview

▶ Continued from page 19

as reported on pages 23 and 26.

The association will offer free advice on launching a radio Web presence or enhancing the one you have. "The NAB Web Station," presented by Innuity Media Services, is an educational booth that focuses on four areas of Internet strategy: getting started, content and programming, advertising and promotions, and database marketing.

The booth list itself is crowded with dot-coms and related suppliers. They have names like CareerLink.com, SpotTaxi.com, AdAcoustics, AllRadioCommercials.com, Media Rewards.com, iTuner Networks, Kerbango, measurecast, akoo.com and lightningcast.

In this volatile age of new media, relatively new names like BuySellBid.com and GlobalMedia.com already seem like stalwarts. Other Net startups that exhibited at past shows are gone — out of business or morphed into other shapes and markets.

Managers will get a chance to see what the new online receivers look like, from companies like akoo.com and Kerbango. Familiar suppliers are expanding their lineups to provide ad insertion systems, online audio processors and audio players, and Net consulting.

### Peek into the future

Right off the bus, you will see something new when you walk into the convention lobby.

"The NAB Radio Station of the Future," presented by Harris Corp. in cooperation with other exhibitors, will provide a peek into what the next generation of radio might be like.

"We wanted to something a little more futuristic so people would get a feel for our 'Internet@The NAB Radio Show.'" said Gene Sanders, director of exhibit sales and services for NAB.

Inside the hall, Sanders said, will be 210 companies; see the listings on page 34 for details. Solid-state portable recorders and upgrades to automation systems will be in the news. On the floor, old will mix with new: Circuit Research Labs will promote its recently completed acquisition of Orban, including the new Optimod-FM 8400. LPB will talk about its purchase of the Fidelipac line. Wicks Broadcast Solutions will talk about its CBSI and Datacount offerings.

If you can't get enough technology by walking the floor or if your time is limited, a good way to find out about new products is something called "Sound Off," a rotating schedule of 20-minute presentations by exhibitors.

Tracy Mulligan, manager of national accounts and new business development for NAB, said most of the talks are related to the Internet, but other products are on the agenda. Friday's schedule includes an hour-long presentation about streaming by Akaimi Technologies.

Legendary southern rock band Lynyrd Skynyrd will perform at the NAB Marconi Radio Awards Dinner

## THE NAB RADIO SHOW BEST BETS

Lowry Mays

*What:* Super Session: Lowry Mays One-on-One With Lou Dobbs
*When:* Thursday, Sept. 21, 1:30 to 2:45 p.m.
*Where:* Esplanade Ballroom

No matter where you go in radio, Clear Channel seems to be there. What does the landscape look like to Lowry Mays from his perch at the top of the business?

Financial journalist Lou Dobbs will talk with Mays, the chairman and CEO of Clear Channel Communications Inc. Mays formed the company in 1972 when, as an investment banker, he was left with a financially troubled radio station.

Today, Clear Channel owns or plans to own almost 1,000 radio stations and 19 TV stations reaching more than 120 million people weekly, plus outdoor displays in 32 countries.


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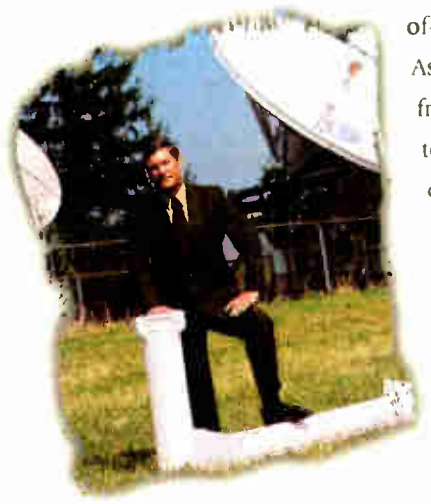

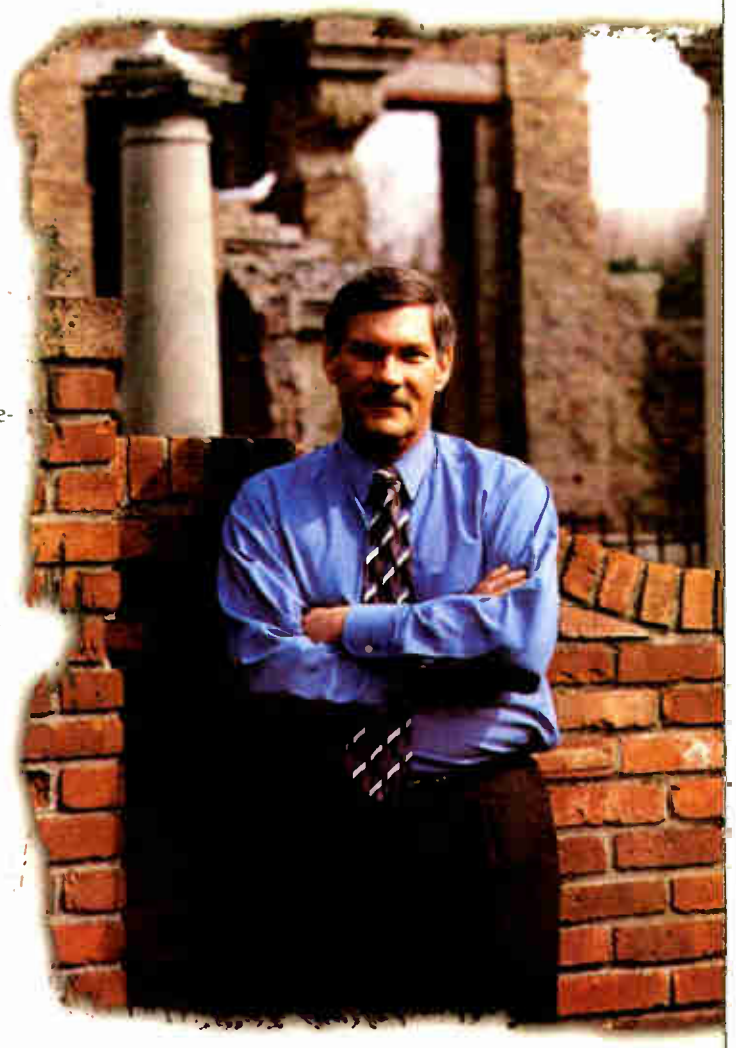

Here's a guy who makes the most of his opportunities. After ten years of on-air work at WFMS, Max wanted to better utilize his electronics skills. Susquehanna gave him the chance, with a promotion to Chief Engineer.

Then, just two years ago, as Engineering Manager of three Indianapolis stations, Max had the opportunity to fulfill a lifelong dream.

"My dream," he says, "a total rebuild of the facilities...a chance to design the studios the way we always wanted, with state-of-the-art equipment." As he took the stations from records and carts to a touch-screen digital operation, Max enjoyed total support from the corporate office. In his words, "Susquehanna has the best group of engineers in the industry. We all communicate and share ideas."

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World Radio History

# Experts Elucidate Format Evolution

*Programmers Debate Future of Changing Formats In the Age of Internet and Satellite Radio*

**Ken R.**

There are no new breakthrough formats on the radio horizon, but the existing ones are changing and dividing like amoebae.

The NAB Radio Show will focus on these new wrinkles in a series of topical sessions.

For instance, at one time, there was only one variety of talk station, and it catered primarily to senior citizens. Now the seniors can talk about leaf removal and the younger folks can talk about sex, drugs, and rock 'n' roll on their own FM stations.

### Questions abound

Rockers are also seeing their audience scatter to alternative and rhythmic outlets. Is there enough of a difference to the audience?

Adult contemporary stations are fretting about increasing competition from the Internet and the satellite band. Will there soon be 100 other channels competing with their programming?

Urban stations often end up splitting their audience with their own sister stations. Is there a way to cooperate on events, promotions and database marketing and yet avoid competing with music?

Most country competitors end up with overlapping playlists. The experts believe the way to dominate the market is with the elements between the songs. Production, personalities and promotions can help differentiate the winners.

Walter Sabo

There are new challenges for the aging classic rock stations. One of those is developing a relationship with their often-unwilling bedmates in the music industry. Another involves the right way to introduce new music by older, established artists.

With adult standards, the music is getting older. But if the programmer brings it too far into the present, the station becomes just another soft AC player.

CHR has experienced resurgence, but how does management avoid another fatal dip in popularity?

Traditional oldies stations now face newcomers to the party, which play urban or rhythmic variations. Another onslaught comes from niche stations playing only 1960s or '70s hits.

NAC/Jazz outlets are leaking listeners. How do they unify a schizophrenic playlist and focus their audience?

An increasing number of sports stations debate whether or not to offer play-by-play. They also are concerned about which demographics they should target. Should they use syndicated or local talent?

In Los Angeles, three of the top five stations air some form of Hispanic programming. The trend is spreading, but how do programmers turn newly discovered 2000 census numbers into ratings?

### Panelists preview sessions

The average age of a WOR(AM) talk listener is 73.

"That's a hell of a station for reaching 65-plus," said Walter Sabo, president of Sabo Media and a news/talk panelist in one of the upcoming sessions. "But what most people don't realize is that talk is not a format; it's a means of communication."

"In everyday life you speak differently to your grandmother than you do to your children, so we use talk as a way to reach any demographic we want," said Sabo. "Programmers have not figured this out yet."

Sabo views successful talk stations as the ones that are able to format themselves like music stations. "Like our WKXW(FM) in New Jersey. It's really a music station with respect to format but we forgot to play the music."

Classic rock moderator Fred Jacobs, president of Jacobs Media, promised that his session wouldn't cover the same old wheezy topics.

"We're going to focus on only two areas: new music and the Internet," said Jacobs. "We're going to bring in some label people and some Internet people and have it out.

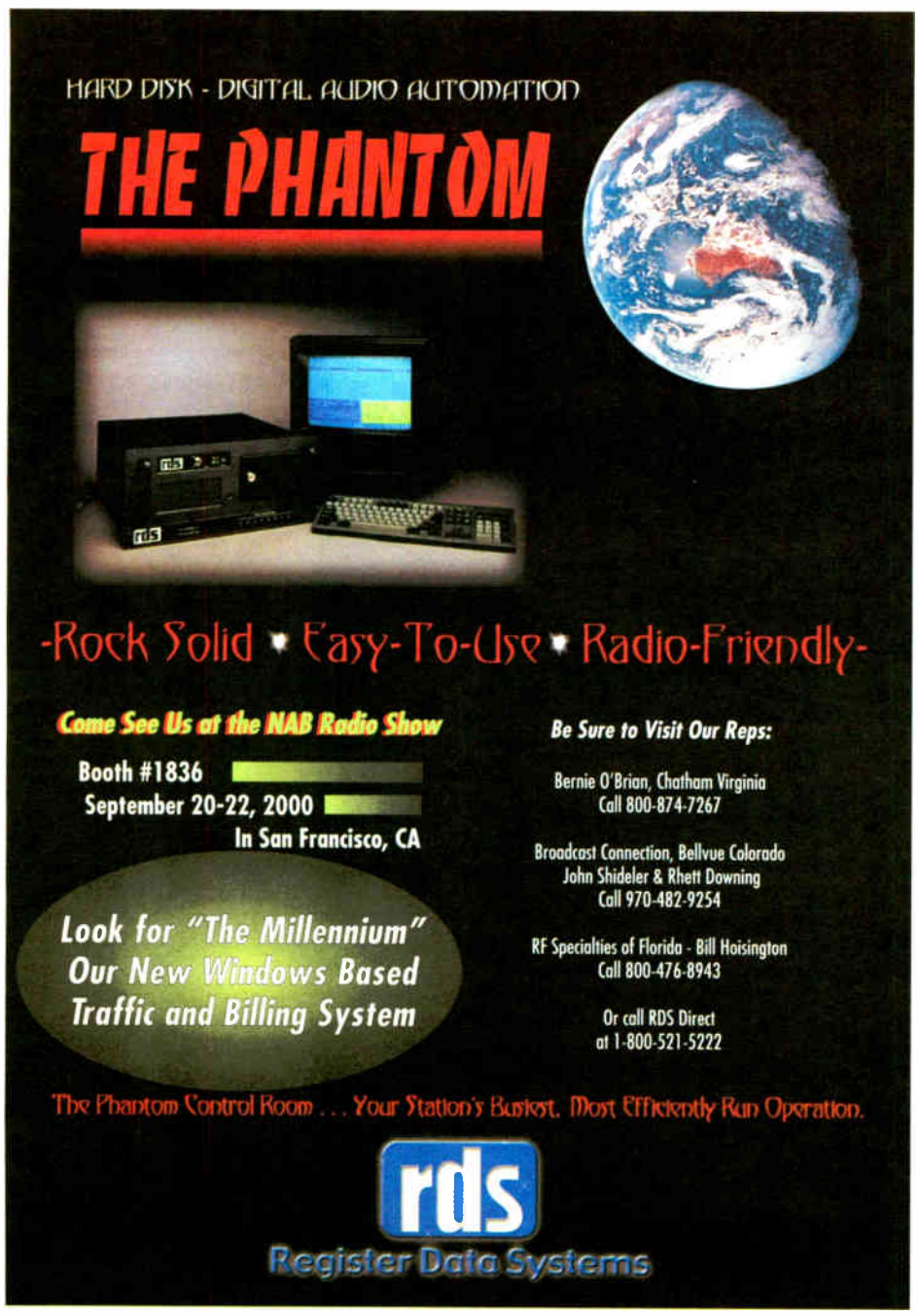
"I'm very interested in finding out what classic rock stations can be doing to expose new music from our core artists... and discussing what the record labels should do to work more smoothly with our stations," said Jacobs. "On the Internet side we're going to show some actual examples of how to set up Web pages."

Jacobs believes that the classic rock format is a proven winner, but he wants to dispel the notion that it has no new tricks to learn.

There are 13 format-oriented sessions on the schedule for The NAB Radio Show including News/Talk moderated by Jack Swanson, program director of KSFO(AM), San Francisco; Rock Alternative hosted by Dave Beasing, alternative consultant with Jacobs Media; Adult Contemporary chaired by Dan Vallie, founder/CEO Vallie Richards Consulting; Urban moderated by Tony Gray, president Gray Communications; Country with Lon Helton of the Radio & Records Nashville office; and Classic Rock helmed by Fred Jacobs, president Jacobs Media.

Fred Jacobs

Other format sessions include Sports moderated by Rick Scott, president/CEO Rick Scott & Associates, Local News moderated by Steve Newberry, president/CEO Commonwealth Broadcasting, CHR with Jim Richards, president Vallie Richards Consulting, Oldies led by Chris Elliot, president, Chris Elliot Consulting, Hispanic moderated by Bill Tanner, vice president programming for Heftel Broadcasting Corp., and NAC/Jazz moderated by Frank Cody of Broadcast Architecture.




## THE NAB RADIO SHOW BEST BETS

*What:* Brown, Smulyan at Radio Luncheon
*When:* Friday, Sept. 22, 12:45 to 1:45 p.m.
*Where:* Esplanade Ballroom

Jeff Smulyan

Willie Brown

San Francisco Mayor Willie Brown Jr. is the featured speaker at the Radio Luncheon, where Emmis Communications Chairman Jeffrey H. Smulyan will receive the National Radio Award.

Brown is the city's first African American mayor. He was elected to the state Assembly in 1964 and served 31 years, 15 of them as speaker.

Smulyan formed Emmis in 1980 and took it public in 1994. It operates 16 radio and seven TV stations, in addition to radio properties in Hungary and Argentina.

Interep sponsors the NAB Radio Show Luncheon.

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# Radio Sales: Hitting a Moving Target

**Ken R.**

Developments on the Internet are forcing stations to become more sophisticated in their approach to sales, billing and collections. The pace of change is increasing each week.

The Radio Advertising Bureau will present 15 sales sessions at The NAB Radio Show, most of which involve new high-tech solutions.

Among the hottest trends shaping radio station sales are online want ads, alternatives to the traditional 15-percent compensation plan for sales people, non-traditional revenue sources and an Internet-based method of electronic invoicing.

It took a common enemy to bring competing radio groups together – the newspaper.

"I noticed that my radio advertisers were complaining about not being able to find employees and they were all spending money in the paper," said Eric Straus, president/CEO of Regionalhelpwanted.com.

### Online classifieds

"I had a computer expert put together a program for local online classifieds, then I went to all my competitors here in Poughkeepsie and got them all to join me in Hudsonvalleyhelpwanted.com."

From that humble start, Straus built his concept into a giant that is now in more than 68 markets.

"Each area has its own local Web site, and each participating station broadcasts ads to drive traffic to the sites," said Straus, who will explain his new venture in a Wednesday session called "Online Help Wanted: Beating the Newspaper."

Another Wednesday session, "What You Must Know about Today's New Media Buyers," will feature David Lawrence of the syndicated "Online Tonight" show and Joe Cariffe, senior vice president of sales and business development for GetMedia Inc.

"We're going to predict what things will look like in September 2001," said Cariffe. "We'll help broadcasters follow what's going on with the dot.com industry and give them a choice: fight technological change or embrace it."

Gary Fries, president of the Radio Advertising Bureau, will make his annual "State of Radio Sales Today" presentation on Thursday.

Mary Bennett of RAB

"The American Association of Advertising Agencies has agreed on a format," said Bennett. "And now we're fine-tuning the software and RAB is very involved with that."

Other sessions will cover topics ranging from marketing urban and Hispanic stations to taking dollars from newspapers to competing with giants in large markets and small. Other sessions will involve non-traditional media and tips on cluster management.

**The exceptionally strong radio revenues over the first six months of this year have changed the landscape.**

— Gary Fries
Radio Advertising Bureau

"The exceptionally strong radio revenues over the first six months of this year have changed the landscape," said Fries. "My biggest concern is the fact that the radio industry has to remember the importance of serving the core group of advertisers responsible for this success."

"As the Internet becomes more mobile, it's going to converge with radio," said Fries. "All Internet devices will be like radio devices and the industry is going to have to change."

If history is any guide, he said, radio will thrive because it is the most articulate content provider.

"If we accept the challenge and move forward with the best programming we can," he said. "The Internet will not be a threat."

### Get ready

Mary Bennett, executive vice president of marketing for RAB, will lead a Friday discussion entitled "EDI Is Coming, Are You Ready?"

The initials stand for Electronic Data Interface, a means of linking stations and advertisers through the computer for billing.

"This will have an even greater impact than when stations first computerized their invoicing," said Lindsay Woods Davis, senior vice president of meetings with NAB.

"It's an issue that is only now starting to get on the radar screen," said Bennett. "The advantage to invoicing electronically is that stations may be able to get paid almost immediately instead of waiting 60 days."

EDI is a software interface that will be available to agencies and stations.

THE NAB RADIO SHOW
BEST BETS

*What:* Chow Down With Harold
*When:* Friday, Sept. 22, 7:30 to 8:45 a.m.
*Where:* Moscone Room 104

NAB head Eddie Fritts talks about FCC policies and decisions with Commissioner Harold Furchtgott-Roth. Join them for breakfast and find out where the commissioner thinks the agency and the industry are headed.

Harold Furchtgott-Roth

The commissioner brings an economist's perspective to the FCC. He is in good stead with the NAB on at least one big issue: he was the only commissioner to vote against the order launching low-power FM radio service.

The breakfast is sponsored by CIT.

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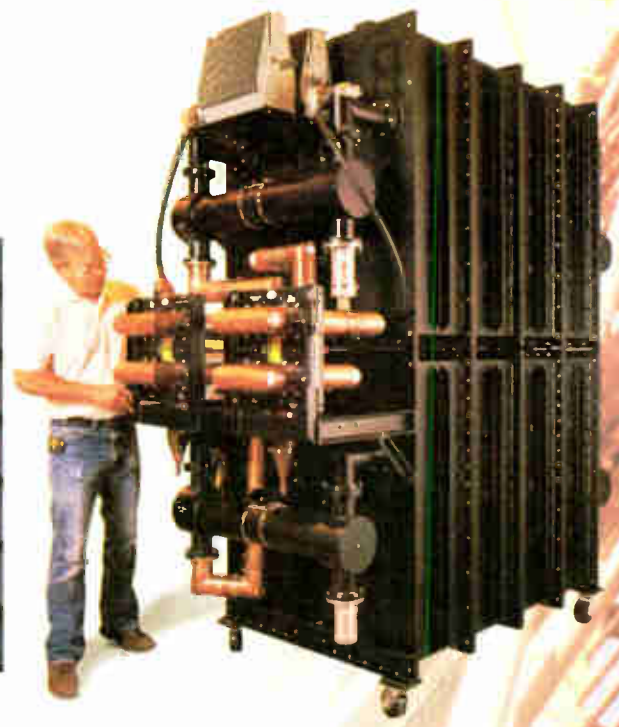

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World Radio History

# Places to Visit in San Francisco

**Linda Sultan**

If you are going to San Francisco you may or may not want to wear a flower in your hair but you can tour the classics: Fisherman's Wharf, Ghirardelli Square, Pier 39.

And if you've already visited the classics, consider these suggestions for a new look at San Francisco.

Experience Chinese culture at the Night Market Fair in Chinatown's Portsmouth Square. Every Saturday evening is filled with lion dancing, Chinese opera, concerts and Chinese painting. Even fortunetellers materialize from 6 to 11 p.m. — who would have predicted that? Call (415) 397-8000) for information.

Swing with some of the best blues musicians in the world at The San Francisco Blues Festival, held Sept. 23 and 24 at the Great Meadow at Fort Mason. Phone number is (415) 979-5588.

Taste gourmet food prepared by master chefs, enjoy a farmer's market and stroll among arts and crafts at the Festival of the Culinary Arts at the Civic Center Plaza. Dial (415) 249-4640 to find out more.

Enjoy the surf and Shakespeare at Stinson Beach. Macbeth is performed Friday, Saturday and Sunday evenings. Call (415) 868-1115 for information.

Join a street fair with a Latin flavor, at the Latino Summer Fiesta in the Mission District. Phone number is (415) 861-3247.

Take a walk. Angel Island State Park offers open-air, narrated TramTours around the five-mile perimeter of the island. Visit a Civil War camp, an immigration station and World War I and II installations. Jumping on the Island Hop Tour, a one-day, five-hour excursion of Angel Island and Alcatraz, is an option. For info phone (415) 705-5555.

Have a good laugh on the Foot! tour, led by a professional local comedian. Explore Nob Hill, Union Square, the Palace Hotel, Chinatown and Washington Square. Call (415) 637-5453.

### Eclectic collection

Admire an eclectic collection at the San Francisco Museum of Modern Art (that's SFMOMA for short, but don't ask us to pronounce it). Now showing: Paul Klee's Acquisitions of the Djerassi, featuring figure drawings and watercolor landscapes. Also on exhibit is Virtual Telemetrix's Selections of the Work of John Bielenberg. 151 Third St. Phone is (415) 357-4000.

Delight in more than 14,000 Victorian homes west of Van Ness Ave. in the Cow Hollow, Pacific Heights and Alamo Square districts. Tour a grand Queen Anne, the Haas-Lilienthal House, at 2007 Franklin St. Tours are given Wednesdays and Sundays.

A mile and a half from shore stands Alcatraz. Tours of the former prison island are conducted by the National Park Service.

Ride on your brakes as you zigzag down famous Lombard Street, winding its way around beautiful flowers and shrubs and offering a splendid view of the bay. The descent begins at Hyde Street.

Admire the 100-foot Peace Pagoda, a gift from Japan, at Nihonmachi (also known as Japantown). The seven-square-block area offers a two-level shopping and dining complex reminiscent of the Tokyo Ginza.

Relish the 360-degrees view from the east side of the 210-foot Coit Tower. Perched atop Telegraph Hill, the tower is located a short distance from the Embarcadero and Fisherman's Wharf.

Walk over to the Embarcadero, where you'll find shops, restaurants, movie theatres and a panoramic viewing deck. The centerpiece of the Embarcadero is the Ferry Building, at the foot of Market Street.

Did you know that the word "jeans" derives from the town of Genoa, Italy? Levi's Plaza, also located at the Embarcadero, is the world headquarters of Levi Strauss. Enjoy the interesting shops, restaurants and the Levi's Jeans History Wall.

A federal penitentiary until 1963, Alcatraz now offers volunteers a chance to examine "The Rock." The 12-acre island is accessible only by ferry, which departs daily from Fisherman's Wharf. But make your reservations well in advance by calling (415) 705-55 55.

Meander through the myriad of eclectic shops, restaurants and cafes of the Haight/Asbury district — still reminiscent of the 1960s. Victorian architecture abounds throughout the neighborhood where The Grateful Dead, Jefferson Airplane and Janis Joplin lived.

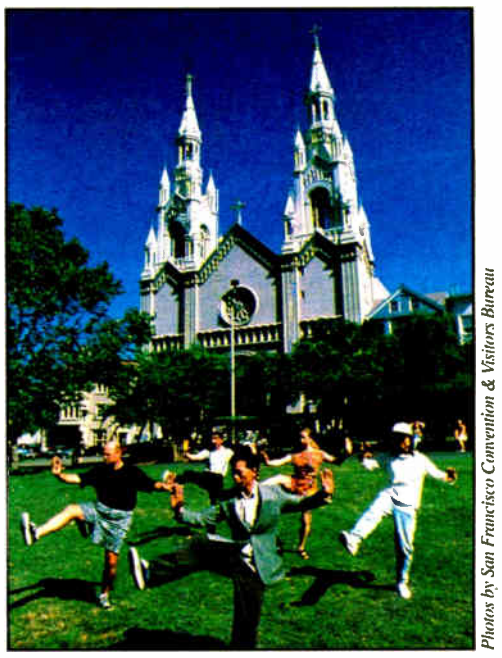
Known as Little Italy of the West, North Beach is tucked between Chinatown and Fisher-man's Wharf. Visit the Church of Saints Peter and Paul found on the grassy piazza in Washington Square.

Grant Ave., the oldest street in San Francisco, extends into North Beach and offers saloons, second-hand shops, pizza parlors and clothing boutiques.

It's the restaurants that draw the crowds to North Beach — and you won't be disappointed. Cafes, Italian delicatessens and bakeries offering tempting pastries line Columbus Ave.

The Golden Gate Bridge links San Francisco with Marin County. The best way to see the bridge is to walk across it — which takes about an hour.

Pedestrian pathways offer sweeping views of San Francisco, Alcatraz and the Marin peninsula, and the view from the heights at the other end is wonderful.



A group practices the art of Tai Chi in the surroundings of Washington Square. Saints Peter and Paul Church is in the background.

Photos by San Francisco Convention & Visitors Bureau

THE NAB RADIO SHOW
BEST BETS

*What:* The Radio Legends Session
*When:* Saturday, Sept. 23
*Where:* Moscone Center Room 250

Big voices, big names: The Radio Legends session brings together Lee Abrams, Kent Burkhart, Casey Kasem, Gary Owens and Dr. Don Rose.

Casey Kasem

Kasem is known as host of the AMFM program "American Top 40 With Casey Kasem." Owens began his career at age 16 as a newscaster in South Dakota and has been a top Los Angeles radio personality and radio executive. He and Kasem are in the NAB Broadcasting Hall of Fame.

Lee Abrams

Lee Abrams is XM Satellite Radio senior vice president of programming, which puts him at the center of the satellite revolution. He is credited with establishing the album rock, classic rock, urban dance and new age/jazz formats.

Kent Burkhart's career includes station ownership, group management, satellite and network radio and international consulting. He is a radio/Internet sports pioneer and helped found Satellite Music Network.

Dr. Don Rose is a long-time radio host at KFRC in San Francisco whose charitable work includes 20 years of March of Dimes Superwalks raising more than $10 million.



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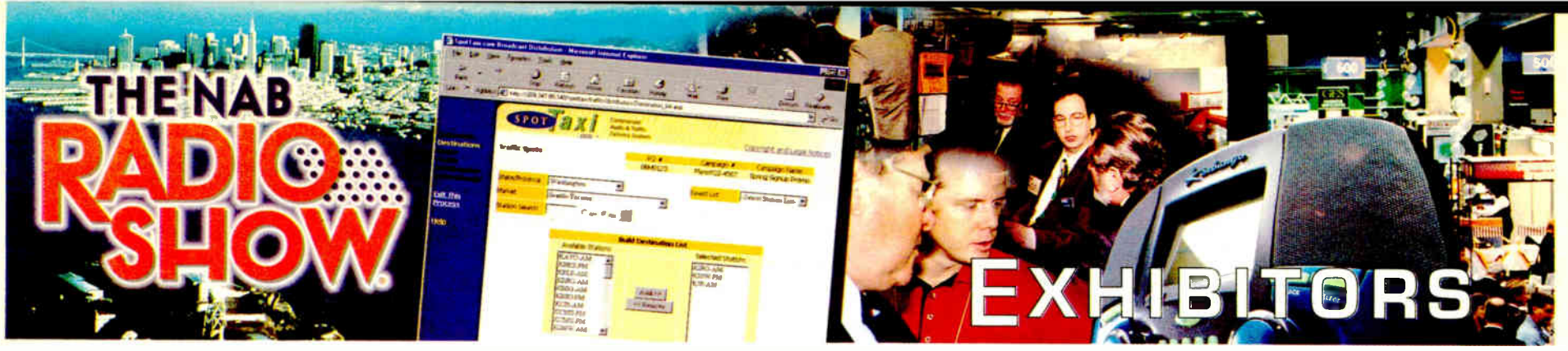


**Exhibit Hours**

| | |
|---|---|
| Wed. Sept. 20 | 5 to 8 p.m. |
| Thurs. Sept. 21 | 10 a.m. to 6 p.m. |
| Friday Sept. 22 | 10 a.m. to 6 p.m. |
| "Exclusively for Engineers" | |
| Thurs. Sept. 21 | 10 to 11:45 a.m. |

*The following companies will exhibit at The NAB Radio Show in San Francisco this month. Product information is based on material supplied by exhibitors to Radio World by Aug. 15. Late registrants may not appear; see the on-site program material for information. Highlighted entries are a paid service.*

**$2.95 Guys (Smoothreads) 835**
*Intro:* Compressed custom-printed T-shirts packaged into shapes that fit into the palm of a hand as a way to generate corporate dollars.
*Also:* Custom T-shirts with designs/logos and up to six colors.

**360 Systems 814**
*Intro:* Short/cut 2000 built to perform all editing and processing operations faster than the original Short/cut recorder/editor.
*Also*: Instant Replay, a hot-keys recorder/player; DigiCart/II Plus, a digital audio hard-disk recorder; and TCR multitrack surround recorders.

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5321 Sterling Center Drive
Westlake Village, CA 91361
818-991-0360
FAX: 818-991-1360
E-mail: info@360systems.com
Web site: www.360systems.com

**4 Cast Media 2516**

**Access Broadcasting 223**

**Accuracy in Media Inc. 810**
*Intro:* AIM Report, a twice-monthly newsletter that critiques media coverage of current issues; Media Monitor offers daily radio commentary on 200 stations with media critics such as Reed Irvine and Cliff Kincaid providing current examples of media misreporting.

**Activate 220**
*Intro:* Radio Webcasting Services, a high- quality, low-cost turnkey streaming solution for radio stations; Ad insertion allows creation of an unlimited ad inventory to bring incremental revenue to radio stations.

**AdAcoustics, The 938**
*Intro:* AdAcoustics places highly targeted, interactive audio advertising into a radio station's Internet stream, aiming to increase listenership and turn content stream into revenue sources; AdAcoustics Network, a turnkey solution for radio broadcasters, Webcasters and Web sites that aims to increase listenership and the bottom line.

Rob Striar, Sales & Mktg.
145 Huguenot St., Ste. 406
New Rochelle, NY 10801
914-235-2099
FAX: 914-235-1448
www.adacoustics.com
rstriar@musicbooth.com

**Adoutlet.com 501**

**Advanced Telecom Services 231**

**Aeta Audio Corp. 2022**
*On display:* Scoop Reporter II, a codec that combines POTS and ISDN in one box.

**Air Force Advertising 738**

**Air Force News Service 905**

**Airdate by TPI 2044**

**akoo.com 2020**
*Intro:* Kima, a wireless consumer product that sends audio from a PC to any home stereo or portable radio system within 1,000 feet.

Susie Delis, Mktg. Dir.
2500 N. Harlem Ave.
Elmwood Park, IL 60707
708-583-9600
708-583-1122
www.akoo.com
susied@akoo.com

**amfm Radio Networks 742**

**Andrew Corp. 427**
*On display:* Supplier of transmission equipment, systems and services for communication markets, including HELIAX high-performance air- and foam-dielectric coaxial cables and elliptical waveguides; HRLine and MACXLine rigid line components; Inners Only inner conductor replacement systems; state-of-the-art pressurization equipment, including the NXT2000 DryLine automatic nitrogen membrane dehydrator; and a full line of installation accessories. Andrew Passive Products will show filters, combiners and RF systems and components.

Rose Wolski
10500 W. 153rd St.
Orland Park, IL 60462
708-349-3300
FAX: 708-349-5943
www.andrew.com
E-mail: webmaster@andrew.com

**Antenna Concepts Inc. 801**
*On display:* Ultra Tracker/Ultra Tracker II helps broadcasters with new RF exposure standards as well as problems associated with multipath, building penetration and co-channel by providing a clear, clean signal.

**Arbitron 1228**

**Armstrong Transmitter 2002**
*Intro:* X Series IBOC transmitter, available in both single-tube and solid-state design, is also on display at the Lucent Digital booth; AMX IBOC 500 W and 1 kW AM transmitters featuring hot pluggable modules, three power presets, remote control power change, 150 percent modulation capability, and rugged switching power supply; DTX 4 offers ADPCM source encoding, facilities for two, CD-quality, stereo FM signals, two 8000 baud digital data channels at 32 kHz and telemetry for multiple station STL use. Allows multiple connections in a daisy-chain fashion without signal degradation between relay stations.
*Also*: SC series of analog solid state transmitters from 300 W to 10 kW; T

See LISTINGS, page 36 ▶

Photos: San Francisco Convention & Visitors Bureau

**Album Network**
**Yellow Pages of Rock 817**

**AllRadioCommercials.com 227**
*Intro:* Radio Commercial, a Web-based service allowing users to send radio commercials and traffic instructions through the Internet.

**Americalist Media Marketing 516**

**American Legislative**
**Exchange Council 1840**

**American Media 2115**

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## 24-bit Digital Telephone Hybrid

Gentner's digital hybrid provides the highest quality audio interface between your telephone line and audio equipment. With its 24-bit digital signal processing, it's an excellent hybrid for use with your digital or analog console. ***Features include:*** three remote-accessible presets; auto mix-minus; adjustable compressor and expander; acoustic echo cancellation; 3-band digital EQ; balanced analog XLR I/O; balanced digital AES/EBU I/O.

Gentner DH30 List $1,795.00

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Gentner TS612-6 List $3,149.00

Gentner TS612-12 (12-line system) List $4,195.00 **Only $3,859.00**

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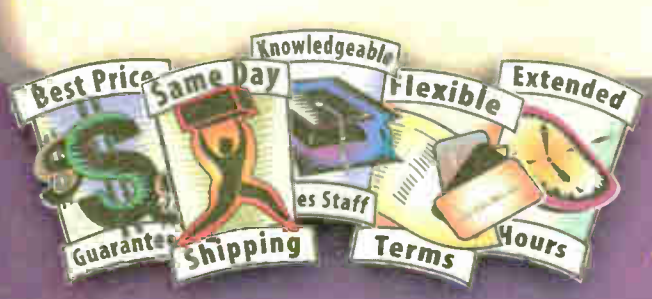


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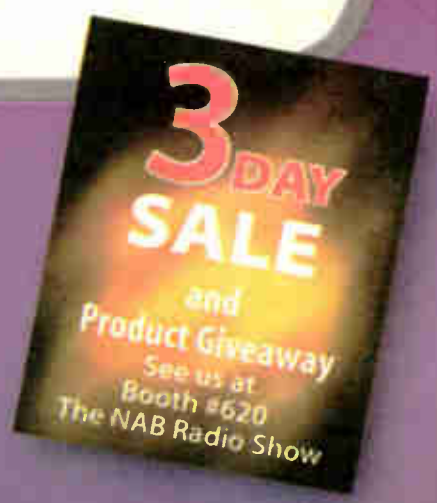


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▶ LISTINGS, continued from page 34

series of single-tube transmitters from 1 kW to 35 kW; FMX exciters from 10 W to 300 W; FMXLCD exciters from 30 to 100 W; FML 10 STL system with two- and fourchannel digital encoders/decoders; and the 700 series of FM circular polarized antennas.

Ernie Belanger, Sales/Marketing Manager
4835 North Street
Marcellus, NY 13108
315-673-1269
FAX: 315-673-9972
E-mail: ernie@armstrongtx.com
Web site: www.armstrongtx.com

**Arrakis Systems** **614**

**Audemat Inc.** **2102**

*Intro:* Fieldstar, a mobile RF field-strength unit that measures up to 99 stations simultaneously and immediately displays on geographical maps all stations received in a target market; ITS4 allows stations and networks to monitor every station or specific stations as required and includes RF analysis, composite monitoring, co-channel monitoring, RF intruder detection, RDS data control and false alarm identification.

*Also*: Goldenear software program that qualifies broadcast reception quality by providing a complete analysis of an individual signal, including actual audio plus composite signal, pilot, RF, RDS, left and right channels, L+R, L-R and multipath; FM-MC3.2 mobile RF field-strength meter measures up to 99 stations and performs precision baseband analysis and audio and modulation analysis of individual stations.

**Audioarts Engineering** **1918**

*Intro:* D-70 digital audio console with four stereo busses, analog and digital outputs, serial interface, sampled rate conversion on all digital inputs, choice of console clock rates and availability with 12 or 20 inputs.

*Also*: RD-12 and RD-20 digital consoles; R-60, R-17 and R-5 analog consoles; SDA-8400 stereo distribution amplifiers.

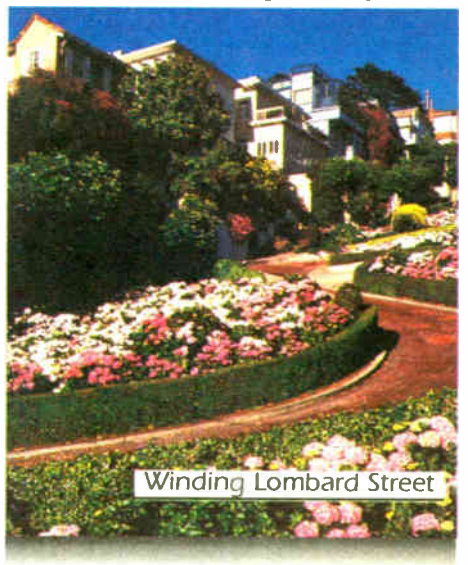
**Audio Processing Tech. Inc.** **819**

*Intro:* BCF384 and NXL384 are apt-X-based codecs for high-quality STL and outside broadcast audio transmission. The BCF384 transmits over both ISDN and permanent digital networks. The NXL384 communicates across permanent digital networks. Both offer negligible coding delay and immunity to multiple coding.

*Also*: WorldNet Studio networking system, a full duplex digital audio codec with integral ISDN line management and featuring digital and analog I/O, time code and aux.

**AudioSoft** **416**

*Intro:* The AudioSoft Tracking Master is a sophisticated plug-in designed to capture,




organize and deliver digital music usage data over the Internet. The plug-in key features are automated playlist declarations and territorial traffic metrics and measurements.

**Auditronics** **1918**

*Intro:* NuStar 4.0 digital console with a separate racknount digital engine that can handle 128 I/O signals and offers a console control surface with eight-character source displays above each fader. Multiple control surfaces can share the same resources; Model 220 offers a modular, easy-to-install serial control for automation interfaces.

*Also*: Model 2500 analog audio console.

**A-Ware Software Inc.** **706**

**Bext Inc.** **716**

*Intro:* XPT Series digital exciters, available in two power levels, 50 and 100 W, and three configurations with features that include frequency agility, a built-in stereo generator, proportional auto-foldback and remote operation; XT 501 FM exciter, a 500 W frequency agile FM exciter with a built-in stereo generator and audio processor, proportional auto-foldback, excessive temperature and excessive drive protection, adjustable modulation limiter (defeatable) and a high-efficiency switching type power supply.

*Also*: Small and large FM transmitters; FM exciters; STLs; FM amplifiers; and FM translators.

**BIA Companies** **2036**

*Intro:* MEDIA Access Pro Version 3.0, a comprehensive database of U.S. radio and TV stations, their owners and markets, with contacts, technical data, ratings, revenues, coverage maps and station Web site viewing; BIA Consulting Services provides evaluations and appraisals, venture capital, strategic business consulting and business planning.

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15120 Enterprise Ct., Ste. 100
Chantilly, VA 20151
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**Bloomberg** **306**

Bloomberg Radio is syndicated through some 220 global affiliates, giving listeners up-to-the-minute business, national and international news. Its flagship station is Bloomberg Radio AM1130 in New York.

**BMI** **734**

**Bob & Sheri** **213**

*Intro:* "Bob & Sheri" radio syndication offers stations an opportunity to do

See LISTINGS, page 37 ▶

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

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

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Quantum 20/20

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World Radio History

▶ LISTINGS, continued from page 36

something that has proven to be extremely challenging: dominating female demos in AM drive.

**British Information Services 714**
*Intro:* Internet News, a free daily radio news service on politics, sports, technology, financial markets, entertainment and fashion with audio available on MP3, Real Audio or Windows Media; Radio News, a free service of news actuality reports, delivered twice daily from London with newscasts available through an ISDN telephone number; Free radio programs from the UK, including "Eco Watch," "Money Matter," "Business Beat," "The Way Ahead," "UK OK" and "New Horizons."

**BroadcastAmerica.com 838**
*On display:* Internet broadcaster of radio programming and TV News consisting of 10 primary content channels and partnerships with more than 600 radio and 65 television stations, including Dick Clark's United Stations Radio Network. Helps stations implement revenue-generating advertising techniques through fully integrated channels dedicated to sports, news, talk, music, film, movies, cartoons, weather and television stations.

**Broadcast Data Consultants 433**
*Intro:* Music Director II for Windows, music scheduling software that continuously weighs and ranks each piece based upon a series of preferences and rules set up by the PD.
*Also:* Traffic C.O.P. for Windows is now compatible with Music Director II to produce an integrated music and traffic log. Traffic is scheduled with Traffic C.O.P., and then, knowing exactly how many seconds are left for music in each hour, the Music Director chooses the music.

Neil Edwards, Pres.
51 S. Main Ave., Ste. 312
Clearwater, FL 33765
727-442-5566
800-275-6204
www.broadcastdata.com
bdc@broadcastdata.com

**Broadcast Electronics Inc. 1028**
*Intro:* VAULT 2 is intended for medium- to large-sized radio operations. It lets you choose the digital studio system software, hardware, architecture and purchasing plan that matches your environment. It maximizes existing resources and talent to collect, manage and deliver content. Flexibility to maximize the non-proprietary out of the box design with robust LAN/WAN and Internet abilities with a software or software/hardware configuration; VaultXPRESS provides smaller operations the power of AudioVAULT technology; WebVAULT for radio and Internet radio operations offers Net ad/spot, insertion management, digital audio management applications, digital audio editing tools, Internet audio processing hardware/software, eCommerce, multimedia cyber-skins and streaming audio post-production programs.
*Also*: AM and FM transmitters, along with RPUs and STLs from Marti Electronics.

**Broadcast Executive Directors Association 505**

**Broadcast Products Inc. 420**

**Broadcast Software International 2128**
*On display:* The company will dedicate its NAB Radio Show booth to raising $1 million for United Way of America. The "Radio Cares" campaign will accept pledges of radio air time for promotion of the new United Way advertising campaign. United Way of America provides training, resources and technical assistance to approximately 1,900 local United Way organizations.

**Broadcasters General Store 1935**
*Intro:* Representative of more than 400 manufacturers of audio/video broadcast equipment and provider to the broadcast industry for more than 21 years.

**Broadcastspots.com 442**
*On display:* Broadcastspots.com provides media sellers an online connection to media buyers and helps stations increase their profit potential.

**BRS Media Inc. 702**
*Intro:* WEBCASTi AM/FM turnkey multimedia streaming ad insertion for radio to help stations build a business to broadcast over the Internet; dot.FM/dot.AM provides branding and industry association to improve a station's overall marketing campaign both on-air and online.

See LISTINGS, page 38 ▶

Get The Scoop Anywhere, Anytime

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

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World Radio History

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**BSW Broadcast Supply Worldwide 620**
BSW is a leading distributor of professional audio equipment. BSW will display hundreds of products on sale and will be giving away more than $7,000 in free equipment.

**Burk Technology 515**
*Intro:* SP-16 status panel connects to an ARC-16 studio unit to provide a continuous display of all status channels at a remote site; AutoPilot for Windows, designed to operate on a Windows platform with ARC-16 systems, provides the ability to monitor and control multiple systems from one central PC.
*Also*: ARC-16 transmitter remote control and LX-16 input stereo selector.

**BuyAndSellItAll.com 517**

**BuySellBid.com 334**
*On display:* Company delivers more than 3.5 million multi-media classifieds through a co-branded distribution network of local radio, television and cable station Web sites. Partners generate local Web ad revenue from classifieds, auctions, e-shopping and personals.

**CareerLink.com 2502**

**CBSI — Custom Business Systems Inc. 1728**

**Central Media/SpotTaxi.com 330**
*Intro:* SpotTaxi.com, an integrated Web-based system for the management and distribution of advertising and traffic information for both terrestrial and Internet radio by simplifying the spot approval and distribution process.

**Circuit Research Labs – see CRL 1024**

**Citium Inc. 740**

**CMI 1621**
*Intro:* Hot Lips TV; Happy Balls TV spot for oldies stations; Wake Up for the high-profile morning show.

**Coaxial Dynamics 537**
*On display:* Wattchman RF station monitor/alarm for transmitter protection; RF Wattmeters, RF power measurements in coaxial transmission lines; RF loads, terminates RF power.

**Columbine JDS 1442**
*Intro:* mediapromoz.com, one-stop Internet shopping for promotional needs.
*Also*: Spotdata, electronic invoicing over the Internet; ColumbineNet for traffic and billing.

**Communication Graphics Inc. 1823**
*Intro:* Screen-printed bumper stickers and window decals, offering complete logo and graphic design.

**Computer Concepts Corp. 1928**
*Intro:* Epicenter incorporates comprehensive audio routing and processing, digital audio storage and virtual console control; Visual Traffic is a complet management-oriented traffic system designed to keep pace with the competitive world of radio. V.T. encompasses the interconnectivity and electronic delivery required for radio; ReeLogger is a digital audio logger capable of storing one, two or three months of a station's audio on hard disk without any user intervention.

**ComQuest Callout 2137**
*Intro:* ComQuest Callout is an enhanced Windows 32-bit software system for in-house callout music and perceptual research; NetQuest offers interactive music and perceptual research on the Internet with the ability to set quotas, change songs and review results from any Internet-enabled computer in the world.

**Comrex Corp. 820**
*Intro:* Matrix Codec delivers high-quality audio on POTS/PSTN and operates on ISDN or GSM wireless services with the use of optional modules.
*Also*: Vector and HotLine POTS/PSTN codecs for high-quality, full duplex audio on one plain telephone line; Envoy and Nexus ISDN codecs for ISDN broadcasts.

Kris Bobo, Mktg. Dir.
65 Nonset Path
Acton, MA 01720
978-263-1800
800-237-1776
FAX: 978-635-0401
www.comrex.com
info@comrex.com

**Continental Electronics Corp. 2132**
*On display:* 816R FM transmitters, ranging from 11 kW through 70 kW. Models at 11 kW through 30 kW are self-contained in one cabinet. As standard features, the power supply, the harmonic filter and the directional coupler are internal. The 35 kW is self-contained, except for the power supply. The transmitter is ready to go when delivered, eliminating additional installation expenses.

**Cool Link Broadcast Network 2220**

**Creative Radio 1239**
*Intro:* Hometeam Radio Sports ID, a custom-song jingle package with your local team mascot(s) or call letters or both; Be Smart Buy Local, a jingle package that promotes local shopping and includes 11 cuts of the jingle, campaign promotion idea and artwork.
*Also*: Creative Radio high-quality, custom-written advertiser jingles, radio ID jingles and a variety of seasonal money-making jingle packages.

**Crouse-Kimzey Co. 2202**

**CRL 1024**
*On display:* Amigo AM stereo or mono processor for maximizing the coverage area; Amigo FM stereo processor, an all-in-one sound processor, protection limiter and stereo generator; Millennium digital audio processor reshapes the incoming audio signal to produce a sound more suitable for radio transmission.

**CUE Corporation 2120**
*On display:* Nationwide paging and data transmittal services via FM subcarrier.

**Dalet Digital Media Systems USA Inc. 906**
*Intro:* OnAir Now, online module of the Dalet5.1 digital automation system enables broadcasters to assemble and produce rich media Webcasts and conduct e-commerce transactions; TeamNews management system assists with news acquisition, production and scheduling; Dalet Web Portal automatically publishes multimedia information onto a Web site, allowing greater self-management of online content.

**Datacount 1728**

**Dataworld 2119**
*Intro:* Offers consulting, data and analysis services, as well as maps.

**Dead Doctor's Don't Lie: The Talk Radio Program 806**

**Dielectric Communications 2135**
*Intro:* Broadcast antennas, coaxial transmission line, motorized switches, directional couplers, filters and combiners; systems from the transmitter output through the antenna.
*Also*: FM antenna models and accessories.

**Digital Generation Systems Inc. 720**
*Intro:* Radio Tools, a suite of Internet tools enabling stations to manage their DGS spots; includes ability to view delivered spots and order re-delivery of spots as needed.
*On display:* A digital network for distributing audio and video content that links thousands of advertisers and hundreds of advertising agencies with 7,500 radio stations and 775 television stations in North America. Other services include music singles distribution, sweeps advertising and other audio and video production services.

**Doane Broadcasting 548**
*Intro:* "Animal Talk," Wild Kingdom Meets Saturday Night Live, Sunday evening call-in show about pets, 6-8 p.m. CST; AgriTalk weekday call-in show for rural America, 10-11a.m., CST, Monday through Friday; Weather Eye, number one source for hands- free weather information and severe weather updates for radio.

**Dr. Ellen Kenner 2047**
*On display:* Host of "Rational Basis of Happiness," Dr. Ellen Kenner is a syndicated psychology talk show, Saturdays, noon to 1 p.m., EST.

**DTN Weather Center 2040**

**Duncan's American Radio 416**

**efusion Inc. 1142**

**elcom.com 2441**

See LISTINGS, page 40 ▶

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*Intro:* PECOS.ipm, a remotely-hosted, automated procurement management system that enables companies of all sizes to streamline purchasing processes by automating the procurement process from product selection and requisition through financial settlement using only a Web browser.

**Emmis Communications 406**

**Energy-Onix Broadcast Equipment Co. Inc. 1001**

*Intro:* Legend Series "C" are solid-state, broadband and frequency-agile FM transmitters available in 1.5 to 20 kW; Pulsar solid-state 250 to 10,000 W AM transmitters offer 133 percent positive peak capability, a full-range antenna line coupler and extensive surge and overload protection; Maximizer III audio processor/FM stereo generator, a three-band unit that allows integrated adjustment of all processing parameters matched to a digital stereo generator.

*Also*: Tube and solid-state transmitters in all power ranges for AM, FM, shortwave and industrial applications; STL, LPFM, translator and audio processing equipment.

**ERI - Electronics Research Inc. 1623**

*Intro:* MPX-FM antenna offers the capacity of a high-power antenna with the windload of a low-power, while filling the void between the 12 kW LPX series and the 32 kW SHPX antenna; DAC (Digital-Analog Comb) combines separate digital and analog signals into a single output port for transmission by a single FM antenna.

*Also*: Manufactures and installs FM antennas, combiners, towers, lightning protection and grounding system; engineering services such as structural analysis and tower reinforcing, directional antenna proofs, grounding system design, emergency antenna repair and installation services.

**Eventide Inc. 728**

*On display:* BD500 Broadcast/Obscenity Delay; DSP4000B Ultra-Harmonizer; Orville Harmonizer with EVE/NET remote control; VR204 digital logging recorder.

**EWTN AM/FM 2518**

**Executive Financial Enterprises Inc. 2237**

**Fairlight On Air 2300**

*Intro:* CoStar radio automation and digital storage system. NT-based client-server, central archive architecture, designed for capture, storage, management, distribution, editing and broadcasting or streaming of audio, text and multimedia images; Fusion digital audio mixer and router for radio, with expandable DSP engine, modular control surface and flexible configuration software for a versatile and powerful on-air mixing solution.

*Also:* MFX-3 Plus digital audio workstation for radio production, with dedicated control console and software for production.

Tim Cuthbertson, CEO
Simon Stevinweg 27
6827 BS Arnhem
The Netherlands
+31-26-368-4925
+31-26-368-4927
www.fairlightonair.com

**FamilyNet 320**

*On display:* "Master Control," family-friendly radio featuring travel, financial, health and entertainment segments as well as "MasterControl's LifeHelps" and "Thought for the Week," hosted by Dave Naugle and Teri Barrett; "Powerline," a fast-paced program of AC music blended with brief commentaries about life and living, hosted by Bill Mack; "The Baptist Hour," Christian music with a half-hour teaching by Dr. Frank Pollard, hosted by Derwood Rowell; "On Track," a contemporary Christian music program with artist interviews and highlights by Bro. Jon Rivers, hosted by Dave Tucker. All shows are weekly and free, and come with a promo spot, voice out 28:00 and compact disc.

Lisa Young, Dir. Radio Mktg/Dist.
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Fort Worth, TX 76116
817-570-1421
800-266-1837
FAX 817-737-7853
E-mail lyoung@namb.net
www.namb.net/mtg/radio.htm

**Feed the Monster Media Inc. 722**

**Fidelipac Corp. 1023**
See listing for LPB.

**Film House, Inc. 1223**

**FirstCom Music 1235**

*Intro:* Headspace library offers visual imagery by musician Thomas Dolby Robertson and his troupe, featuring production music fused with technology by musicians ahead of the technowave.

*Also*: FirstCom's Personal Production Library allows the creation of a custom library from a selection of more than 1,200 discs (100+ added this year).

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**FMiTV Networks Inc. 1941**

**FMQB 2402**

**Forever Young Program Service 2148**

**GlobalMedia.com 214**

**Gorman-Redlich Mfg. Co. 1902**

*Intro:* EAS and character generator, EAS equipment with built-in character generator for TV and cable systems.

*Also*: Emergency Alert System encoders/decoders with a DTMF telephone interface to originate EAS messages from a remote location via telephone; Model CRW NOAA weather radio with any three of seven weather service frequencies; Model CM and CMR digital antenna monitors for directional AM arrays.

**Gotmerch.com 2439**

**Groove Addicts/ Who Did That Music 1842**

*Intro:* Original music, sound design, underscore and imaging services; jingle and sweeper packages in all formats; libraries, thousands of contemporary titles, including Who Did That Music, Gravity, Ignite, Revolucion, EuroGrooves, Unity libraries.

**Harris Corp. 1528**

*Intro:* DX Destiny, completely digital AM transmitter offers new patent-pending features to keep stations on the air at the highest level of performance, with innovations including Direct Digital Drive (3D) technology, Digital Serial Adaptive Modulation (DSAM), Parallel/Serial Intelligent Control (P/SIC) and the next level of hot-pluggability, "hot serviceability." Also Impulse Automation, an option that provides a serial interface for Impulse consoles by PR&E, enabling console to be controlled by a digital delivery system for automated or unattended operation; and the "Station of the Future," which Harris, in conjunction with NAB and other exhibitors, will produce in the lobby of the Moscone Convention Center, demonstrating a futuristic studio as an opportunity to network and be introduced to what the future may hold.

Also: AM and FM radio transmitters, CDLink, DigitCD Digital FM Exciter, SuperCiter, Quest, audio consoles, Enco DADpro32, Orban Audicy workstation, Intraplex IntraLink, STLPlus, and Digital Cross Connect Server.

**Hiwire Inc. 2028**

*Intro:* Targeted audio ads into live streams, allowing advertisers and broadcasters to turn every listener, both in and out of market, into premium revenue.

**Home & Garden Radio Network 408**

**Hungerford, Aldrin, Nichols & Carter 1140**

**iBEAM Broadcasting 2418**

**iBiquity Digital 628, 914**

IBOC DAB technology to enable broadcasters to send a digital signal containing CD-quality audio, crystal-clear reception and wireless data over existing frequencies without denigrating analog programming.

**Images INK 808**

*On display:* Decals and bumperstickers.

**IMAS Publishing 829**
See listing under Radio World.

**Informano Networks 2230**

**Innuity Media Services Dv. 2532**

See LISTINGS, page 42 ▶

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**Inovonics Inc.** **947**
*Intro:* Omega_FM, a fully-digital FM audio processor/stereo generator with analog and AES/EBU digital I/O and featuring AGC, multiband leveling, compression and peak control, and manual basic operation or computer control over all parameters; Model 711 full-featured RDS/RBDS encoder with UECP protocol that addresses all data groups and transmits the song title and artist with the software to interface with digital automation systems.
*Also*: AM/FM/Internet audio processors; stereo generators; AM and FM modulation monitors; rebroadcast receivers; RDS/RBDS encoders/decoders; telephone "line eliminator."

Jim Wood, Pres./Chief Eng.
1305 Fair Ave.
Santa Cruz, CA 95060
831-458-0552
800-733-0552
FAX: 831-458-0554
www.inovon.com
info@inovon.com

**Interactivepools.com Inc.** **440**

**International Communications Products** **827**
*Intro:* DCR-974 audio receiver, digital satellite audio/data with a built-in store and forward capability receiver, providing more than 30 hours of recording. Allows for real-time recording of feeds for later playback, automatic time zone delayed playback, customization of local content, unattended station operation and many others.
*Also*: DCR-972 multifunction, MCPC, audio and data satellite receiver

**International Demographics** **1642**

**International Gamco Inc.** **2001**

**iTuner Networks Corp.** **233**

**Jampro Antennas/ RF Systems Inc.** **1136**
*Intro:* RCMC-214-FM, a temperature-stable IBOC DAB bandpass filter for power levels 1-20 kW, featuring high isolation levels and low insertion loss.
*Also*: JSWB, a broadband CPOL side-mount antenna for multi-user applications requiring bandwidth for combining two or more FM frequencies on a common antenna.

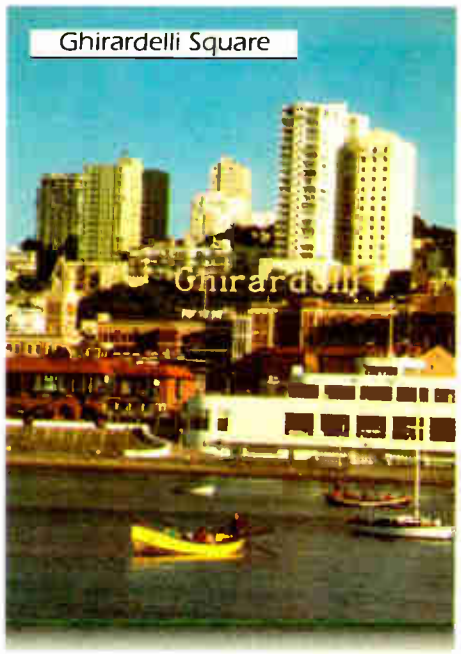
**KD Kanopy** **2111**
*On display:* KD Majestic, KD StarShade, KD StarStage, KD BannerPole, Signage

**Kelly Music Research** **837**
*Intro:* Living Room Music Test, methodology for researching music preferences in listeners' homes and seeing which songs help generate higher ratings; Interactive Call-Out, custom local call-out music research that delivers accuracy and cost-efficiency by using touch-tone telephone to score songs.

**Kerbango** **1912**
*Intro:* Kerbango Internet Radio, requires no PC to tune in to more than 6,000 stations.

**Keystone Studio Inc.** **2620**

**Klotz Digital AG** **2138**
*Intro:* VADIS 880 audio/media provides audio routing, fiber optic distribution, format conversion and DSP functions for radio, television, satellite television and audio networks' public address systems; X4P Network, a PC-based system providing a secure private network via the Internet to distribute audio signals, graphics and video, with content stored on servers; VADIS D.C. II modular mixing console, available in production and on-air versions with an open architecture that allows for the ability to build any surface for modern broadcast functions.
*Also*: Paradigm producer, a production console for Webcasting and Internet radio; Paradigm digital audio console, 8- and 16-fader consoles for on-air radio.




**Lightningcast** **2632**
*Intro:* Strikepoint Services, cutting-edge technology for the insertion of targeted, audited ads into streaming media, allowing Internet publishers to monetize their stream and advertisers to target their audience precisely.

**Liquid Audio** **2520**
*Intro:* Broadcast applications to showcase, sample, promote or sell music from a Web site; Music Meeting provides access to every song, no matter the market.

**Live365.com** **2328**

**Logitek Electronic Systems** **1943**
*Intro:* AE-NETA, network card permits sharing of up to 500 stereo audio sources among 32 audio engines and 64 console control surfaces; Supervisor Software provides integrated configuration of multiple audio engines and control surfaces, supervision of routing and switching functions as well as schedules audio switching; IO8D Digital I/O card doubles the number of digital inputs and outputs on each digital card in Logitek's audio engine, and offers a 24-bit, 96 kHz capability sample rate converter resolution.
*Also*: Numix digital console, ergonomic design, configurable from six to 42 faders; ROC digital consoles, available in five- and 10-fader designs; Vmix virtual console software; DSP-based audio metering products.

See LISTINGS, page 44 ▶

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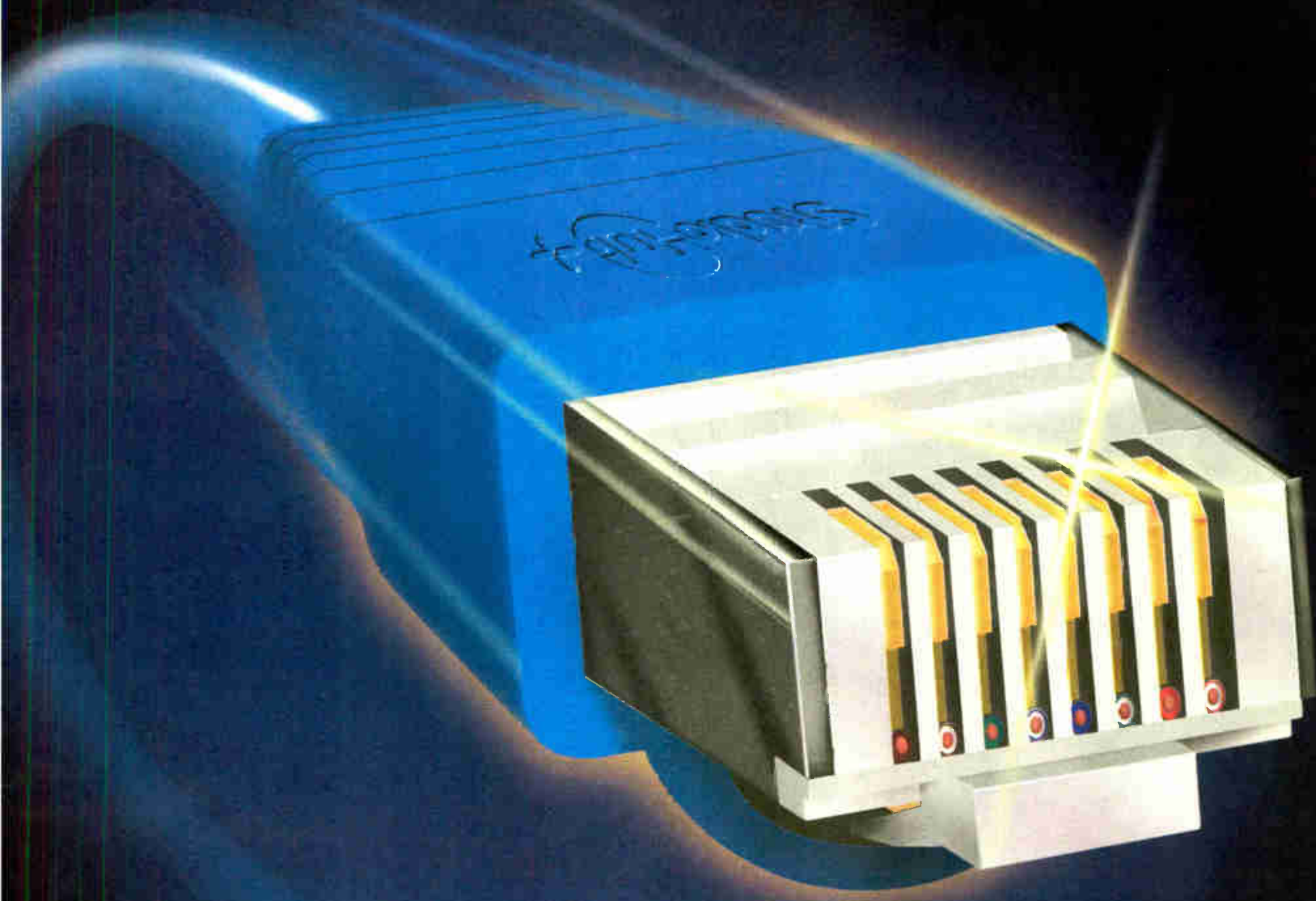

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**LPB/Fidelipac 1023**
*Intro:* Blue 5c console, an "industry first in RJ-45 connectivity," ideal for remotes, LPFM and Webcasters, with five stereo channels, 10 stereo inputs, stereo program and cue, mono telephone, remote starts, muting and a price of $1,295.
*On display*: Dynamax Series on-air consoles, modular analog line with six to 18 channels; Dynamax MX/D eight-channel digital on-air console; Web Jockey automation software for MP3 and WAV file scheduling and playback; Spatial One speakers; low-power AM transmitters.

**Lucent Technologies — Lucent Digital Radio Inc. 628**
See listing under **iBiquity Digital** page 40.

**Management Data Media Systems 606**
*Intro:* DigaSystem, global database management for digital radio systems via WAN, VPN or frame relay, with more than 80 integrated software modules for archiving, production, communication and Web publishing; DABS 3.0, server-based digital radio systems for massive information management and a central database that incorporates production, scheduling, traffic, billing and archiving, GUI adaptation for robotics, support for more than 500 connected users and up to 2 million gigs of data storage; Webantz/YOOM, systems for content distribution and management with music portal technologies that include copyright protection and management of Web-related commerce.

**Marketron Inc. 1342**

**Maxagrid International Inc. 1742**

**MeasureCast 2214**
*Intro:* Streaming audience measurement service. MeasureCast provides Internet broadcasters, advertisers and media buyers with credible, third-party reports on streaming audience size and demographics, information critical to evaluating and placing streaming media advertising. Online reports are available to customers anytime day or night, with updated information available the day after a Webcast.

Sven Haarhoff
Communications Manager
921 SW Washington Street. #800
Portland, Ore. 97205
(877) 840-6800
(503) 241-1469
(503) 241-0243
www.measurecast.com
sven@measurecast.com

**Media Professional Insurance 2512B**

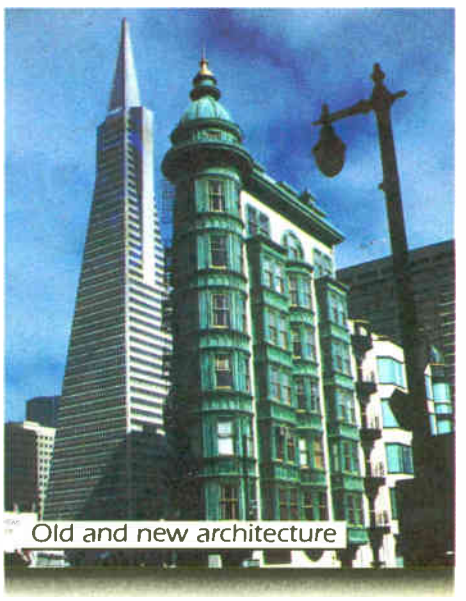
**Media Rewards.com 2327**
MediaRewards.com increases Web NTR by rewarding listeners. Listeners receive points redeemable for prizes. Advertisers get traffic, Web revenue increases and stations gain market share.

**Media Site Manager 2341**
*Intro:* Media Site Manager, a community Web portal for generating revenue through a cost effective turnkey solution.

**Media Spike — Direct Air 2419**

**MediaTouch 1936**
*Intro:* OpLog 2000 32-bit control surface with TCP/IP virtual players uses standard TCP/IP communication and connects to the player, allowing station control from any location; iMediaEdit multiformat audio editor supports MPEG-II, MP3, WMA and ADPCM formats, allowing transcoding on the fly, pitch control and level control with an optional scrub wheel and remote control; imediaLogger multichannel, multiformat audio logging system with control through a Web browser.
*Also*: QuicPix entry-level cart replacement system; MediaTouch Enterprise System, a full line of automation software, custom-configured for each radio station; turnkey installations, through a partnership with Jay Rose Engineering.

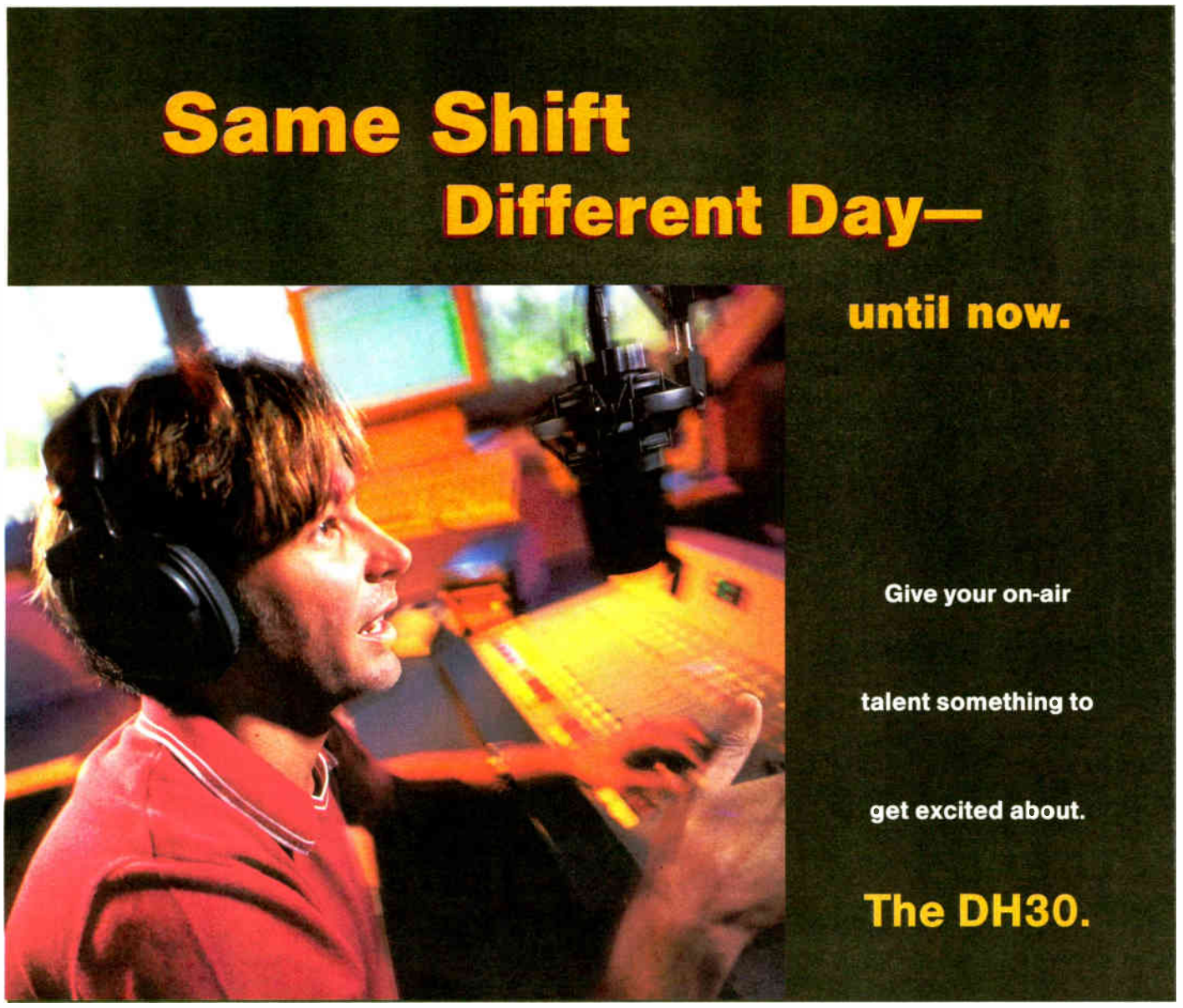
John Davis, VP Radio Operations
P.O. Box 1181
La Mesa, CA 91944-1181
619-460-4228
888-665-0501
619-460-4338
www.mediatouch.net
jdavis@omt.net


Old and new architecture

**Megastation.com 542**
*Intro:* Megastation.com, entertainer of nationally syndicated radio programs and a major destination entertainment site, providing every new music or movie soundtrack release publicity, marketing and promotion.

**Megatrax Production Music Inc. 744**
*Intro:* The 95-CD Promo Collection music library for advertising and promotion is filled with broadcast-length tracks, with a minimum of 15-20 new update CDs scheduled for production each year; The Metropolis Sci-Fi Toolkit has nearly 200 transitional and ambient effects on one CD for radio ID, logo, and bumper production; Sound Ideas professional sound effects.
*Also*: Music libraries for film, radio, television, advertising and multimedia.

**Mental Minutes 2238**
*Intro:* "Mental Minutes," limitless storylines in daily, two-minute audio shows for radio or streaming, with a design to
See LISTINGS, page 45 ▶


This Revolutionary Digital Hybrid Features:

- AES/EBU and analog inputs and outputs
- Adjustable compressor and expander
- Adjustable 3-band digital EQ
- Adjustable caller control
- Selectable auto mix-minus
- Highest quality sound
- Bass boost
- LCD menu display
- Remarkable low price
- Digital Echo Cancellation™

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World Radio History

▶ LISTINGS, continued from page 44

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325 Kitty Hawk Rd., Ste. 315
Alameda, CA 94501
510-864-2377
209-304-2716
www.mentalminutes.com
ricktorgerson@home.com

**Miller, Kaplan, Arase & Co. LLP 2428**
*Intro:* Media Market X-ray, query software that provides access to account-by-account newspaper, television and radio advertising expenditures by agency, advertiser, product code and account executive.
*Also*: Monthly market revenue reports and weekly market revenue pacing reports disclose station market share and ranking.

**Moseley Associates Inc. 1723**
*On display:* Starlink SL9003Q uncompressed digital STL; PCL-6000 composite STL; DSP-6000 digital STL codecs, Starlink SL9003T1 uncompressed digital STL for T1, transmitter remote controls.

**MP3.com 2437**

**Musicam USA 2016**
*Intro:* SuperLink, a low-cost codec, linear (uncompressed) STL, network audio server and more, offering a link among the broadcast/audio, communications and information technology worlds.
*Also*: Audio transmission products for ISDN, satellite, T1/E1 and POTS; T1/E1 audio multiplexing transmission system; CDQPrima stereo codecs; RoadRunner portable codec/mixer and FieldFone II/Studio Fone POTS codecs.

**MyCity.com 202**

**National Weather Service 539**

**Nautel Maine Inc. 1942**
*Intro:* Nautel Q40/Q20, 40 kW and 20 kW solid-state FM transmitters with built-in duplication for greater, more powerful efficiency; Digital FM exciters.
*Also*: AM and FM high-efficiency, solid-state modular transmitters with serviceability and redundancy features.

**NBG Radio Network Inc. 302**
*Intro:* "Bigg Snoop Dogg Radio," a weekly four-hour radio show hosted by Hip Hop star Snoop Dogg, featuring the artist's favorite R&B and Hip Hop, old-school cuts, original mixes, world premiere releases and tracks from some of today's rising stars; "Soul Assassins," a weekly three-hour show hosted by Cypress Hill members B-Real and Eric Bobo, featuring cutting-edge rap-rock mixes, short sketches, world premiere releases and in-studio interviews; "Julie Show," a live two-hour weekly entertainment/talk program hosted by Downtown Julie Brown.

**Netia 600**

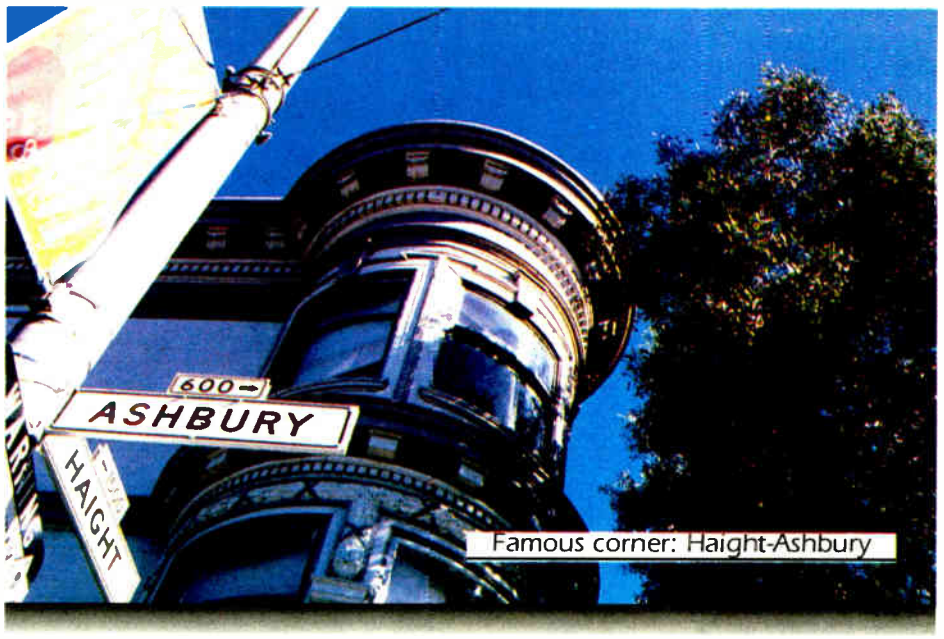
**Net Media Convergence 2228**

**Network Music LLC 1036**

**New Generation Media LLC 847**

**NPR Satellite Services 1122**

**NSN Network Services 2143**
*On display:* SuperCarrier service provides audio and data distribution for top radio networks, sports teams, music shows and syndicated programming; delivery is via Satcom C-5, and then the new "Radio Bird" GE-8. Thousands of downlinks nationwide. SuperCarrier provides the first improvement of radio network delivery in almost 20 years. Using advances in technology, it offers real-time audio, text and IP delivery, as well as sophisticated store-and-forward audio/data delay devices in the receiver. NSN National Operations Center in Denver is a premier uplink facility that is being expanded to provide best possible services and support. Turnkey affiliate hardware, satellite and terrestrial backhaul packages.
*Also:* KEL Audio is CD-quality audio for stereo or mono transmission of syndicated shows or network O & Os. Contact closures for data events and fire tones. Low-cost affiliate hardware packages. Market flexibility for growth in local, regional or national markets. USA 50 state coverage and selected Caribbean areas. FCC digital earth station uplink license process preparation. Turnkey installation. Network design, uplink integration, installation, network commissioning, 24/7 technical support. Uplink equipment located at your facility. Financing available.



Famous corner: Haight-Ashbury

**nTunes.com 2406**

**Olympia Management Inc. 2312**

**Olympus Flag & Banner 2113**
*On display:* A custom manufacturer for more than 100 years of custom flags, banners and mascots to meet any promotional need.

**OMB 2529**
*On display:* FM radio transmission equipment, including FM transmitters (15 W to 15 kW), STL units, translators, broadcast consoles, FM antenna systems and accessories.

**Omnia, a Telos Company 1906**
*Intro:* Omnia-6fm digital audio processor offering 96 kHz, 24-bit resolution, full-color intelligent display, plug-in software architecture for unlimited flexibility; and a user-configuration with up to six bands of processing; Omnia-3 three-band, DAB-ready on-air audio processor with a PCMCIA slot for easy software upgrades, 48 kHz audio performance and an integrated stereo generator; ToolVox microphone processor that includes AGC with compressor and adjustable noise gate, digital de-esser, built-in phantom power and 100 user presets.
*Also*: Omnia platform of audio processing for FM, AM and the Internet with plug-in software for specific formats. See also Telos Systems.

**Orban 1042**
*Intro:* Optimod FM 8400 FM processor with windowed dual-band AGC, stereo enhancement, parametric EQ, large color LCD and advanced processing controls; the Optimod 6200S offers presets designed for Webcasting in 1RU, optimizing the use of variable bandwidths without compromising the performance of the perceptual encoder at any bit rate.
*Also*: The Optimod-DAB 6200 audio processor for digital radio DAB and DTV applications; Optimod-AM 9200 digital audio processor for mono AM and HF, featuring a five-band limiter with a patented distortion-canceling clipper; Audicy digital audio workstation, a multitrack recording, editing and effects processing system designed for broadcast audio production.

**Patriot Communications LLC 1237**

**PHI Enterprises Inc. 2234**

**Popstick 2506**

**Pristine Systems Inc. 1144**
*Intro:* RapidFire version 5.0 on-air automation software offering triple audio overlap, simultaneous record/play, on-air editor, automatic delayed broadcast, and satellite, live assist and walkaway operations; Production Suite, a graphical waveform digital editor and audio file manager offering Windows NT/98/2000 compatibility.
*Also*: RapidFire digital automation software; MusicPlus music scheduling software; VoiceTraxx; Production Suite; TimeWarp delayed broadcast recorder.

**Prophet Systems Innovations 428**
*Intro:* Audio Format Converter converts audio files for NexGen Digital Broadcast or AudioWizard by compressing audio files from PCM to MPEG 1, Layer 2 and offering a configurable compression level, normalization, silence trimming and system settings; CD/Extractor Pro builds music libraries easily by offering multiple CD-ROM drive support, improved extraction speed, enhanced CDDB Internet access, comprehensive track editor, improved file writing control and expanded configuration options; enhancements to NexGen Digital Broadcast that include "heads and tails" WANcasting, automatic record calls, and export log information via text, serial or IP for RDBS or Internet purposes.
*Also*: NexGen Digital Broadcast provides digital management for large and small groups.

**Radio Data Group 2311**

**Radio Express Inc. 813**

**Radio Systems 314**
*Intro:* StudioHub+ analog/digital wiring system that makes use of twisted pairs for increase compatibility with high-speed Ethernet LANs.
*Also*: Millenium consoles, available in six-, 12-, 18- and 24-channels; distribution amps; telephone interfaces; clocks; and timers.

**Radio Unica 431**

See LISTINGS, page 46 ▶

World Radio History

▶ LISTINGS, continued from page 45

**Radio Wall Street.com** **2331**

**RadioWave.com** **2206**

**Radio World** **829**
*On display:* Radio World, Radio World International and Radio World América Latina reach the entire world of radio. The newspaper for radio station managers and engineers, Radio World has been the world's No. 1 source for industry news, management trends, production techniques and new product information for almost 25 years. Reach other markets through our family of publications and online ventures serving television, pro audio and numerous international markets.

Julie Wielga, Mktg. Mgr.
5827 Columbia Pike, Suite 100
Falls Church, VA 22041
703-998-7600
FAX: 703-820-3310
www.rwonline.com
radioworld@imaspub.com

**RCS** **927**
*Intro:* RadioShow, Internet audio player and graphic sychronizer with continuously changing content and song/artist notes and a new "Buy Me" button; InSert substitutes ads into the Web audio stream separate from the ad that broadcast listeners will hear, thereby doubling spot inventory and increasing revenue; SplitStream targeted ad insertion by accessing user profiles (age, demographic, interests) and inserting a targeted ad into the stream.
*Also*: Selector Music Scheduling; Linker Promo Scheduling; TalkBack talk show screening; Master Control NT on-air studio system with Internet VoiceTracking; and other products for radio broadcasting and Internet Webcasting.

Carolyn Lemoine, Mktg. Project Coor.
12 Water Street
White Plains, NY 10601
914-428-4600, ext. 172
914-428-5922
www.rcsworks.com
carolyn@rcsworks.com

**Regional Help Wanted.com** **215**
*Intro:* RHWC creates and maintains local help wanted Web sites, with radio broadcasters promoting the site and capturing some of the revenue currently being spent in local newspapers.

**Register Data Systems** **1836**

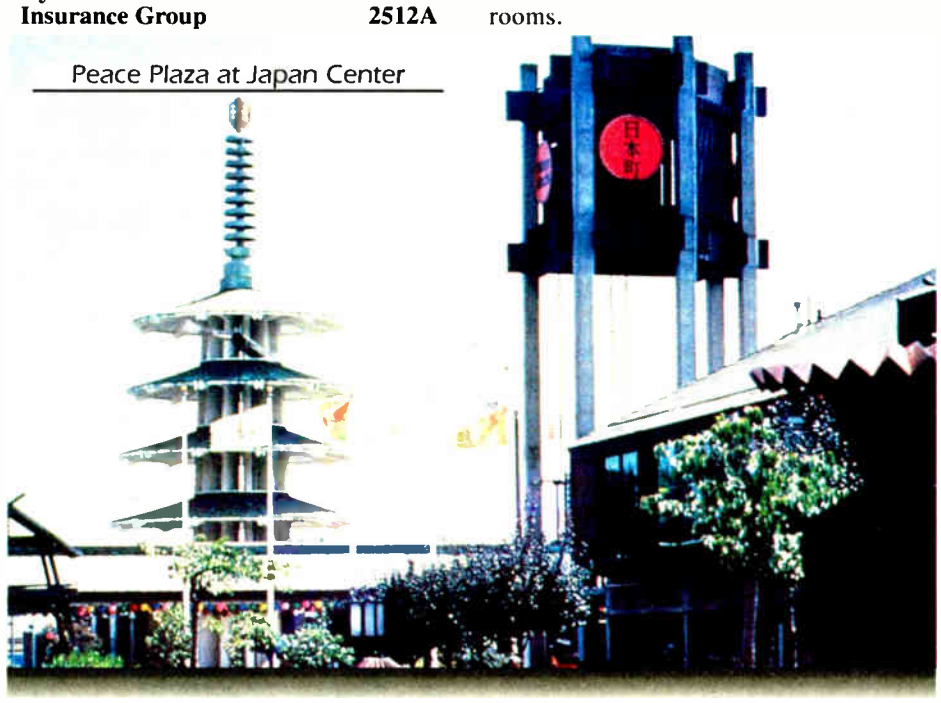
**RFS Broadcast** **602**
*On display:* Line of FM antennas, including the 828 series FM sidemount antenna; CFM series; 902, 903, 904 series panel arrays; Flexwell Coaxial cable; and Combine B.

**Rockprep.com** **2329**
*Intro:* www.rockprep.com, a business-to-business Internet application providing an up-to-the-minute, encompassing Rock 'n' Roll information database, with searchable programming content at the announcer's fingertips.

**Roll A Sign, Div. of Reef Industries** **402**
*On display:* Roll-A-Sign provides economical and disposable plastic banners on continuous rolls, with availability in different weights and sizes.

**Royal & SunAlliance Insurance Group** **2512A**

Peace Plaza at Japan Center



**Rules Service Co.** **1939**
*Intro:* FCC Rules and Regulations on CD ROM for purchase individually or in packages.
Also: FCC Rules and Regulations on loose-leaf and disk for purchase individually or in packages.

**Sabre Communications Corp.** **601**
*On display:* Supplier of engineering services, parts, accessories and modification materials for all towers; manufacturer of guyed and self-supporting towers, monopoles and HF antennas.

**SCA Promotions** **538**

**Scott Studios Corp.** **1736**
*Intro:* Scott 32 System, a touchscreen digital studio with 30 sets of 30 hot keys, and the ability to display "Now Playing" title/artist/etc. over an Internet site; AXS3 hard drive music and satellite digital system; SS Enterprise, allows remote control of up to 48 unattended stations over the Internet.

David Gerety
13375 Stemmons Freeway, 400
Dallas, Texas 75234
972-620-2211
800-SCOTT-77
FAX: 972-620-8811
www.scottstudios.com
info@scottstudios.com

**Sender S.A.** **2048**

**Shively Labs** **1221**
*Intro:* The IBOC filter/signal injector system is the result of almost 10 years of research and development, and boasts a small and light design that makes it ideal for crowded transmitter rooms.
*Also*: Full range of antennas and related RF equipment.

**Sierra Automated Systems & Eng. Corp.** **1242**
*Intro:* The 32KD is the next generation of digital audio routing. Designed to perform a series of audio functions including routing, mixing, sound processing, IFB and even mix-minus, with almost unlimited expansion capabilities; SoftPanel virtual control stations are pop-up Windows graphical user interfaces which communicate to the router over a standard LAN. They stations are great for locations already served by a PC.
*Also:* Analog and digital routing switchers, intercom/IFB and mix minus systems, both large and small, with comprehensive control options.

**Silicon Valley Power Amplifiers** **2527**

**SiteShell** **2006**

**Sonicbox** **2528**

**SpaceCom Systems Inc.** **833**
*Intro:* Wireless Internet, a satellite-based two-way service that helps solve last mile Internet access challenges, targeting remote areas lacking broadband access; Network Back-up services offers automatic, satellite-delivered back-up service for networks to prevent service interruptions due to terrestrial network outages; Net Streaming Live Video, a single-source two-way satellite technology for streaming live video and audio events over the Internet.

**Sparks Network Services** **2313**
*Intro:* IVR Polling and Information Lines.
*Also*: MatchLink2.0 premiere radio dating service.

**Straight Talk Network** **2101**

**STRATA** **1542**

**Streampipe.com** **642**

**Super Prize Machine, Inc.** **2117**

**Superior Electric** **907**
*Intro:* SPW Series STABILINE uninterruptible power supplies protect against power failures, sags and surges, with integral power management software, synthesized sine wave (step wave) technology. Rated 300, 420 or 650 VA, 120 V 50/60 Hz or 230 V, 50/60 Hz.
*Also*: WHR Series STABILINE voltage regulators provide clean, stable voltages for AC power systems up to 660 V. Ratings from 2 to 1680 kVA hold output voltages within 1 percent, with 99 percent typical efficiency.

**Superscope Technologies Inc.** **2533**
*Intro:* PMD680 PC Card Recorder records high-quality 16-bit digital audio using PC Card media. Supported file formats include compressed MP2, uncompressed WAV and Broadcast WAV. Record via the built-in microphone, an external mic (choice of XLR or 1/4-inch input) or phone line. Monitor recordings using headphones, built-in speaker or line out. Set record levels manually, use a limiter or let the unit adjust record levels. User can move sound into a computer for editing, archiving and transmission simply by moving the PC Card into a computer's PC Card slot. Accepts variety of compact flash and PC Card sizes.

**Surfer Network.com** **2332**
*On display:* An Internet marketing and content distribution company that partners with traditional radio broadcasters to form the SurferNETWORK Alliance. The result is a large franchise of aggregated local radio listeners delivered via the

See LISTINGS, page 48 ▶

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STATUS BITS
True Dual Domain Audio Testing at an Attractive Price Point
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- True digital domain analyzer with -140 dB residual noise
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- Digital interface analyzer
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Audio precision
Audio Precision
PO Box 2209
Beaverton, Oregon 97075-2209
Tel: (503) 627-0832; Fax: (503) 641-8906; US Toll Free: 1-800-231-7350
Email: techsupport@audioprecision.com; Web: www.audioprecision.com

World Radio History

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Due to the extensive introduction of computer-networked systems in radio and TV broadcasting, the requirements of modern work-stations have changed dramatically. Traditional ideas no longer provide practical solutions. Routing, mixing, monitoring: The pressures of the broadcast workplace require faster-to-operate and more intuitive equipment. A large number of signal sources needs to be accommodated, and a mix has to be made quickly and intuitively, but still produce professional results.

## Think digital, pay less.

Check out the compelling benefits of the versatile digital layout of Intellimix®. Explore the new synonym for smart solutions in broadcast.

Enjoy top performance equipment at an affordable price.

## intellimix KEY FEATURES

- Compact Desktop Control Unit
- 12 Stereo Inputs (AES/EBU, S/PDIF, optical and analog)
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- Out-of-Phase Warning Indicators
- Versatile Source Selection
- Alphanumeric Displays for Navigation
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- Powerful WINDOWS® Configuration Software
- 2 Mix-Minus Feeds
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YELLOWTEC

World Radio History

▶ LISTINGS, continued from page 46

Internet, generating revenue from targeted multimedia advertisements.

**SWR Inc.** **902**
*On display:* FM1 Series Antenna, an omni-directional, low-power FM antenna with stainless steel construction and field tunable under 1.3:1 VSWR; FMEC Series Antenna for low-power FM broadcast stations that require circular, vertical or horizontal polarization; FM3 Series Antenna, a medium-power FM antenna with a similar built to the FM10 version; FM10 Series Antenna, a high-power FM antenna with a choice of circular, vertical or horizontal polarization.

**Syntrillium Software Corp.** **841**
*On display:* The Cool Edit line of audio software. Cool Edit Pro is a 64-track digital audio recorder, editor and mixer with more than 40 DSP effects. Cool Edit 2000 is a family of low-priced professional products. Syntrillium also licenses its technologies to other software and hardware vendors.

**Talk Radio Network (TRN)** **2242**

**Target Positioning** **2522**

**Telos Systems** **1906**
*Intro:* Series 2101 Talk Show Sys interfaces directly with ISDN and T1 lines and offers an expandable system that handles up to 96 lines assignable to multiple studios; TWO x 12 Talk Show System, dual digital hybrids that interface with POTS, ISDN or BRI, and handles up to 12 lines with built-in conferencing; Telos TWO, digital dual telephone hybrid for applications requiring clear, high quality audio from dial-up phone lines. Allows conferencing without external hybrid.
*Also*: Zephyr/ZephyrExpress Layer III codecs; ONE, ONE+ONE, 100 Delta Digital Hybrids; 1x6 Talk Show System; Direct Interface Module; 1A2 Multiline interface module; Assistant Producer Call Screener software; Audioactive Internet Audio Suite of products for MP3 encoding. See also Omnia, a Telos Company.

**The Associated Press** **2006**

**The C.A.R. Show** **509**

**The Label Company** **438**
*Intro:* Barricade Tape, custom imprinted with your logo, slogan or repetitive advertisement, available in 3" x 1000' rolls; Temptoos!, temporary tattoos customized with your station logo and available in a three-color maximum; CD Scratch-off game cards available in five sizes or customized for your program, with hidden messages or logos underneath to reveal prizes.
*Also*: Bumper stickers; static cling vinyl; fluorescent safety strips; listener cards with card carriers; cassette and reel box labels; lapel stickers; complete graphic designs.

**T.O.M.A. Research/ American Consult** **2413**
*Intro:* Training of salespeople on how to generate new revenue from nontraditional sources, money-back guarantee.

**Tune In Now Network** **2106**

**Ubarter.com** **1243**

**U.S. Census Bureau** **328**

**U.S. Tape & Label Corp.** **1322**

**USA Digital Radio** **914**
See listing under **iBiquity Digital** page 40.
IBOC DAB technology to enable broadcasters to send a digital signal containing CD-quality audio, crystal-clear reception and wireless data over existing frequencies without denigrating analog programming.

**USA Radio Network** **2212**

**Valcom Limited** **414**
*Intro:* AM Antennas, a free-standing 75-foot fiberglass AM broadcasting antenna for AM radio using less real estate and a new alternative to guyed towers while meeting FCC regulations.

**VCS Nachrichtentechnik GmbH** **942**
Provider of radio automation systems will present dira! software, including innovative Web functions and new stand-alone clients; dira!proStation, an all-in-one radio package designed for medium-sized radio stations.

**V-Soft Communications** **1241**
*Intro:* Probe II propagation prediction, including Longley-Rice, TIREM, Okumura, PTP and FCC, as well as FM/TV/DTV coverage and interference analysis; Terrain3D, radio path and Longley-Rice analysis over 3D terrain, incorporating USGS 03 sec terrain data; FMCont for Windows, full-service, LPFM and translator frequency search program for contour protection and minimum spacings.
*Also*: InterDLG, FCC coverage and interference mapping; Contour, Distance-to-Contour tables with FCC & PTP, and FM/TV/DTV F50-50, 50-90, 50-10 curves; IDSeries, IDAirport, IDCensus, IDCity, IDStations, IDTower and Vtower; RFHaz RF Radiation analysis.

**WarpRadio.com Inc.** **730**
*Intro:* Internet Streaming: Reliable, quality streaming of radio stations through the Internet. Unlimited bandwidth with ASCAP and BMI fees included; WarpFactors Internet audience statistics for individual radio stations available daily. Includes AQH and TSL; WarpRadio.com of FCC licensed radio stations with station information including Web links to Web site and audio stream.

**WebPresence Inc.** **228**
*Intro:* The webNTR.com suite of applications gives listeners instant access to advertiser information even on Internet-ready wireless phones through seamless integration with your existing Web site; Radio Advertiser Guide, a turnkey solution that offers advertisers printable coupons, unlimited searchable text for detailed information and interactive maps; Events Calendar provides listings for unlimited local events, each linked to their own Web page.
*Also:* WebPresence software product development and customer service, exclusively focused on serving the needs of the radio industry by helping stations make the transition from on-air broadcasters to leaders in the convergence of radio, Internet and wireless.

**Wheatstone Corp.** **1918**
*Intro:* Wheatstone D-700 digital console with a serial protocol for automation and digital router interfacing. Its dynamic processor adds EQ, limiting and ducking, while it boasts 2 aux sends per channel plus 99 security controlled presets; the D-5000 includes D-600 digital technology with Hot-swap modules that can be field-converted from analog to digital. It features serial control, 8-character source displays and dedicated phone modules for up to four callers.
*Also*: A-6000 analog radio on-air console; ATC-1 digital AES router.

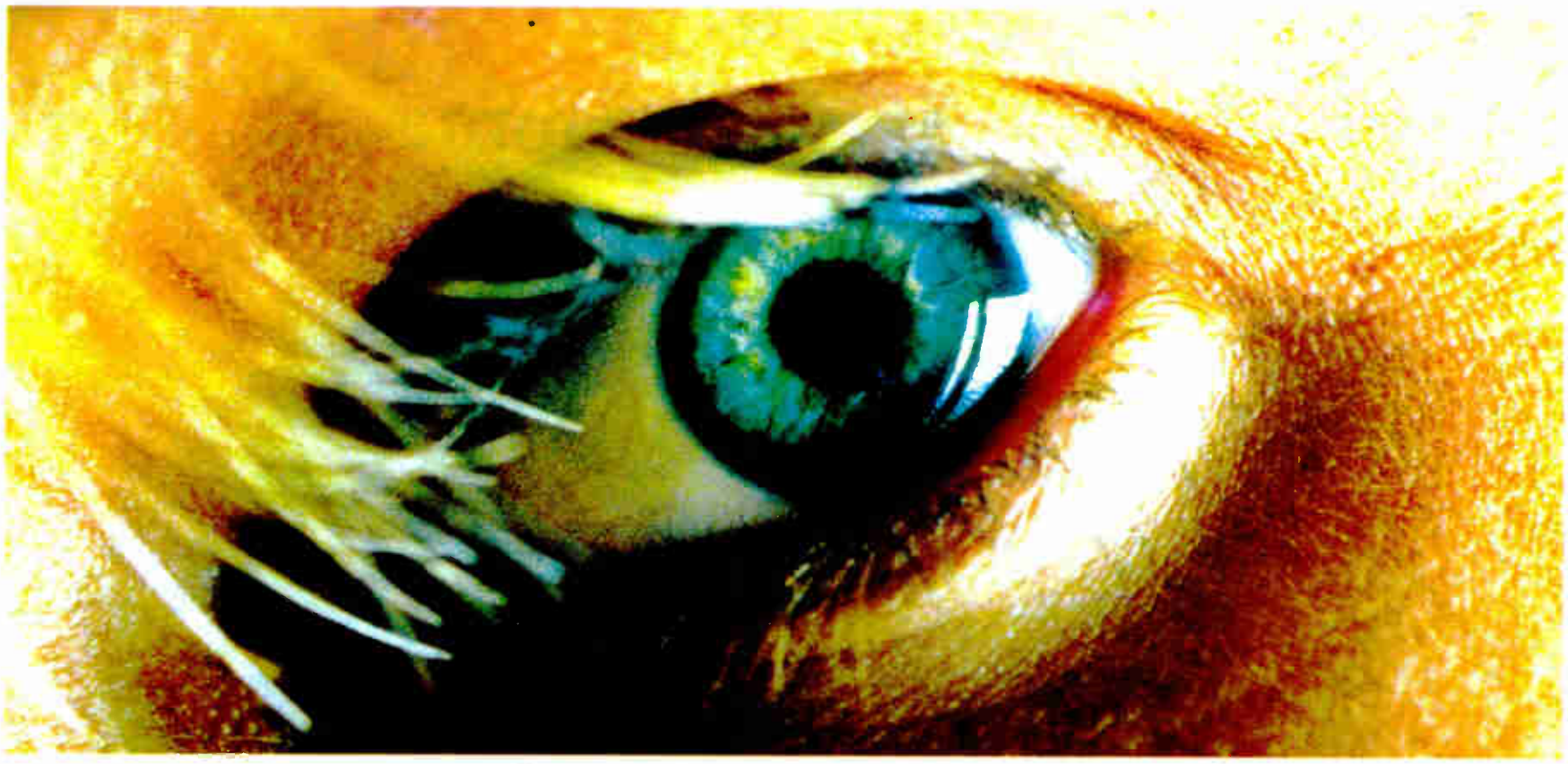
**Wicks Broadcast Solutions LLC** **1728**
*Intro:* Datacount 32 (D32) NT/2000-based, 32-bit traffic and billing system, with an easy-to-use graphical user interface that helps create an information cornerstone for your business integrating new tools and technologies.

John DeLoach, Mktg. Coord.
P.O. Box 3078
Opelika, AL 36803-3078
334-364-2625
334-749-5641
334-749-5666
www.wicksbroadcastsolutions.com
jdeloach@wicksbroadcastsolutions.com

**Williams Vyvx Services** **2139**
*Intro:* AudioNet e-commerce audio transport solution that digitizes and securely transports radio spots online for broadcast-quality results, with the ability to track all spot information from a desktop with adsInView Web-based tracking service; AdsInView secured, online tracking service that provides instant access to order and deliver information on all your spots.

**World Division** **736**

World Radio History



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# On Air 2000 MkII Digital Broadcast Console

**Continuing a 50 year tradition** of state of the art sound quality and precision manufacturing, Studer proudly presents the On Air 2000 MkII. Featuring "Touch N Action", a familiar, straightforward touch-screen interface with programmable rotary controls, it is easy to learn and simple to operate. Call the Studer office nearest you for a detailed product booklet or to arrange a private demonstration.

***The On Air 2000 MkII also features:***

- Self-contained, modular architecture (no racks and no fans)
- Remote control from automation systems
- "Studer Sound" AD and DA converters
- Customizable per user/show, password protected (20 users)
- Snapshots can be stored on PCM/CIA cards
- A/B select on mic / line / AES inputs (6x1 optional)
- Selectable channel EQ, and output bus limiting
- Built-in clock/timer with ext. sync option
- Version 3.0 software offers up to 6 mix minus feeds (N-1).

***Options include:***

- Telephone hybrid control module
- External digital wordclock input
- Studio talk-back box or custom made turrets
- RS232/422 serial interface

**STUDER**
professional audio equipment

H A Harman International Company

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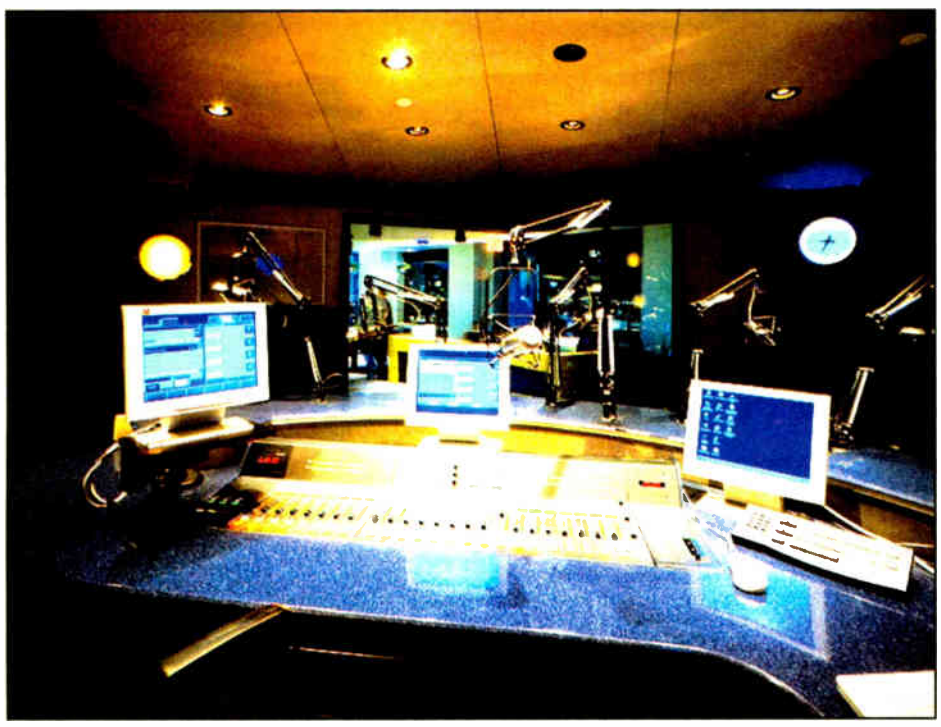
FACILITY TOUR

# Z100 Settles Into Its New Home

## *One Year Ago, WHTZ(FM) Made the Move to Jersey City to Better Serve the Big Apple*

**Scott Fybush**

Its signal may emanate "from the top-top-*top* of the Empire State Building," but anyone who saw the original studios of New York's WHTZ(FM), better known as Z100, might have had a hard time believing they were in the nation's top market.



The new Z100 has plenty of elbow room and work surfaces

"Good God, Secaucus," said Z100 Chief Engineer Josh Hadden of his station's original home in the New Jersey Meadowlands. "It was built on a budget in 1983 and maintenance on it was deferred ever since. The place was a nightmare."

It was clear to Hadden and to WHTZ's owners that something needed to be done, fast.

"We would routinely get wakeup calls from the morning show saying that they couldn't turn their mics on, then later in the day we'd get calls from the midday people saying their mics were still on even when they were switched off," Hadden said.

Not that a working microphone was any blessing in a studio overlooking the swamps of Secaucus, N. J. — especially one with very little soundproofing.

"Whenever there was a 747 on final approach into Newark Airport, you could hear it on the air," said Hadden.

Cringing yet? Try finding the sales department at Z100. "They were in Secaucus only one day a week because we had no space for them," said Hadden.

The rest of the time, Z100's sales force was miles away, across the Hudson, at a satellite office in Manhattan. The station is licensed to Newark, N.J.

By October 1998, then-owner Chancellor Broadcasting was ready to begin the search for a new home for Z100.

"It would have been too intrusive to rebuild at the same location," said Hadden.

For him, the task of relocating Z100 was something of a personal mission.

"I remember the day Z100 signed on the air," he said. "I remember falling into radio and working the board for remotes for the station and even then they were talking about moving. I never dreamed I would be the chief engineer to oversee that move."

Reception area

Before Z100 could find a new home, Hadden and his corporate bosses at Chancellor had to decide whether to attempt physical consolidation with the company's co-owned stations in the Big Apple. WKTU(FM) had recently moved into new quarters in nearby Jersey City and Z100 considered joining it.

"We couldn't cobble together enough space in KTU's building," said Hadden, "and anyway, in New York City you have all-star radio stations. Do you really want them sharing the same dugout?"

### Team Z100

The search for a new home field for team Z100 wasn't being conducted alone. New York architectural firm Meridian Design was assisting in site selection long before the station settled on a 37th floor space in Jersey City.

"We get involved the moment they start thinking about doing a build," said Meridian co-CEO Bice Wilson.

In addition to finding enough square footage in the competitive New York real estate market, Wilson said a radio station poses some challenges to any would-be landlord, what with its needs for power, ventilation and soundproofing.

"We looked at five or six different locations in New Jersey."

Even after the 17,200-square-foot Jersey City space was chosen, it still proved to be a compromise.

"Unfortunately, the shape of the space ended up being an elongated floor, so it was a bit of a challenge to get all the departments working in an acceptable space," said Meridian co-CEO Antonio Argibay.

Meridian made the most of it, creating a station built around two identical on-air studios lining an outside wall.

"We tend to group our studios around a social space, instead of making them just rooms off a corridor," said Wilson.

Deciding what would go into those studios forced Hadden to begin with a major choice: digital or analog?

### Digital decision

"I was intimidated by digital, to be frank," Hadden said. "There's a world of difference between reading about it and getting your hands on it."

Once he began investigating digital products, though, he was sold on the flexibility they offered.

Z100's two air studios feature an integration of digital products from three separate companies: Enco Systems automation, Zaxcom consoles and SAS routers.

"I was the only person who'd ever implemented this with separate pieces of equipment," Hadden said.

Among his goals: getting the automation, routers and consoles to communicate with each other in ways that had never been tried before.

"I wanted the displays on each fader to show the first eight characters of each song, so instead of saying just 'CD-1', it would say 'Like a Prayer,' for instance," Hadden said.

The goal of making the studios more comfortable (and less error-prone) for each jock was also made easier by digital technology.

"Our morning show needed a totally different configuration from the other dayparts. This way, we can tell the router, for instance, that the morning show always has traffic on a specific fader."

He also worked with Meridian to figure out what would surround the studios.

"The traffic department needed to be close to the studio, but it also had to straddle between programming and sales, so we had to find a central location for it," he said.

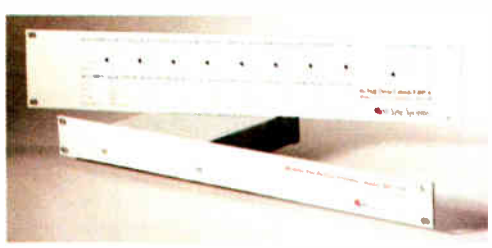
Talking to individual staff members about their needs produced further refinements.

"I found out that because of the long hours our promotions people put in, they sometimes ended up crashing at the station and then complained about how warm their office would get overnight."

The result: Z100's new "promo pit" is on a 24-hour air conditioning zone.

See Z100, page 54 ▶

try to control yourself...



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| FM4,000G3 | 3CX800A7 | 3CX3000A7 | $ 24,795.00 |
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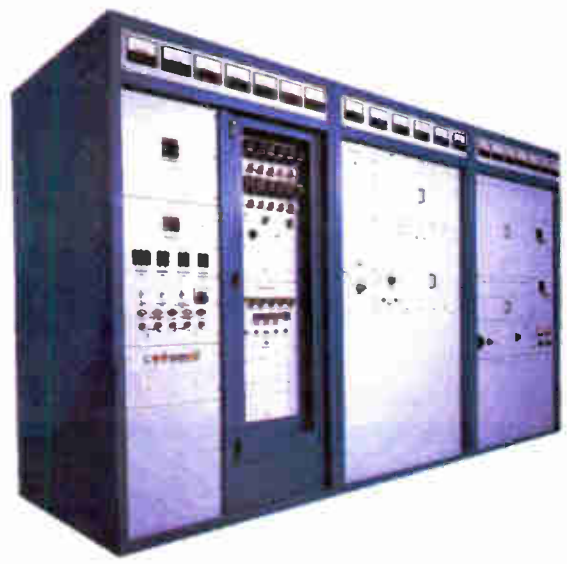

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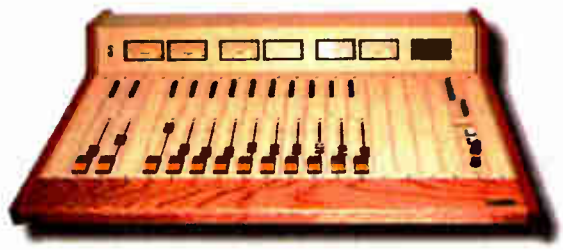

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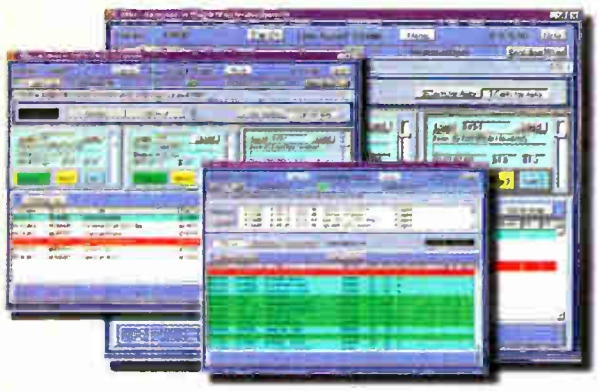

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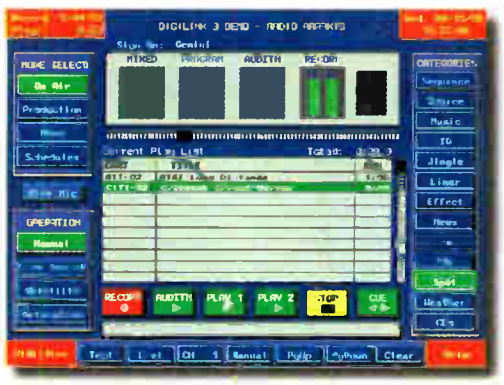

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# Z100

▶ Continued from page 50

Meridian contributed other elements to the design, including revolving CD racks that line the corridors to the air studio.

"It has kind of a hip, relaxed feeling," said Argibay. "It's not overwhelmed by a corporate feeling."

Instead of the usual Formica surfaces for the studio furniture, Meridian used fiberboard coated in lacquer.

"It's a kind of industrial-looking material," Wilson said.

But visitors to the Z100 studios aren't likely to spend long looking at the furniture, because of what looms just beyond: floor-to-ceiling windows offering a stunning view of the Manhattan skyline.

"We found that was a huge asset," Argibay said.

For Hadden, the view took on a potent symbolism.

"In our old Secaucus studios, we had a panoramic picture of the New York City skyline," he said. "When I found out our new building had a real view of the city, I made it my personal mission to make sure the studios faced that way."

In addition to the view, the studios offer Z100's talent something else they lacked in Secaucus: breathing space.

"We had 120 square feet of space for anywhere from six to eight people in our morning show," Hadden said.

The new studios offer 250 square feet each, not counting a large open space outside that can accommodate live performances.

Bright, airy sales space is part of the new facility

There were a few stumbles along the way, as with any project of this size. Meridian said the building's owners originally agreed to allow Z100 to have a "major presence" in the public hallway outside, then changed their minds, forcing a last-minute redesign.

Meridian and Hadden also had to cope with changes in ownership as Chancellor was bought out by AMFM, then by Clear Channel. No matter the name on the checks, the project carried forward right up to moving day, Sept. 24, 1999.

Hadden said the biggest surprise with the new facility was realizing just how bad the old one had been.

"At one point, the mike came up and there was a pause before anyone started speaking and we just heard silence ... absolute silence."

Engineers considered putting in a ground-loop generator, he joked, just to make sure they knew the STL hadn't failed.

### Protected rig

The new studios offer Z100 three paths to the "top-top-*top*" of the Empire State Building with the STLs. In addition to the line-of-sight microwave link from the roof, Hadden is testing a Harris Intraplex fiber STL in a protected-ring configuration that can run directly to Empire or through the nearby WKTU(FM) facility.

Even with the project on the air, Hadden said he's remained in close contact with his suppliers, suggesting possible improvements and hearing their suggestions as well.

"Be really careful about the vendors you choose. You're really looking to build a relationship past them selling you the equipment."

Just about every bit of that equipment was new. Because Z100 had to stay on the air from Secaucus during construction, nearly all of the old equipment stayed behind. The only gear to make the move: two DAT machines, two Denon 951 CD players, a Telos Zephyr and a Cutting Edge Omnia processor.

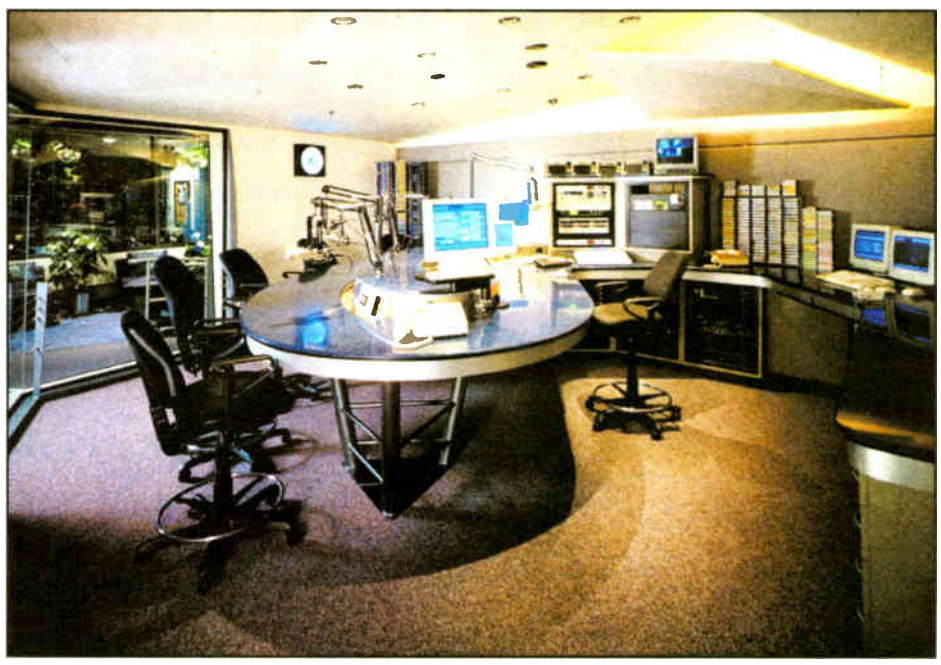
"Everything else was abandoned in place," Hadden said — and "abandoned" is definitely the right word.

"Four months after we turned on the new place, I finally got back to Secaucus."

Chancellor still holds the lease on the old studio.

"The lights were still on in the offices where people had walked out and the faders on the old board were still potted up from the last song that was played from that studio."

And on the wall, that old photo of the Manhattan skyline still glowed, a dim echo of the real thing outside Z100's new windows a few miles north.



On-air studio at Z100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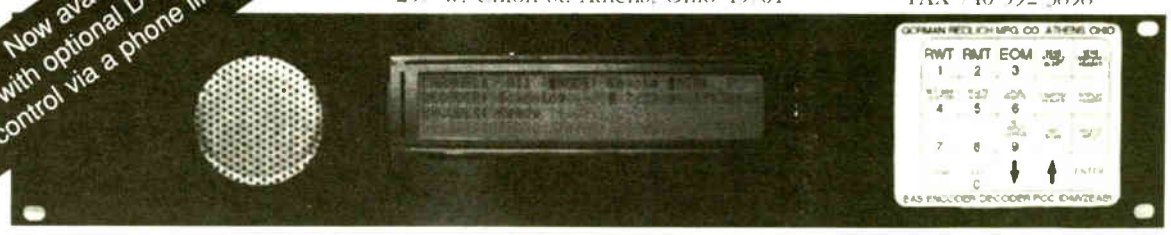


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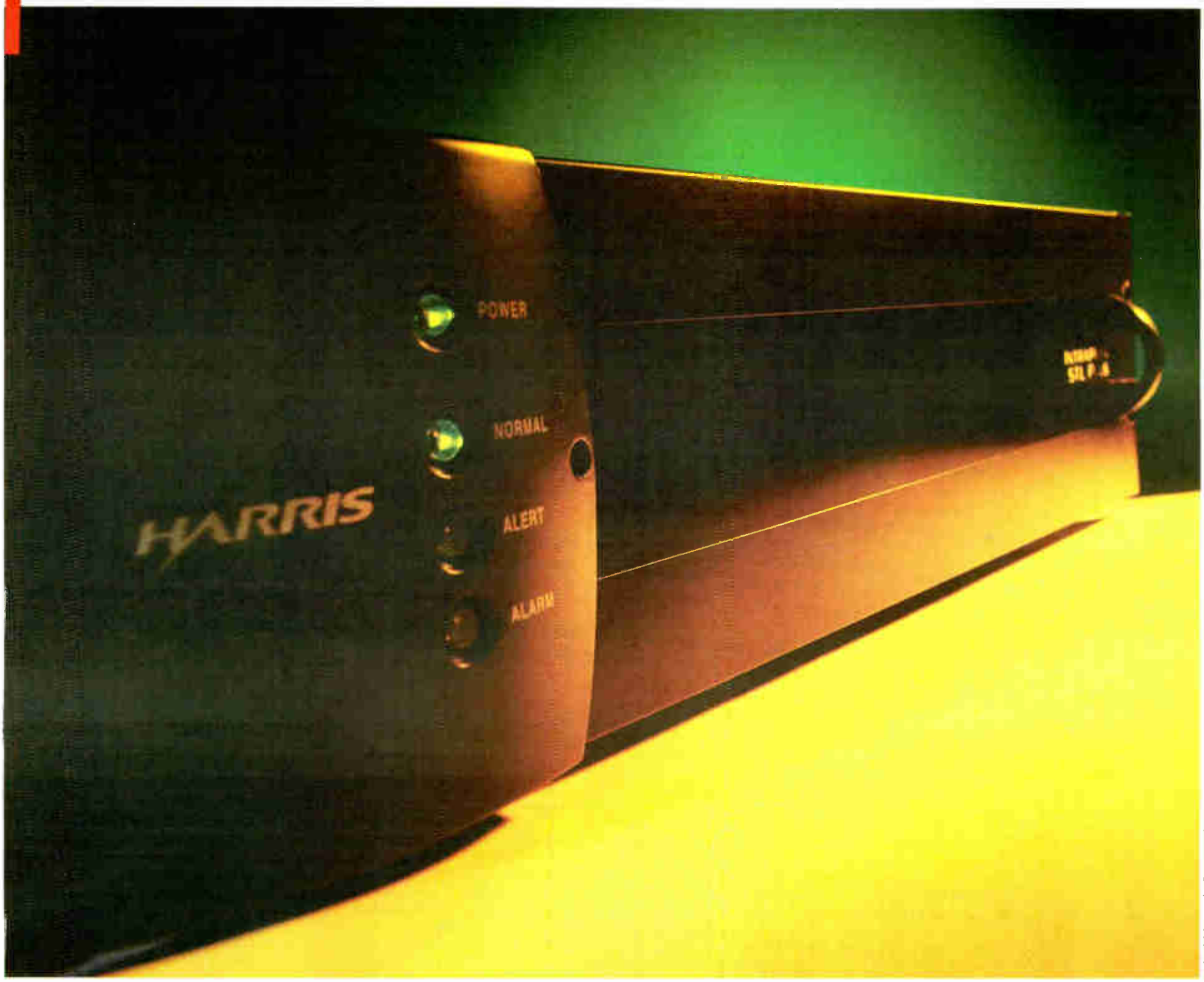


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# Low-Power FM: Goat, Not Hero

*RW welcomes all points of view on the issue of LPFM, in the form of guest commentaries, letters and e-mails. Write to us at* radioworld@imaspub.com *or use the address on the inside last page.*

Dear **RW**,

The venom directed at legitimate radio and the NAB astounded this old broadcaster and, proud to say, NAB member. I attend the (trade) shows to learn and to bring back to my students what's happening in the industry.

I'm afraid LPFM is not the hero, but the goat. As a 35-year veteran of the radio wars, and still fighting, I manage a community station and teach radio. My partner and I engineer a total of 10 stations. I also spend time in front of the mic and the camera for public radio and TV.

We have diversity in Southern Colorado; there is Colorado Public Radio, NPR, Mom-and-Pops, the so-called big boys and some smaller group-owned stations. We co-exist with none of the animosity found in the letters of the July 19 **Radio World**.

We have our own engineers group that meets monthly, we share and we help each other. Locally our formats include classical, alternative, freeform and everything in between. More than 40 AM and FM signals are available.

I want to know why some want to clutter the band with amateur night. With no advertising allowed, at least three non-profits fundraising already, not to mention a large PBS TV station, LPFM will have to sell pencils on the street corner to raise funds.

People who have not had training, do not understand the business of broadcasting, and do not have any idea of what it takes to run a station 24/7 *will fail*! And the FCC and misguided supporters are urging them on.

The technical end also is of great concern, not from spacing considerations, but from people who will make honest mistakes, twist the wrong knob, forget the mic is open, not understand the equipment or just plain loose interest after a few weeks.

What happens then? Who polices and helps LPFMs? The FCC? Field offices are understaffed and overworked. The only people who will make out will be equipment companies, and us contract engineers.

This is CB radio all over again, but with much higher stakes.

Long live radio.

*Dan Thomas*
*GM/CE KKPC(AM)*
*Pueblo Community College*
*Pueblo, Colo.*

Dear **RW**,

In regards to the June 21 Guest Commentary "LPFM to make Receivers Obsolete," I would like to make a few adjustments to what the author, Mr. Fred Krock stated.

Mr. Krock talks about deep shadow areas in FM signals, then attempts to relate the shadows to the design shortcomings of FM receivers, when in fact receiver design plays no part in this effect.

He then attempts to further confuse the reader by stating laboratory-grade receivers would create fewer problems, and then compares what he defines as a standard-standard receiver (because it is expensive, not because it is better), to current consumer receivers.

Then he goes off on a tangent and attacks the shortcomings of a consumer-grade receiver, and goes as far to state that LPFM stations will seriously degrade reception. He directly places the future of receiver design on LPFM.

Unfortunately, Mr. Krock may not remember the Kenwood (and many other) consumer tuner/receivers from the late '70s with mechanically tuned, multi-RF staged front ends. Also, the use of narrower IF filters to reduce adjacent-channel interference by tens of dB. These receivers were manufactured long before the FM band became as crowded as it is now, and were well ahead of their time.

Maybe Mr. Krock doesn't realize that one can purchase a 150 kHz ceramic IF filter from Digi-Key Corp., which improves the selectivity immensely. I have added these filters to all my radios with considerable improvement.

One effect Mr. Krock also did not indicate is capture effect of an FM receiver. Most 100-kW stations will produce field strengths more than several millivolts stronger for a given distance from the transmitter site. At the same distance from a LPFM station, the signal strength will be magnitudes less. Put those stations one channel apart, and see who interferes with whom.

I had the opportunity to conduct actual tests with a 20-kW station next to a 10-watt signal at 100 feet HAAT. Measurements were conducted over flat terrain. The 20-kW station was 15 miles from the 10-watt signal.

Starting 20 feet from the 10-watt signal, noise and interference measurements were measured. There was no interference from the 20-kW station. Beyond 1,250 feet, the 20-kW station began to introduce distortion to the 10-watt station, *however* the 10-watt station was not affecting the 20-kW signal performance at this distance.

Moving the measurements beyond 1,250 feet only increased the interference to the 10-watt signal. At approximately 4 miles the distortion and noise began to severely interfere with the 10-watt station. Although the FCC would not license such a condition, the results were conclusive.

*Jim Trapani*
*President*
*JT Communications*
*Ocala, Fla.*

See LPFM, page 65 ▶

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World Radio History

WIRED FOR SOUND

# How to Deal With the Aliens

**Steve Lampen**

We left our previous column in the Aug. 16 issue talking about alien crosstalk, something new in the computer/data world.

This is crosstalk from cable-to-cable caused by the bundling and cinching of large numbers of cable. One might make the assumption that alien crosstalk also applies directly to standard analog audio twisted pair, but I wouldn't go so far. Those stranded twisted pairs are older technology, made with much less precision than premise/data UTP.

Besides, the UTP is solid conductors. They maintain their shape, twist and position a lot better than stranded cables.

So should you worry about alien crosstalk? Well, I've never heard of analog audio crosstalk cable-to-cable. Have you? If you have, drop me a line.

Everything points to the crosstalk of even casually twisted pairs as being very low at audio frequencies. Figure 1 shows the rejection of noise based on the twists-per-inch.

You'll note that after you pass a twist every two inches, things begin to level off. There are data cables that you might see where some of the pairs are twisted dozens of twists per inch. You can see from the chart that this gives diminishing returns. On the other hand, super-tight twists are more expensive because they use more copper and slow down the data signals because there is more copper for the signal to travel down.

| Twists-per-foot | Noise Reduction |
|---|---|
| 0 | 0 dB |
| 3 | 23 dB |
| 4 | 37 dB |
| 6 | 41 dB |
| 12 | 43 dB |

Figure 1: How twists affect noise reduction

How does this affect analog signals running down pairs? Not that much. Except that it doesn't take a lot of twists-per-inch to give you significant noise reduction. Couple that with the "inverse square law" which says that, at double the distance, the effect is one-quarter, and you can see why twisted pair cables rarely, if ever, affect one-another, even if in a conduit together.

For AES/EBU, being digital, these pairs require even less crosstalk. In fact, -30 dB crosstalk will allow digital pairs to work just fine. And -30 dB is very easy to arrive at, even in the mega-hertz frequency range.

| Signal | Occupied Band |
|---|---|
| Power | 60 Hz |
| Analog audio | 20 Hz - 20 kHz |
| Analog video | DC Hz - 6 MHz |
| RS-422 | DC - 10 MHz |
| Digital audio | DC - 25 MHz |

Figure 2: Selected signals and their frequencies

There's only one consideration. Crosstalk in AES/EBU shows up as noise. (In fact, all crosstalk is noise if you think about it ... unwanted signals!) And noise in digital signals is not like noise in analog signals. Noise in digital signals adds to the inability of recovering data at the receiving end.

Further, in AES, the clock is derived from the data, so jitter also is increased since the noise obscures the clock transitions.

### In the band

I think, after balance and distance, the key to crosstalk and noise between cables mostly is determined by the occupied band. Figure 2 shows are a number of signals you most likely would send down a cable and their occupied band.

I add analog video here only because you might do surveillance cameras in the midst of your install. Note that these signals share portions of their spectrum. And, given the robust nature of digital signals, most installer are more worried about getting digital signals, which are square waves, after all, into the analog than vice versa.

You could also make multiple bundles, one for analog, one for digital. That would surely help.

It is for this fear alone that cables are most often separated into like groups (all the power in one conduit, all the line-level analog audio in another conduit, all the mic level in another, all the digital in another and so on).

Because there is no empirical testing on different signal crosstalk, I suppose it is a question of paranoia. If you're scared, separate 'em. If you're not, combine 'em. I am interested in hearing from anyone who ever had a problem mixing signal types. I have never heard of a wiring failure from such a practice.

There is, however, one clear problem with combining cables: pull strength. You would think, seeing how some installers pull cables thorough conduit, that cables have infinite pull strength.

Well, of course, they don't. Much of this is due to improper fill ratios, which we discussed in the last column. If you go above 40 percent, the first thing you will exceed is the pull strength of the cable. So how do you know how hard to pull? And how do you know when you get there? And what is the pull strength of a coax cable or twisted-pair?

### Packing it in

I once worked on a job installing a radio station. Unfortunately, on the first day we discovered that the architect had been given the mandate to save money.

One thing he had done was to change all the 2-1/2-inch conduit to 2-inch conduit. What this meant was that the conduit fill, which might have been close to the 40 percent maximum, was now 60 or 70 percent.

But the wire and cable had been bought, so there was no chance to redesign the pull. We were stuck. I vividly recall being on the pulling end of one of these runs with multiple audio pairs. I estimated the total poundage of human flesh hanging on this bundle of cables and realized that, between us, we were over 700 pounds.

To say this was beyond the "recommended pulling strength" of the cable is an understatement. However, it is a testament to the wire manufacturer that, even after this punishment, every pair worked! So what should he have done?

Well, perhaps he should have had an earlier conversation with the architect and pointed out that changing the side of the conduit was not a cost-savings in the long run. If it *had* to be changed, he could have opted for snake cable with a lesser gage, such as going from 22 AWG to 24 AWG, or even down to 26 AWG.

The size of snake cables changes dramatically when you change the gage of each wire. However, there is no free lunch. And while the cable gets smaller, and in many cases less expensive (less copper), the pull strength goes down dramatically too. If there is one reason to stay with larger gages, it is ruggedness. And, if you are going to put it in conduit, ruggedness means pull strength.

In the next installment, we'll determine the pull strength of twisted pair cable. And we'll talk about measuring that pull strength during installation.

■ ■ ■

*Steve Lampen is technology specialist, multimedia products for Belden Electronics Division in San Francisco. His book "Wire, Cable, and Fiber Optics for Video and Audio Engineers" is published by McGraw-Hill. Reach him at* shlampen@aol.com

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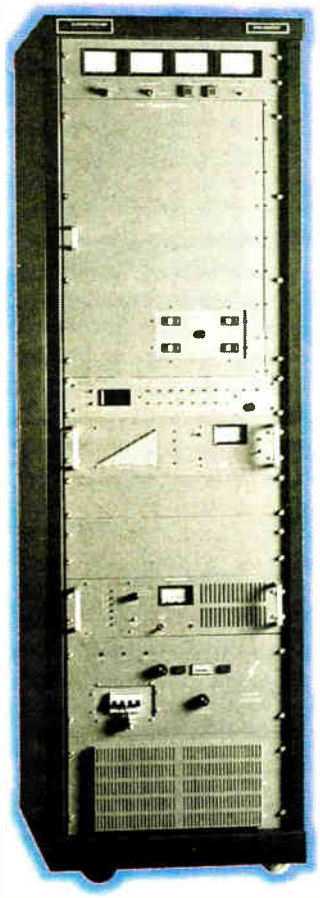

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World Radio History

# Workbench

Radio World, September 13, 2000

# When Lightning Gets You Down

**John Bisset**

The lightning storms aren't over yet, and Figure 1 at right will give you the willies.

The photo shows the end of an 8-foot ground rod that was on the WKZM tower lights. The lighting controller was not bonded to the tower ground, and the photo is evidence that the light controller took a bad hit.

Fig. 2

Further inspection by John Stortz, the market DOE for the group of stations, found the grounds at the site were inadequate. John expects that deep in the ground, at the end of this rod, the discharge formed a fulgarite.

★ ★ ★

Looking for a good CAD program? The question was recently asked on the SBE Digest at *broadcast.net*.

One of my associates, Gary Liebisch, replied, recommending Visio 5.0 Technical for a good CAD program with a short learning curve. The newer Visio 2000 also is a good selection.

For users that don't need all of the features and complexity of AutoCad (to include 3D views), the Visio programs are good choices. If, however, you feel that someday you will want to graduate to AutoCad, consider AutoCad Lite. This is a simpler and much less expensive program, running about $400.

To help engineers new to either program, tutorial disks are available. Thanks, Gary, for the view from the driver's seat. Gary works with the Harris Systems Division, putting the CAD programs to work designing turnkey studios, wiring and equipment layouts.

★ ★ ★

Speaking of associates from Harris, Tom Harle, the radio district sales manager for the Upper Midwest, found an informative Web site which describes various MiniDisc machines. Visit *www.minidisc.org/equipment_browser.html*

Also on the Web, Jon Bennett, the market chief for the Cox stations in Richmond, Va., (FCC approval pending) found a wealth of information at a site called Martindale's The Reference Desk Calculators OnLine.

Check out the Broadcast Engineering page on this site at *www-sci.lib.uci.edu/HSG/RefCalculators.html*

Tell your fellow *Workbench* readers about useful Web resources you've discovered. Send us e-mail to *jbisset@harris.com*

★ ★ ★

I mentioned that lightning season isn't over yet. In some states, like Florida, they never see the end of lightning season.

Folks in the Midwest gets their share of storms, too. The damage seen in Figures 2 and 3 will make you glad it's not your station.

**'Never Question the Engineer's Judgement!'**

— Shop sign

The engineer providing these photos has asked for anonymity, primarily because the owners haven't fixed the problem promptly. The problem was found during an inspection of the station's directional array towers. Pieces of porcelain at the base of one of this tower were found.

Closer inspection showed where the pieces once belonged. Figure 2 shows the missing chunk, but Figure 3 on page 60 gives you a better picture of the stresses involved. Look at the carbon traces, cracks and burns on the insulator itself. That the tower is still standing is even more amazing.

Fig. 1

Photos like these demonstrate why your management needs to give you the resources to make periodic transmitter site inspections. Remember, the FCC still requires a quarterly tower inspection. If you're not completing this quarterly requirement, which includes checking your tower bases, you are leaving your station open for a forfeiture.

Problems like the cracked insulator can be corrected before the tower falls — if they are spotted. You won't find these problems if you rarely visit your transmitter site.

In the case of this directional station, this tower likely will take other towers or buildings with it when it falls.

I greatly appreciate the candidness of this engineer, sharing this problem with the readers of **Radio World**. Hopefully, the photos will open the eyes of your management as to the importance of routine maintenance and site inspections!

See WORKBENCH, page 60 ▶

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World Radio History

# Lamarr Had Looks and a Great Idea

**Robert Rusk**

Perhaps there should be a picture of actress Hedy Lamarr mounted near your RPU equipment.

Lamarr died earlier this year at age 86. When she arrived in Hollywood in 1938, she was billed as the "world's most beautiful woman," and went on to star in cinematic classics like "Samson and Delilah" (1949).

But long before, Lamarr and musical composer George Antheil collaborated on a technological innovation that would ultimately give the engineering world a concept in use today: spread spectrum.

Hedwig Eva Maria Kiesler was born on Nov. 9, 1913, in Vienna, Austria. In 1933, her parents forced her to marry Fritz Mandl, an Austrian munitions magnate.

To say she was unhappy with the marriage would be an understatement. Mandl was brutal.

In an interview with the Associated Press years later, she said, "I was kind of a slave. When we were in Italy, I couldn't even go swimming without him being there."

Mandl held meetings with arms developers, builders and buyers, keeping his attractive wife by his side. She did more than play the role of devoted wife and hostess; she listened closely and learned about technology.

She had a technical mind from an early age. "When I was just four years old," she once said, "I remember my father had a gold watch. I asked (him), 'Why does this in front go around? How does this work?'"

After four years with Mandl, who was making deals with the Nazis, the feisty woman had had enough. She drugged the maid who had been assigned to guard her, crawled out a window and fled to freedom in London.

MGM studio chief Louis B. Mayer spotted her in a London stage production and offered her a contract with his studio. With the deal came the name Hedy Lamarr.

### Torpedo control

She met George Antheil at a Hollywood party in 1941, and was immediately impressed. He would become her partner in an innovation that relied on their combined technical and entertainment knowledge.

With a bitter hatred for the Nazis, Lamarr had an idea for the radio control of torpedoes, which she hoped the U.S. government would use in its fight against Hitler and the Nazis.

Not really understanding how the technology could be used in full, Lamarr recalled, "We were figuring the whole thing out."

But Lamarr knew that a simple radio signal sent to control a torpedo would be too easy to block. However, she theorized, what would happen if the signal jumped from frequency to frequency at split-second intervals?

Anyone who was trying to listen or jam the frequency, Lamarr thought, would only hear random noise, such as the spinning of a radio dial. However, if both the sender and receiver were signal-hopping in synch, the transmission would be heard as intended.

It was Anthiel — whose musical compositions had included more than a dozen player pianos operating in synch — who came up with the idea of using piano rolls to ensure that both sides of the signal were in synch.

"Hedy's invention of the 1940s was remarkable for the time. Spread spectrum has come a long way since (the) piano roll synchronization scheme, allowing broadcasters increasing flexibility up to four times the bandwidth of T1 for studio-to-transmitter links," said Bill Gould, product manager for Harris Intraplex Transmission Solutions.

"Her contributions are saluted by the industry."

Lamarr and Antheil were granted a patent on Aug. 11, 1942, for their "Secret Communication System." The U.S. Navy declared the invention too cumbersome to be fully implemented. Three years after their patent expired, the idea of spread spectrum was used in secure communications systems aboard the U.S. military ships that were ordered to blockade Cuba in the 1960s.

Today the technology is used in certain specialized remote broadcast equipment and in consumer goods such as cellphones.

Neither Antheil, who died in 1959, nor Lamarr received royalty payments for their patented technology. After her screen career ended, Lamarr lived her life in relative poverty and seclusion, and died in her Orlando, Fla., home in January of 2000.

So the next time you pass that photo of Lamarr — on display next to the RPU rack — smile and say a silent "thank you."

### Lamarr Links

You can find more information about Hedy Lamarr's invention and her movie career on the Web. Start with these sites:

*www.inventorsmuseum.com/hedylamarr.htm*
*www.ncafe.com/chris/pat2/index.html*
*www.hedylamarr.at/*
*www.clevernet.net/hedylamarr/*
*www.geocities.com/Hollywood/Hills/1797/*
*web.mit.edu/invent/www/inventors1-Q/lamarr.htm*

# Workbench

▶ Continued from page 59

★ ★ ★

One sign says it all. The market chief for Southern Communications in Beckley, W.Va., Randy Kerbawy, showed me a really neat sign that we all need in our shops.

Fig. 3

It's a professionally manufactured sign, made of wood, 17 inches long by 7 inches high. The sign reads, "Never Question the Engineer's Judgement!"

Nuff said!

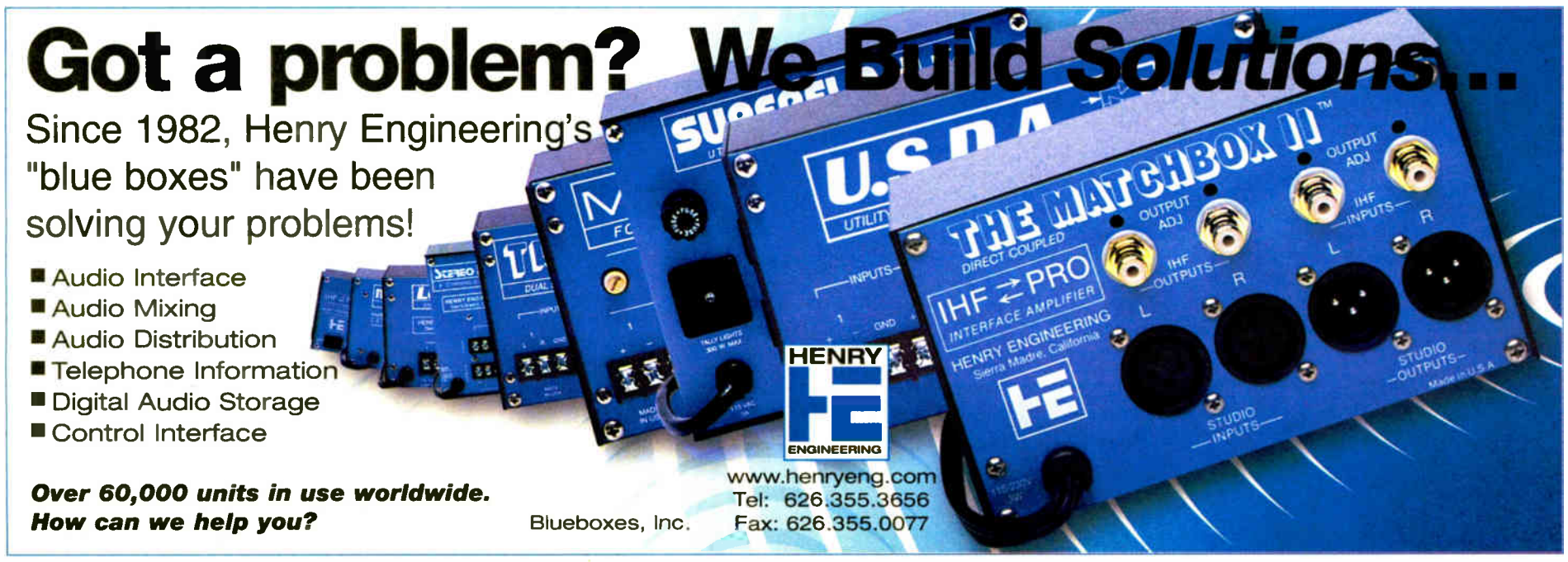
If you want one of these signs, perhaps as an early holiday present for yourself, order it for $34.50 from The Paragon. Call them toll free at (800) 657-3934, and ask for item EA4744A "Engineer's Sign."

Getting your staff to follow the sign's advice is another story!

■ ■ ■

*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



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World Radio History

FIRST PERSON

# WOR Survives 'Black Wednesday'

## *Here's What Happens When a Major-Market Radio Station Loses T1, Dial-Tone Service, ISDN, DSL and Transmitter Control*

**Thomas R. Ray III**

*The author is corporate director of engineering for Buckley Radio, WOR Radio/The WOR Radio Networks in New York City.*

Imagine, if you will, your worst nightmare at your radio facility.

Would it be the tower toppling to the ground? A fire at the studio complex or transmitter site? A madman breaking in the front door and marching in with a shotgun?

Have you considered what might happen if you lost your phone services? You probably don't realize how vulnerable you are and how much you rely on your telco services.

This is the story of WOR's "Black Wednesday."

### Phone trouble

Wednesday, April 28, started out in a not-too-unusual way at the studios and offices of WOR, located on the 23rd floor of 1440 Broadway in New York City.

We had our usual weekly management meeting, there were several computer issues to be taken care of, someone was swearing at the digital automation system. I had gone downstairs to get a bowl of soup for lunch, and had returned to find a voice-mail message from my wife. I settled in at 11:40 a.m. and called my wife.

At 11:42, the line abruptly went dead. Unusual. I hit redial. The PBX responded by telling me that all outside trunks were busy.

All of WOR's office and talk show lines pass through the Mitel PBX via T1 from AT&T. The talk show lines are purposely restricted to only 10 calls incoming to one particular number at any time, so there was no reason for all the trunks to be busy. A quick dash down to the phone room showed all seven T1s in alarm.

Knowing I had no dialtone, I grabbed my cellular phone and asked Eloise Maroney, WOR director of operations, to follow me down to Master Control. Something big was happening and we might have to work closely.

Passing the newsroom, the news desk assistant said they had lost several of their wire services. Someone in Control Room 3 said they lost their Internet access. Producers appeared wanting to know what happened to the incoming phone calls.

The visit to Master Control revealed the worst: not only no T1s, but no standard dial tone, no ISDN, no DSL, no broadcast loops, no transmitter control. Nothing.

### The net is down

There was no problem with WOR itself at this time, as the signal gets to the transmitter in Lyndhurst, N.J., via 950 band STL. But our station has an average cume of half a million persons — that's a lot of folks and clients who now could not reach us. Further, our hosts would have to do talk radio with no listener interaction.

And seeing as all our other services were dead, I assumed that The WOR Radio Network, feeding 400 affiliates, was off the air.

To add insult to injury, we had been in the process of setting up a remote for our Network program "The Dolans" via ISDN from the International Auto Show at the Jacob Javitz Center in Manhattan. Our national remote was now dead in the water.

I asked Eloise to call Mario Sfogliano, our remote engineer, and explain the situation, and to see if they wanted us to run a DAT or MiniDisc machine over there to record the remote. I called ABC Satellite Services to find out about the network.

The response from ABC Satellite was "Where the hell have you guys been? You've been off for over 10 minutes and we kept getting a busy!" I quickly explained our predicament, and that ABC would need to air our emergency copy of "The Joy Browne Show" at 12:06:40. We would also need a studio.

"Bye. I'll call you soon."

The next call was to a vice president's office at what was then called Bell Atlantic, now Verizon, the local telco operating company. Even though most of our services are through AT&T, the cabling is Bell Atlantic.

I was quickly passed to the supervisory level of all departments: dialtone, ISDN, broadcast services, news wire services. My response to all was, "Here's a circuit ID. Test it. Then send someone over here. Now."

### Breaks on CD

By the time I was off the phone with Bell Atlantic, Eloise had John McDermott, our executive producer, and several other producers lined up and gathering tapes. Chris Thompson, WOR director of Internet services, was drafted to take an armful of tapes to ABC Satellite Services at 125 West End Ave. in Manhattan, and start airing them.

Scott Lakefield, producer for the Dolans, arrived and was quickly pushed out the door with a MiniDisc machine to record the remote. The Dolans had explained

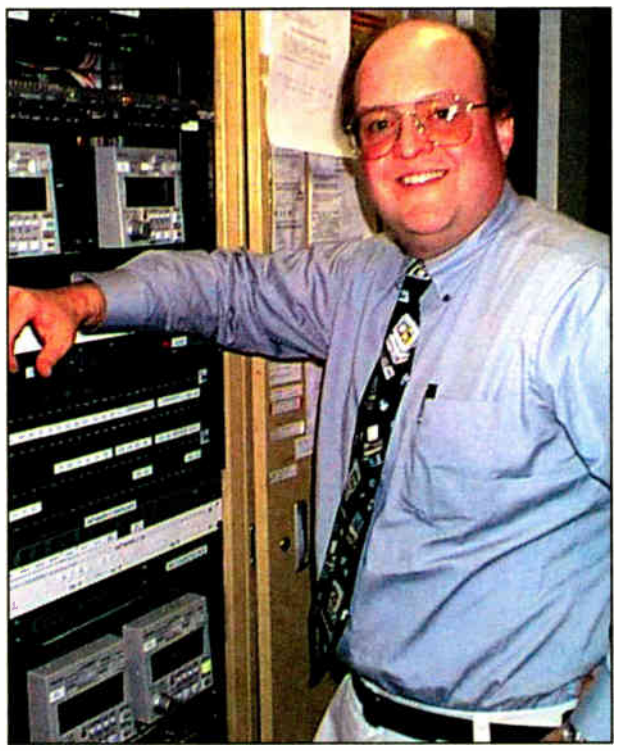

Photo by Joanna Rice, WOR

The author is corporate director of engineering for Buckley Broadcasting.

the situation to the client, who understood it was out of our control, and all agreed to air the recording the following day as a normal remote broadcast.

We then sat down with Master Control operator Miguel LaBoy, and he was given a quick lesson in digital editing and CD burning. Miguel started burning our network breaks to CD, which were messengered up to ABC for playback to get revenue back on the network.

Telco showed up 40 minutes after I ended my call with them — six people from various departments. I handed them all circuit numbers or phone numbers and said "find them." Within minutes faces dropped. The response was, "We'll be back shortly." They left.

In the meantime, Eloise had commandeered the cellular phones from the sales department and brought them down to network. The network started calling all of our affiliates to let them know what was going on and to inform them that we might not have the ability to send out local automation cues in our predicament. No one complained or threatened to cancel.

### The unkindest cut

About 30 minutes after telco personnel had left, they returned looking glum. The 9th floor was being demolished. Some jolly joker had jimmied the lock on the secured riser column and taken a sawzall to the 9,000-pair telco riser. It was going to take a while.

On the air, WOR personalities punted.

Arthur Schwartz producer Mike Hayes, managed to round up some guests in a hurry. Bob Grant's producer found some local guests, since Bob's show was not going to be on the network this day.

Joan Rivers got on the air and said, "Hey! We've got big phone problems here, so we can't take your calls. But if you happen to be near the corner of 40th and Broadway, come on up and help me do the show." Almost two dozen people showed up to be Joan's studio audience for the evening.

Approximately 90 minutes after I initiated my original call to telco, a Bell Atlantic "SWAT team" arrived. Forty telco people converged on the 9th floor, blueprints in hand.

By 3 p.m., we were informed that there was partial good news. Our broadcast services, news wires and ISDN lines were in a fairly recent cable that was a home run from the telco central office across the street to our 23rd-floor phone closet. This cable was color-coded and would be worked on first.

Our T1s, dialtone and anything else was in old, paper covered telco riser cable that would need to be toned out.

The WOR newsroom punted. Thank God for television newscasts and listening to the competition. The main problem we had was what to do after the 8 p.m. newscast on WOR.

WOR carries Mutual/CNN News top hour from 9 p.m. to 4 a.m., then has Metro News do two minutes from across town. Both arrive via broadcast loop, which didn't exist at this moment.

It was decided that Shelly Strickler, afternoon anchor for WOR News, would anchor live until midnight. She would then record several casts to air on the overnight hours.

We all took a long deserved breather at 3 p.m. I finally got to finish my soup. Others finally got to have lunch. We ordered 15 pizzas for delivery to the telco army on the 9th floor — hey, a little "bribery" might make them work faster!

### We're up

By 7:30 p.m., the automation was reprogrammed for the live newscasts, and ABC was in possession of WOR Network programming and spot breaks to last until 9 a.m.

At 7:45 p.m., Shelly Strickler let out a whoop in the newsroom. She had AP service. I checked Master Control and found that I had several ISDN lines. I promptly called ABC and we started the process of putting the network up on ISDN for uplink. This would start with the 8 p.m. hour.

When ABC was ready, they cut us over live on the bird, and I informed Joan Rivers that her 8 p.m. hour would be national.

Checking the lines for Metro and Mutual/CNN showed that these lines were back. We reprogrammed the automation again and told Shelley to go home. By 8:30, the news room was able to receive audio feeds again, the first time since 11:30 that morning. We went home.

Dial tone and T1s returned at about 3:30 a.m.. When I returned at 9 a.m., all but one of the network lines and one T1 had been restored, and telco was working on them both.

All of us at WOR came to realize how vital our telco services are to our daily operation. Thanks to a staff that is largely cooperative when the chips are down, and, as WOR General Manager Bob Bruno has called Eloise Maroney and myself, the "Field Generals," we were able to take an impossible situation and carry on as if this were an every day occurrence.

It also helped that no one panicked. Neither Eloise nor myself gave anyone time to.

You might want to assess your vulnerable points and come up with a bunch of "What If" scenarios. Who would have thought that in New York City, one joker with a sawzall could throw an entire office building into a tizzy?

If it could happen to WOR, it could happen to you. We're lucky to be a big station with a large staff and the necessary resources to do what it takes to get back on the air. You should put together a plan to keep your station on the air and the revenue flowing should an unforeseen disaster befall you.

■ ■ ■

*Thomas R. Ray, III is corporate director of engineering for Buckley Radio, WOR Radio/The WOR Radio Networks, New York City. He says situations like this keep his trips to the barber to a minimum.*

*Tell us about how you handled your own radio emergencies at* radioworld@imaspub.com

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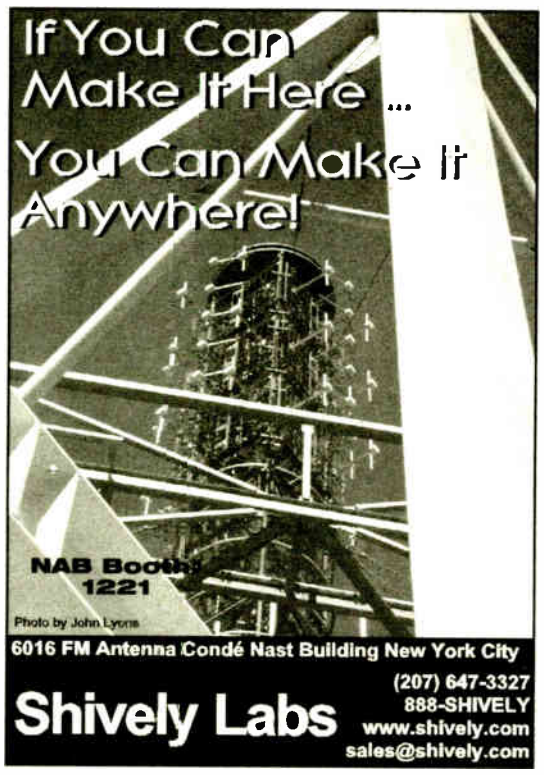


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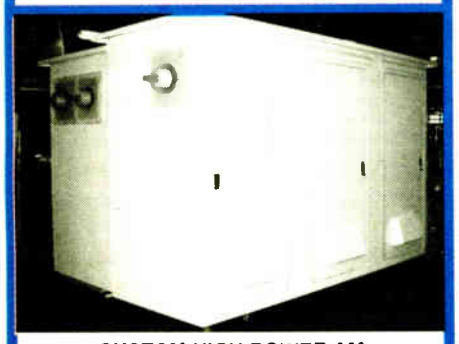

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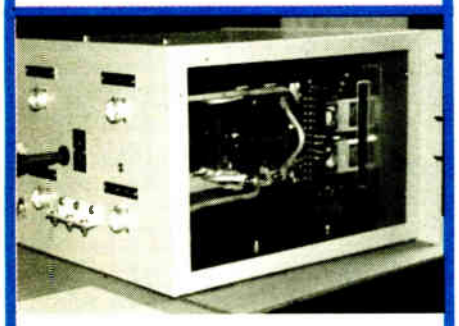

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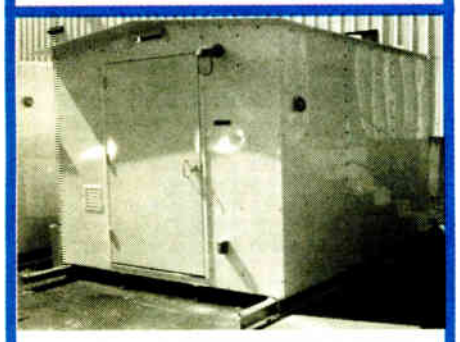

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FEED LINE

# Shared Use of Transmitter Sites

**W.C. Alexander**

*This is the first in a short series of articles about shared use of transmitter sites.*

Has there ever been a time when there was more demand for tower space, "vertical real estate" if you will, but when it was so difficult to get approval to build a tower in a desired location?

Technology has taken off like a skyrocket in the past decade. Take a walk through the streets of any metropolis and you can't help but see the pagers, PCS and cellular phones and other wireless devices clipped to people's belts.

The number of broadcast stations has also increased. DTV and LPTV have placed significant demands on the supply of vertical real estate.

AM stations, particularly directional AMs, are quite often real estate hogs. Urban sprawl and development have, in many cases, made the once valueless bottomland on which AM arrays are sometimes located worth much more than the station itself.

This same sprawl has brought increasing regulation in the form of incorporation, zoning and environmental regulations, making it harder if not impossible to construct new towers in many areas.

### Share and share alike

While sharing of towers is nothing new, it has gone from being a means of generating revenue for the tower owner to a necessity for broadcasters, paging and wireless companies. Large companies such as American Tower Systems, Lodestar and others have created a new industry out of tower construction and leasing.

In this series, we will take a look at the options broadcasters have when it comes to shared use of towers.

We will look at it from both sides, as tower owner and tenant, exploring the problems and ways to head them off. We will also explore the rights and responsibilities of both tower owner and tenant.

Some other areas of interest are diplexing (both AM and FM), shared use of AM towers by other services and innovative ways to maximize use of vertical real estate and maximize revenue streams from towers.

It may seem relatively easy to add an FM station to another FM station's tower. This is sometimes the case, but proceeding without careful study of the situation can be perilous. Several key areas demand a close look: structure, pattern and intermod.

Overloading a tower is dangerous. It is also very easy thing to do.

Without a thorough structural analysis by a competent mechanical engineer who has experience with towers, there is no way you can know for certain that adding an antenna and line will not overload a tower. A lot of factors come into play, including leg size/type (solid or tubular), face size, guy location and radius, design parameters, existing load (antennas and lines) and the proposed load.

I have been surprised in the past when running structural analyses on towers that looked to be plenty strong and with lots of room for additional antennas.

In some cases, I have had to replace guy wires with wires of a larger size and even add structural elements at key locations but not necessarily anywhere near the new antenna's mounting location. Had I proceeded with the proposed installation without the analysis and recommended modifications, chances are that those towers would have at some point come down.

Tower owners, take heed: insist on a structural analysis for any new antennas and lines on your tower *unless* you know for a fact that the addition is within the design limits of the tower.

**Overloading a tower is a dangerous thing. It is also very easy to do.**

An example of known design parameters might be where a tower was ordered to support *n* FM and/or TV antennas of a certain size/number of bays, *n* lines of a certain type and a set number of auxiliary/STL antennas.

It costs a lot of money to over design a tower, seldom do owners order a tower that is a lot beefier than necessary to gain room for future expansion. In most cases, a structural analysis is going to be needed. The owner should order the analysis and the potential tenant should pay for it.

The top spot on most FM and TV towers is reserved for the tower owner's antenna.

This is prime vertical real estate, not only from a height standpoint but also from the standpoint of an undistorted antenna radiation pattern. The top of a typical FM or TV tower consists of either a pole, which is an ideal albeit expensive way of minimizing pattern distortions, or a smaller face size tower section.

Sometimes there are no guy wire connections above the bottom of this pole or section or the guy wires that are in the antenna aperture are non-conductive.

Unless a multi-user master antenna is used at the top of the tower, which all the users can share, tower space below the ideal top spot will have to be used to mount any additional antennas.

The trouble here is that the large structural elements (legs, girts and cross-braces) tend to interfere with the otherwise non-directional radiation characteristics of the antenna.

This interference will often result in reduced signal where it is needed most. The resulting overall losses can reduce the RMS so that the actual ERP is well below the licensed value.

### Range study

The way to get around this problem is to have a range study made of the tower/antenna combination. The antenna manufacturer usually does this study.

A single bay of the antenna is mounted on a tower section of the same type/size as where the antenna will be mounted in the field. A signal is fed to a reference antenna a short distance away and the antenna being tested receives that signal.

The tower section and antenna is rotated on a turntable and the resulting receive signal is plotted on a polar graph. Vertical plane measurements are also made. Thereby, the effects of the tower structure on the antenna pattern can be seen and evaluated.

The antenna can me moved around from face to different angles on the tower leg and the resulting pattern plotted and analyzed.

It could be that on large-face towers, no good mounting location can be found. In that case, it may be necessary to change gears and switch to a panel-type antenna. In other cases, it may well be that a mounting location can be found that will put the maximum signal over the target area while placing pattern minima over unpopulated areas.

All this should be considered carefully before simply hanging an antenna on the side of a tower.

Keep this in mind: it is much better to deal with pattern problems before the antenna is on the tower and the station is operating. Range measurements are cheap by comparison to the cost of investigating and fixing problems later.

One other item regarding pattern distortion — guy wires in the aperture do tend to distort the ND antenna pattern. If it is necessary to mount an antenna with guy wires nearby, it may be worthwhile to replace the steel cable with non-conductive cable at least in the area near the antenna.

In the next part of this series, we will start with a look at intermod. No engineer likes that word, yet it is a phenomenon against which we must carefully guard. It is one of the most important considerations in shared use of a tower.

■■■

*Cris Alexander is director of engineering for Crawford Broadcasting.*

*Contact him via e-mail at* cbceng@compuserve.com

## Orban Donates, Raffles Last 8100s

Orban is donating one of the last five units of its Optimod-FM 8100 analog audio processor to the Pavek Museum of Broadcasting.

The gift is part of the company's 30th anniversary celebration. The 8100 will be part of the collection of equipment at the museum in St. Louis Park, Minn.

The company will give away three 8100s in drawings during The NAB Radio Show in September in San Francisco, and one via the Internet after the show.

All five units — the last to be produced — will have special front panels with the signature of founder and Optimod inventor Bob Orban.

The supplier introduced the Optimod-FM 8100 in 1980. It was on the market for 17 years; the company says it is the best-selling FM audio processor ever.

To register to win at the Radio Show, visit the Orban booth. Non-attendees can enter to win over the Internet after the show at *www.orban.com*

World Radio History

# LPFM

▶ Continued from page 57

Dear **RW**,

So the FCC commissioner who would allow local programming to actually be *local*, is now going to be investigated by the Department of Justice?

As **RW** reported in the June 7 issue (*Newswatch*, "FCC Unlawful on LPFM?"), Reps. Billy Tauzin and Michael Oxley (coincidently, both Republicans) want FCC Chairman Bill Kennard's head on a silver platter.

I have a suggestion to Mr. Kennard: Ask the DOJ to indict various and sundry elected officials, especially Tauzin and Oxley on a seldom-used FCC law called "*payola*."

If my memory of that law is correct, it basically says that any corporation (in this case the NAB) cannot pay bribes to any government licensee (in this case, any elected official who received NAB money) in exchange for small favors.

In this case, the public who elected these officials and gave them a "license" to make decisions on their behalf, were then stabbed in the back when the big money came in!

These bozos should be put in prison, like all the other crooks. The airwaves belong to the public, and so should the politicians!

*Duke Evans, Bob Banner*
*Petaluma, Calif.*

Dear **RW**,

Thank you for continuing to publish information and views relating to LPFM. Nothing makes me laugh harder than seeing letters from the LPFM zealots threatening (quote from Jan. 5 letter), "If the FCC doesn't come up with something soon, there will be so many pirate stations springing up on the FM band ... " and my favorite quote "LPFM is going to happen with or without FCC sanction. Isn't it better to have a regulated system of frequency allocation than complete chaos on the FM band?"

First of all, if the LPFM wackos don't obey rules now, why would a few LPFM licenses being granted change anything? Second, if large populated areas like Los Angeles don't get enough LPFM allocations to satisfy every weirdo who wants one, will they stay off the air? Probably not.

Another quote that makes me laugh from the same letter quoted above reads: "You (meaning broadcasters and the NAB) will be solely responsible for the total destruction of the FM band and it will become another citizen's band." Isn't that what the LPFM nut cases propose? Isn't that what the people jumping the gun and going on the air anyway are doing?

Memo to LPFM losers: You are not doing your cause any good. You are destroying your own image, and if anyone is going to "destroy the FM band," it will be you.

*Paul Shinn*
*Stockton, Calif.*

## ◆ PRODUCT GUIDE ◆

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### Andrew Launches Online Documentation

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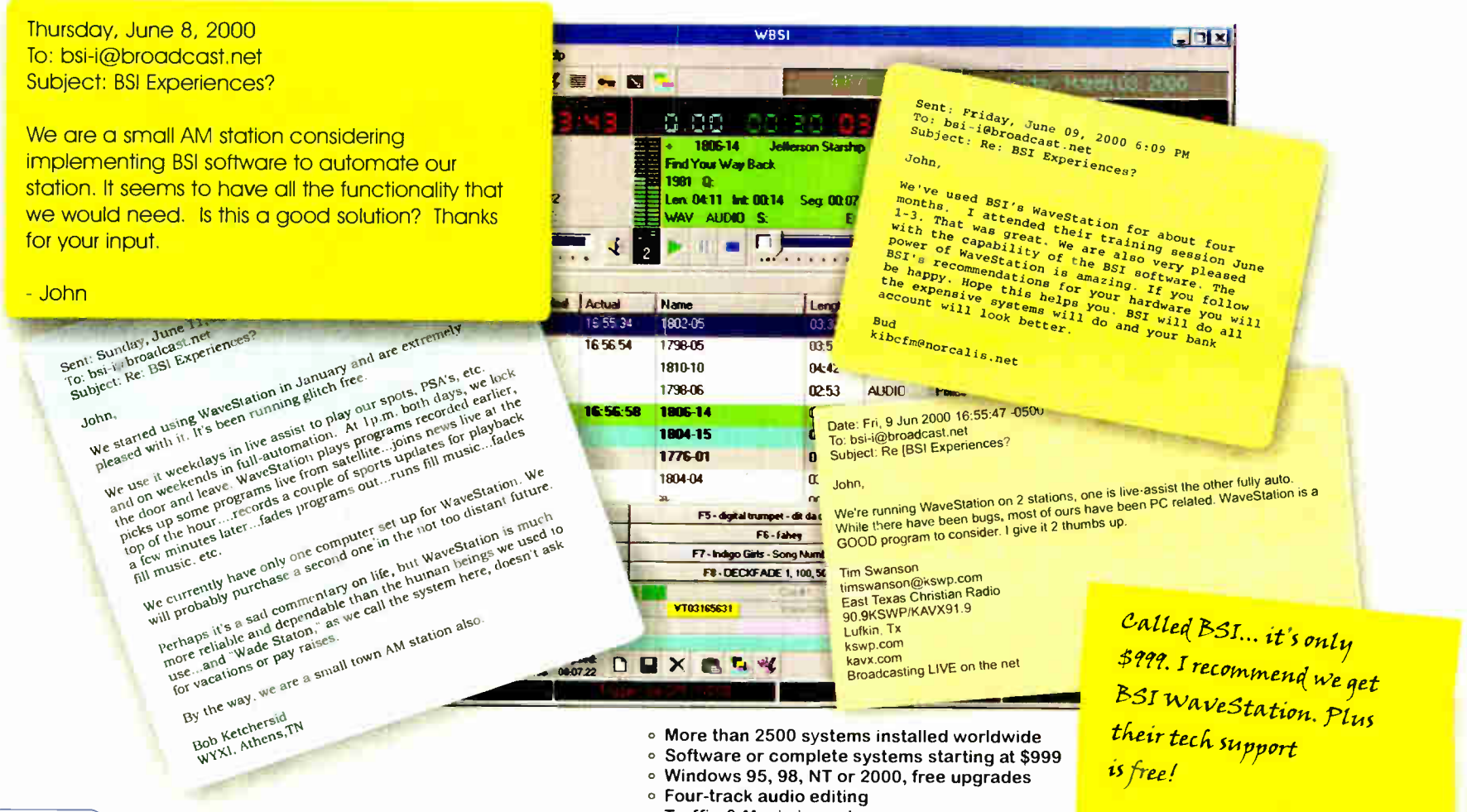
# One Question, Three Answers

An actual email thread,
June 8-11, 2000 on broadcast.net

Thursday, June 8, 2000
To: bsi-i@broadcast.net
Subject: BSI Experiences?

We are a small AM station considering implementing BSI software to automate our station. It seems to have all the functionality that we would need. Is this a good solution? Thanks for your input.

- John

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World Radio History

GM Journal

Radio World — Resource for Business, Programming & Sales — September 13, 2000

Marconi Award Finalists

Page 68

# Traffic Directors Form Guild

**Eileen Tuuri**

KPLU-FM's Laura Adamson hadn't worked in traffic since 1988 at her college station, where everything was handwritten and typed.

When she came back to traffic two and a half years ago, it was a brave new world by comparison.

The software systems that she encountered then were completely new to her.

Laura Adamson

"I had no experience! My supervisor trained me, and then I went to Marketron (the broadcast software supplier) for a week of training. But without any training I'd be lost."

### Wonderland

What, she wondered, would someone coming into traffic without the benefit of training do?

Likewise, Debra Jordan took on a challenge and a half in getting Wisconsin Public Radio's new traffic system in place.

"We were just switching over to CBSI Delta-Flex 3 from an old Wang-based system. It took about three months to prep everything. Suddenly we had formalized, real logs, rather than the fairly simple ones we had before."

Where, she wondered, could she tap the wisdom of peers who had experience with new electronic traffic systems?

"We realized there wasn't a group out there for traffic directors," Jordan said.

And although the underwriters, promotions and engineers go to conferences, traffic managers don't. Jordan said she realized that those meetings are valuable to be updated on new technology and developments.

Carol Anderson, COO of the formative Traffic Directors' Guild of America, aims to change that.

TDGA's mission statement declares it will be a resource to support and enhance the status of traffic directors, office managers, business managers and others among the station's internal office staff.

"Traffic is one sector of a radio station that, while vital to the station's functional success, is frequently either taken for granted or lacking in support services," Anderson said.

"Today consolidation is moving traffic from its traditional standalone status to taking its place as a vital ingredient in larger, all-purpose companies. It's a new ballgame, and we firmly believe 'our' time has come."

Jordan said traffic directors are in demanding positions where all departments in a radio station have a pull on them. Traffic directors must interact with the sales, promotions, on-air, operations and management office

"Essentially you have to make every single one of them happy and it can be very stressful," Jordan said.

But Jordan said she doesn't have time to look for groups like TDGA — they'll have to come to her.

"If it turns into regular e-mails or a newsletter, TDGA will be an easy way to get information without having to do all the direct research. "

### Direction

TDGA is deliberately dubbed a "guild" to keep its focus on education and professional development and to avoid the specter of unionization, according to Anderson.

While Anderson has some definite ideas about potential directions for the organization, she said TDGA is committed to being member-defined and member-run. The group's Web site (*www.tdga.org*) features a questionnaire for prospective members to complete with their input for the organization's mission and goals.

The survey asks visitors what support services they would like to see offered — training, a member magazine, discussion forums are suggested — and which traffic systems they particularly want to see reviewed or emphasized.

"We've received an extraordinary response and have been surprised at

See TRAFFIC , page 72 ▶

# Net Study Shows Radio On Verge

**Laura Dely**

Arbitron and Edison Media Research will announce the results of their fifth and biggest Internet study at The NAB Radio Show in San Francisco.

Bill Rose

Titled "20 Startling New Insights About Internet and Streaming," the study will address questions that radio broadcasters have asked since the advent of streamed media, according to its authors.

These include: Does the existence of audio and video on a Web site make Web sites more "sticky?"

Bill Rose is Arbitron's vice president and general manager for Internet information services. Rose said that just as radio initially viewed the Internet as irrelevant, radio now seems to be missing a huge opportunity with regard to

See ARBITRON, page 72 ▶

World Radio History

# The 2000 NAB Marconi Radio Awards

Saturday night at The NAB Radio Show will see stars of the industry gather for the annual Marconi Radio Awards Dinner and Show.

Dick Purtan, morning host of Infinity station WOMC(FM) in Detroit, will emcee the event, which is the gala closing to the show. Legendary southern rock band Lynyrd Skynrd will provide the music.

More than 100 radio stations and on-air personalities have been selected as finalists for the awards, which honor the country's top radio stations and personalities.

NAB member radio stations are mailed a nominations kit each spring. General managers and program directors at NAB member stations determine winners. The award ballot tabulation was performed at KMPG Peat Marwick in Washington, D.C.

Purtan, winner of the 1993 Marconi for Major Market Air Personality of the Year, said the Marconis are the most important award in the radio industry.

"They are the top awards, the 'Oscar,' the primo tribute to the industry's greatest," Purtan said.

Asked what radio inventor and Nobel Prize winner Guglielmo Marconi would think about the awards in his name, Purtan said he believes Marconi would do what he always did on momentous occasions.

"He would have been so pleased he would have bought a new hat," Purtan said

On this page are the 2000 NAB Marconi Radio Award final nominees.

— *Laura Dely*

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WBEB(FM), Philadelphia
WEBN(FM), Cincinnati
WTMJ(AM), Milwaukee

**Network/Syndicated Personality of the Year**
Bob Lacey & Sheri Lynch, "Bob & Sheri," Jefferson-Pilot Communications
Don Imus, "Imus in the Morning," Westwood One Radio Networks
Tom Joyner, "The Tom Joyner Morning Show," ABC Radio Networks
Rush Limbaugh, "The Rush Limbaugh Show," Premiere Radio Networks
Howard Stern, "The Howard Stern Show," Infinity Broadcasting

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**Station of the Year**
KTCK(AM), Dallas
WHUR-FM, Washington
WOMC(FM), Detroit
WTMX(FM), Chicago
WXKS-FM, Boston

**Personality of the Year**
Big Boy, KPWR(FM), L.A.
Jim Dunbar & Ted Wygant, KGO(AM), San Francisco
Mike Francesa & Chris Russo, WFAN(AM), New York
Kidd Kraddick, KHKS(FM), Dallas
Randi Martin, WASH(FM), Washington

***Large Markets:***

**Station of the Year**
KESZ(FM), Phoenix
KIRO(AM), Seattle
KQRS-FM, Minneapolis
WQSR(FM), Baltimore
WZAK(FM), Cleveland

**Personality of the Year**
Jay Gilbert, WEBN(FM), Cincinnati
David Lawrence, WDAF(AM), Kansas City, Mo.
Randy & Spiff, WFOX(FM), Atlanta
Steve Rouse, WQSR(FM), Baltimore
Joe Soucheray, KSTP(AM), Minneapolis

***Medium Markets:***

**Station of the Year**
KBNA-FM, El Paso, Texas
KUZZ-AM-FM, Bakersfield, Calif.
WILM(AM), Wilmington, Del.
WOOD(AM), Grand Rapids, Mich.
WTCB(FM), Columbia, S.C.

**Personality of the Year**
Brent Johnson, WTCB(FM), Columbia, S.C.
Jimmy Matis, WFBQ(FM), Indianapolis
Valleri St. John, WWGR(FM), Ft. Myers, Fla.
Dino Tripodis & Stacy McKay, WSNY(FM), Columbus, Ohio
Dave Wilson, WIBC(AM), Indianapolis

***Small Markets:***

**Station of the Year**
KBHR(FM), Big Bear City, Calif.
WAXX(FM), Eau Claire, Wis.
WGIL(AM), Galesburg, Ill.
WPST(FM), Trenton, N.J.
WSRS(FM), Worcester, Mass.

**Personality of the Year**
Dave Daniels, KJUG-FM, Tulare, Calif.
Elmo James & Eric Foster, WJTT(FM), Chattanooga, Tenn.
Jim Kramer, WKCQ(FM), Saginaw, Mich.
Danny Preston, KMBQ(FM), Wasilla, Alaska
Tim Wilson, WAXX(FM), Eau Claire, Wis.

**Stations of the year by format:**

**AC Station of the Year**
KESZ(FM), Phoenix
KSTP-FM, Minneapolis
KUDL(FM), Kansas City, Mo.
WSRS(FM), Worcester, Mass.
WTCB(FM), Columbia, S.C.

**Adult Standards Station of the Year**
KEZW(AM), Denver
KVFD(AM), Fort Dodge, Iowa
WAMB-AM-FM, Nashville, Tenn.
WMMB(AM), Melbourne, Fla.
WOKY(AM), Milwaukee

**CHR Station of the Year**
KDWB-FM, Minneapolis
KHKS(FM), Dallas
KPWR(FM), Los Angeles
WBBM-FM, Chicago
WXKS-FM, Boston

**Classical Station of the Year**
WBQQ(FM), Kennebunk, Maine
WQXR-FM, New York
WRR(FM), Dallas

**Country Station of the Year**
KILT-FM, Houston
KUZZ-AM-FM, Bakersfield, Calif.
WAXX(FM), Eau Claire, Wis.
WIVK-FM, Knoxville, Tenn.
WTQR(FM), Winston-Salem, N.C.

**NAC/Jazz Station of the Year**
KPLU(FM), Seattle
WJJZ(FM), Philadelphia
WNWV(FM), Cleveland
WVAS(FM), Montgomery, Ala.
WVMV(FM), Detroit

**News/Talk/Sports Station of the Year**
KGO(AM), San Francisco
KSFO(AM), San Francisco
KTCK(AM), Dallas
WSGW(AM), Saginaw, Mich.
WTMJ(AM), Milwaukee

**Oldies Station of the Year**
KCMO-FM, Kansas City, Mo.
WCIZ-FM, Watertown, N.Y.
WFOX(FM), Atlanta
WOMC(FM), Detroit
WROR-FM, Boston

**Religious Station of the Year**
KGBI-FM, Omaha, Neb.
WAOK(AM), Atlanta
WAWZ(FM), Zarephath, N.J.
WMBI-FM, Chicago
WOLC(FM), Princess Anne, Md.

**Rock Station of the Year**
KFOG(AM), San Francisco
KLAQ(FM), El Paso, Texas
KOZT(FM), Fort Bragg, Calif.
WBCN(FM), Boston
WFBQ(FM), Indianapolis

Caricature of Dick Purtan

**Spanish Station of the Year**
KBNA(AM), El Paso, Texas
KLAT(AM), Houston
KLVE(FM), Los Angeles
KSCA(FM), Los Angeles
KXTN-AM-FM, San Antonio, Texas

**Urban Station of the Year**
WBHJ(FM), Birmingham, Ala.
WBHK(FM), Birmingham, Ala.
WPEG(FM), Charlotte, N.C.
WUSL(FM), Philadelphia
WVEE(FM), Atlanta

## Correction

The Aug. 16 issue of **RW** inflated the population of Austin, Texas. The population, according to the Austin Convention and Visitor's Center, is "about a million-three." The U.S. Census Bureau puts it at 1,110,300.

In any event, our published estimate of 11 million was off by a healthy decimal point.

World Radio History

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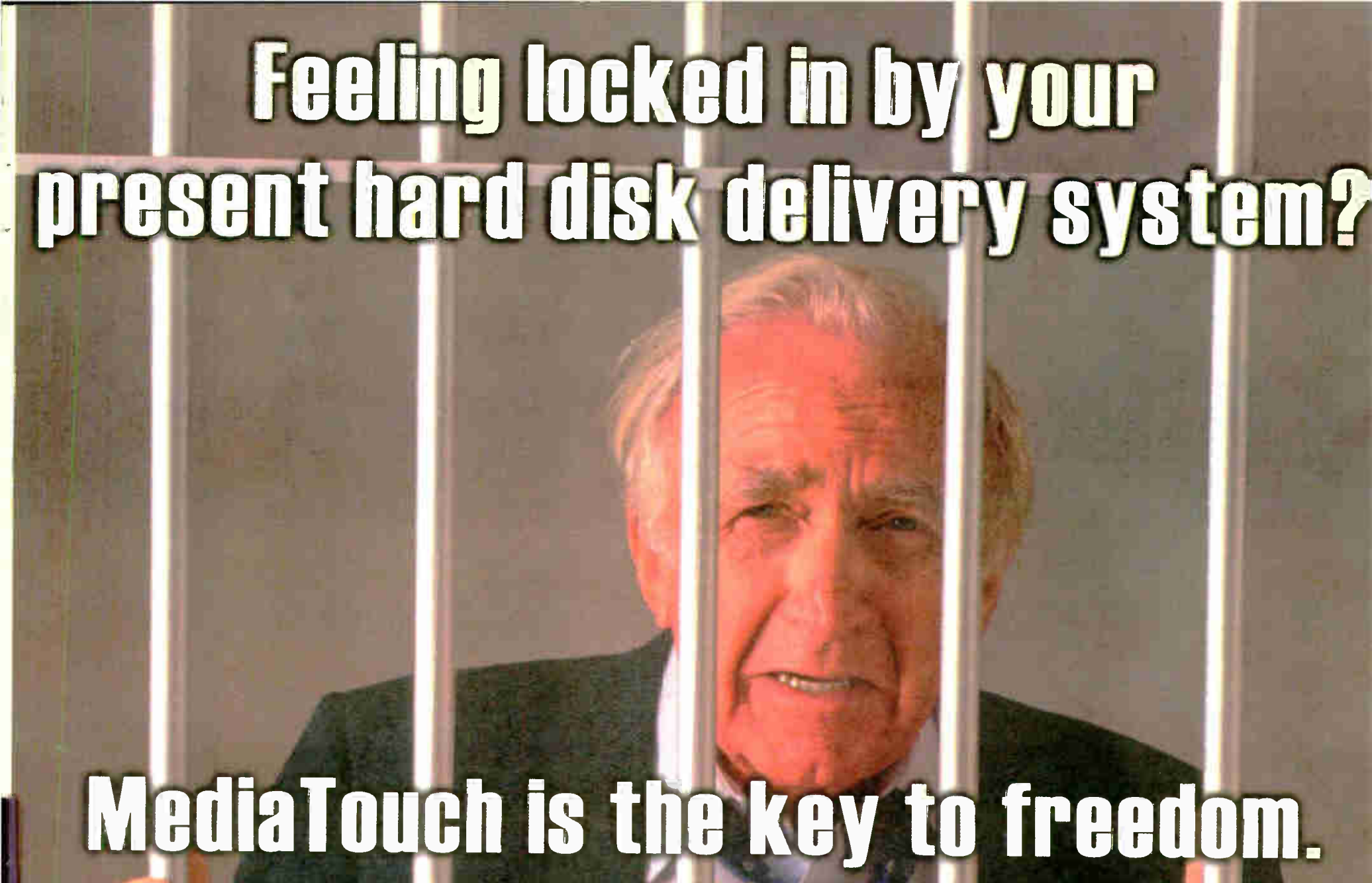

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MANAGEMENT CORNER

# Teens Provide Live-Assist at WNYG

**Vincent M. Ditingo**

First there was listener-supported radio — now comes listener-operated radio. That's the concept behind the format approach of WNYG(AM) in West Babylon, N.Y., on Long Island.

The Student Radio studios in West Babylon, N.Y.

The station has, in fact, taken the practice of focus-group listener studies to the next level by letting its listeners not only provide input on programming, but also work there.

The listeners and the staff: high school and college students, ages 16 to 24.

The format: contemporary hit radio, billed as "Student Radio."

While refurbishing studios this summer, Long Island radio executive Jack McCloy introduced the innovative format over WNYG(AM), owned by Multicultural Broadcasting. Multicultural also owns WPAT(AM) in the New York City area.

WNYG, which had aired an oldies format since the spring and before that, Spanish-language under previous ownership, operates at 1,000 watts with reduced power at night.

The station transmits over 1440 kHz from its location near the border of Nassau and Suffolk counties on Long Island.

According to McCloy, who serves as WNYG's general manager, the primary mission behind the student-operated concept was to transform the station into a radio-training center. The idea is for students interested in a career in broadcasting to learn all facets of radio station operations, including announcing and sales.

The station, which is seeking advertising support, looks to complement both local colleges' academic broadcast training, and the local communities it serves.

"Students who already have some on-air experience (at school) will be given regular full air shifts and time slots," said McCloy. "They are being paid slightly above minimum wage," he said.

### Chores

"Other students who conduct in-house tasks such as production will also be paid while those learning sales will be compensated on a commission basis," McCloy said.

Keeping within the framework of a training center, WNYG will employ a handful of experienced radio personnel to facilitate the training while bolstering the level of professionalism.

Meanwhile, student participants at WNYG, which airs the slogan "Student Radio 1440," provide their take on what current rock songs are hot and what isn't making the cut among their friends to Operations Director Russell Skadl, who regularly updates the station's playlist.

See WNYG, page 77 ▶

All student DJs work in pairs at WNYG. On the left in front is Jeannette Alvarez with her DJ partner Latasha Lankford, right. DJ partners Krystal McCloy (left) and Bari Keim (right) stand behind.

## To Stream Is Essential for Growth

Much has been written on the move by some traditional broadcasters to adapt their formats to Internet transmissions via live streaming audio.

This columnist views such an investment as a necessary direction to ensure the continued financial growth of station groups, regardless of size. Just ask the early network executives or FM station operators about their initial skittishness on investing in that technology. And then look at the positive results.

**Streaming audio will add incremental value to the resale of stations.**

— James Marsh

It is important to note, however, that valuation experts see this step as adding only slight, incremental, if any, value to the selling price of radio properties.

"There are so many elements currently involved such as bandwidth constraints, but my sense is that streaming audio will add some incremental value to the resale of radio stations," said James Marsh, senior analyst of broadcast for Prudential Securities.

"Investors tend to be more comfortable with broadcasters who are taking some initiative for the long term," said Marsh. It (the Internet) just may emerge as the preferred way to listen to audio, he said.

"It does not come up in conversation," said New Canaan, Conn.-based radio broker Gary Stevens, regarding any correlation between streaming audio of terrestrial stations and increasing values.

"When there is enough bandwidth, it could become a source of value."

Said Stevens, "Today, the audio sound over the Internet can be inconsistent ... but if you are looking at long-term (industry) health, the Internet can be another potential distribution avenue for competitive programming."

*— Vincent M. Ditingo*

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World Radio History

# Traffic

▶ Continued from page 67

many of the answers," Anderson said.

Other immediate offerings on the site include informational links, a newsletter and a clearinghouse of classified job listings.

What do prospective members want from TDGA?

At the top of the list for both Jordan and Adamson is the opportunity to share best practices with their colleagues.

"It's a learning opportunity," said Jordan, "to find out what different departments do at other stations."

Adamson agreed.

"I just read an e-mail posting from someone who went to a conference and wondered why there were no other traffic managers there. The traffic manager is usually holding down the fort. TDGA could be kind of a nice forum to see what everyone is doing without having to be away from the office. Time is *always* a factor."

Support and high hopes for TDGA extend to other station departments, as well as vendors.

"I think it would be great if there were such an organization, to help promote the viability of the traffic function as an integral part of making sure clients get what they pay for," said Tom Davis, underwriting contract coordinator of Minnesota Public Radio.

Davis said he's looking forward to hearing more about the mission and direction of this organization."

"I have grown to believe that the traffic function can have a measurable effect on the results of underwriting sales" he said.

John DeLoach is marketing coordinator for Wicks Broadcast Solutions, the entity formed by the recent alliance of CBSI and Datacount, two traffic software vendors. DeLoach sees in the TDGA an opportunity to enhance Wicks' existing services to clients.

"The more information you can get out there to the traffic directors, the better — they sometimes don't get much glory or much feedback. TDGA might be a good source through which we can serve the traffic operators by information sharing," DeLoach said.

One potential obstacle DeLoach foresees is that many traffic departments do not have in-station Internet access.

"I would hope I'd be surprised by the numbers, but I kind of wonder. We can update software and solve a lot of support problems more efficiently through the Internet, if our clients have that access."

Though stations contacted for this article were fully Internet-capable — most heard about the TDGA through the traffic managers' discussion group *www.egroups.com* — they acknowledged that stations' policies are more often the cause of restricted Internet access.

Greg Dean, president of Computer Concepts Corp., which makes "VT," a visual traffic software system, thinks there is great potential for TDGA in recruitment and referrals.

"It's a tough area for radio stations to fill. If we can refer those inquiries to TDGA, then it's a win/win situation all around," Dean said.

Dean described the awkward position he is often placed in when Computer Concept client stations ask him for referrals for traffic department personnel.

"We know great traffic directors but that puts us in a difficult position because we don't want to upset the operations of our other clients," he said.

### Status

Jordan sees a related benefit in TDGA's potential to improve the stature of the traffic director within the station.

"I think I've finally broken the mold of traffic being seen as clerical ... but elsewhere, and when I've interviewed for assistants, I've seen talented people looking to get out of traffic because they don't feel their contributions are being recognized."

TDGA, she hopes, can help to change that, by giving traffic operators a true professional-development forum.

Anderson encouraged prospective members to download the group's questionnaire from *www.tdga.org* or to fax a request for questionnaire to them at (509) 471-5765.

■ ■ ■

*How does your station management view the traffic function? Tell us via e-mail to* radioworld@imaspub.com

*Eileen Tuuri is an independent consultant who has managed marketing communications for several broadcast vendors in the past 15 years, including traffic supplier CBSI.*

# Arbitron

▶ Continued from page 67

streaming video on station Web sites.

"Before, you couldn't have moving pictures — because you're a radio station — but online, it's a whole new ball game," said Rose.

Rose posed the question he said all radio broadcasters will need to consider: What happens if people like to watch music videos and you're a top 40 station?

"A local radio station, especially if it's cool and hip — alternative or top 40 — its Web site should make sounds and it should move and it should be fun and it should be exciting and it should look more like MTV than the New York Times," Rose said.

Larry Rosin, Edison Media Research president, said the study shows that for radio stations, "relevant information" is largely local information.

"And if it's a music station, then information about the music and the artists is important," Rosin said.

"We're going to provide the information that tells you point blank all about that," Rose said.

Larry Rosin

### Pop-up

The updated "20 Insights" study will also include the results from the first-ever pop-up survey conducted on 45 radio station Web sites.

The survey results will assess what listeners like and dislike about station sites, according to Rosin. Nine thousand respondents, across every type of format, participated in the pop-up survey, according to Rosin.

"We looked at not just whether Web site visitors want information, but what type of specific info — what kind of entertainment or things to do at a station Web site, for example — Internet users want from station Web sites," Rosin said.

Also among the 20 insights to be revealed by Arbitron and Edison at the NAB Radio Show are the results from focus groups that analyzed radio station sites to define what makes a site relevant and frequently visited by "streamies," or online listeners.

Rosin said that the study shows a dramatic increase in streamies.

"We're going to show a lot of data that seems to imply that both the threats and the opportunities from streaming audio are very real," Rosin said.

Arbitron's Rose said the study also looked at advertising on the Internet and what consumers think about it.

Rose said the development of Webcasting and Internet radio is breathtaking.

"It's hot and it's growing and it's amazing, we only began this in '98 and the distance that we've come in terms of the amount of people who are listening and viewing online is just astounding," said Rose.

Rose seems confident of where the online world will take radio broadcasters.

"The next wave of all of this stuff is broadband — actually, it's the 'now' wave," Rose said. "The extent that American homes have broad and fast access to the Internet, it's going to really drive usage because the experience changes dramatically.

"And as soon as we hit a significant portion of the U.S. population with broadband access," said Rose, "the next thing is going to be wireless."

Rose said that radio broadcasters have a small window of opportunity to prepare for the future, but they must act quickly.

"All of this is happening today. Broadband is happening and there is wireless Web access today."

The study is based on data from a sample size that is 50 percent bigger than that in the last collaboration between the two companies, which was released at the Radio Advertising Bureau conference last February.

Interviewed were 3,005 Spring 2000 national, random, 12+ Arbitron diarykeepers.

"Spring 2000 diarykeepers were called back and asked if they had access to the Internet and how they use it," said Thom Mocarsky of the Arbitron Co.

From the data gathered from the 12+ diarykeepers, the study examines listening to Internet-only channels; total number of people listening online — to both radio stations and Internet-only channels.

Rose said that the "20 Insights" will be useful to all radio broadcasters.

"People will get a lot of information — either an update, a continuation, some things they didn't expect, some things they should have expected and some recommendations as we always try to do," Rose said.

For more NAB Radio Show information, see pages 19-49 in this issue.


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BROADCAST LAW REVIEW

# Avoid the FCC's Greatest Hits

**Barry D. Umansky**

Every year the Federal Communications Commission imposes fines and other sanctions against radio broadcasters for a variety of offenses.

Both the FCC's Mass Media Bureau and its recently created Enforcement Bureau have enforcement jurisdiction over broadcast licensees. How do they coordinate their activities — and what are the steps the commission takes to detect a violation and assess a penalty?

What are the stakes involved here? How high can the fines be and what other penalties may be imposed?

Finally, what are the FCC's greatest "hits?" That is, what are the areas where a station is most likely to run the risk of being hit with an FCC fine?

### Preventive maintenance

While we can hope that this edition of *Broadcast Law Review* will be of only academic significance to our station readers — in that these stations will not be on the receiving end of an FCC "Notice of Apparent Liability" or other bad news from the commission — it's important to develop a "preventive maintenance" system to ensure station compliance.

And in the event you do face some FCC enforcement action, it is critical that you are familiar with the commission's enforcement process, what to expect from that process and how to defend your station and your pocketbook.

Above all, never, *ever* engage in any kind of lying or "misrepresentation" to the commission. Students of FCC enforcement know that in the situations where the FCC has imposed "capital punishment" — either license revocation or very sizeable fines — it almost invariably was not the original violation(s) that resulted in the sanction.

Instead, the station licensee was given the heavy penalty for attempting to "cover up" the violation or otherwise deceive the commission in its investigation and review of the matter.

The FCC's Enforcement Bureau, formed in late 1999, is the commission bureau given primary responsibility for enforcement of the Communications Act, as well as the commission's rules, orders and authorizations. The new bureau consolidated enforcement functions and personnel from several bureaus.

But this doesn't mean that the Mass Media Bureau is out of the enforcement picture. That bureau still has enforcement responsibility in two key areas: political broadcasting and equal employment opportunity.

Now that the general election campaign is in full swing, stations now must ensure their "seasonal" compliance with the political rules. And with the adoption of revised EEO rules this year (*Broadcast Law Review*, **RW**, March 29), EEO now has returned as perhaps *the* most vigorously enforced area at the commission.

Also, it is the Mass Media Bureau that processes all applications for new stations and station license renewal, including the review of "petitions-to-deny" — petitions that generally allege violations of FCC rules.

In most cases, a radio broadcast violation comes to the attention of the FCC through complaints filed by another licensee (often a competitor), a listener or some other party with an interest in the matter.

Though the FCC sometimes responds to a fairly "bare-boned" complaint, the commission usually requires that the complainant provide the location and call letters of the station and describe the specific circumstances surrounding the alleged violation.

As mentioned, violations also can come to the attention of the FCC in the application process through the filing of a petition to deny or informal objection to a license application or a license renewal application.

In some cases, violations of FCC rules may result in denial of a license application or license renewal after a hearing. The FCC has also issued forfeitures or taken other enforcement action against licensees for violations revealed during the license application and license-renewal processes.

The Mass Media Bureau usually undertakes enforcement action in the broadcast licensing area. In some cases, that bureau may refer a matter that arises in the licensing context for further investigation and possible enforcement action by the Enforcement Bureau.

The FCC's Enforcement Bureau, primarily through its agents in 25 geographic locations throughout the United States, often conducts inspections of FCC-licensed facilities, with violations often uncovered during these inspections.

The Enforcement Bureau and the Mass Media Bureau also may conduct self-initiated investigations under certain circumstances. For example, the Mass Media Bureau recently announced it will conduct random audits of stations to check on their EEO compliance.

The FCC uses a variety of methods to investigate allegations that a station has violated a rule. Among those techniques:

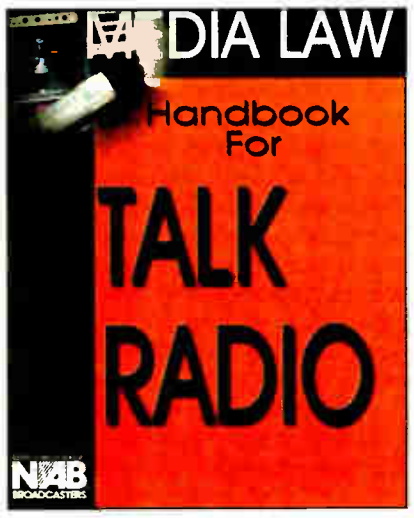
*A Letter of Inquiry* is a typical way the FCC obtains information directly from a broadcaster or someone else involved.

A Letter of Inquiry may be used to initiate an investigation into a matter or be used to determine whether to continue a proceeding beyond a preliminary stage of investigation or to gather more information during the course of an ongoing investigation when the record is inadequate.

Usually, a station is given a specific period of time in which to respond to the letter.

The FCC's rules prohibit misrepresentations or willful material omissions in

See FINES, page 80 ▶


This reference source examines libel, privacy and emotional distress claims that arise in talk radio. The work also covers FCC, copyright, trademark matters as well as preventive measures and mitigation. To order, call the NAB Store at (800) 368-5644 or visit *www.nab.org/nabstore*


## Chart of FCC Fines

| VIOLATION | AMOUNT |
|---|---|
| Construction and/or operation without an instrument of authorization | $10,000 |
| Failure to comply with prescribed lighting and/or marking | $10,000 |
| Violation of public file rules | $10,000 |
| Violation of political rules: reasonable access, lowest unit charge, equal opportunity, and discrimination | $9,000 |
| Unauthorized substantial transfer of control | $8,000 |
| EAS equipment not installed or operational | $8,000 |
| Alien ownership violation | $8,000 |
| Failure to permit inspection | $7,000 |
| Transmission of indecent/obscene materials | $7,000 |
| Exceeding of authorized antenna height | $5,000 |
| Use of unauthorized equipment | $5,000 |
| Exceeding power limits | $4,000 |
| Failure to respond to commission communications | $4,000 |
| Violation of sponsorship ID requirements | $4,000 |
| Unauthorized emissions | $4,000 |
| Using unauthorized frequency | $4,000 |
| Construction or operation at unauthorized location | $4,000 |
| Violation of requirements pertaining to broadcasting of lotteries or contests | $4,000 |
| Violation of transmitter control and metering requirements | $3,000 |
| Failure to file required forms or information | $3,000 |
| Failure to make required measurements or conduct required monitoring | $2,000 |
| Failure to provide station ID | $1,000 |
| Unauthorized pro forma transfer of control | $1,000 |
| Failure to maintain required records | $1,000 |
| Failure to maintain directional pattern within prescribed parameters | $7,000 |
| Violation of main studio rule | $7,000 |
| Violation of broadcast hoax rule | $7,000 |
| AM tower fencing | $7,000 |
| Broadcasting telephone conversations without authorization | $4,000 |
| Violation of enhanced underwriting requirements (noncommercial radio stations) | $2,000 |

**Upward Adjustment Criteria**
(1) Egregious misconduct
(2) Ability to pay/relative disincentive
(3) Intentional violation
(4) Substantial harm
(5) Prior violations of any FCC requirements
(6) Substantial economic gain
(7) Repeated or continuous violation

**Downward Adjustment Criteria**
(1) Minor violation
(2) Good faith or voluntary disclosure
(3) History of overall compliance
(4) Inability to pay

*Background: FCC Headquarters*
*Photo: Paul J. McLane*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World Radio History

PROMO POWER

# Don't Be Clustered in Your Cluster

*Spotlight Your Brand One Radio Station at a Time And Get Better Results From Your Live Events*

**Mark Lapidus**

It's a common sight: You walk into an event that has been sponsored by a cluster of radio stations. The banners have so many stations on them that they look like they were made for a NASCAR race. There are a dozen disc jockeys from different radio stations on stage and they're sharing mic time — and they're even being so nice about it!

### 'Radio Row'

Then there's "Radio Row," where every station has a booth and they're right next to each other. Event goers get a radio dog-and-pony show from each station as they walk down the "media" aisle.

**Use the power of your cluster to obtain the event and then focus the beam on one property.**

Even worse, all the publicity about this event has been "co-branded," meaning that once again, the various call letters and logos are all joined together.

I've seen this happen in direct-mail pieces, on television spots, in print ads, on flyers and even on billboards.

If you don't think that there's anything wrong with this situation, you're too close to it to realize that you're destroying the individuality of your brands and blurring what listeners will remember.

### Total recall

Let's not forget that the ratings game is still recall-driven. Is it possible that someone attending a co-branded event will remember your radio station where seven others overwhelm him or her?

It's much more likely that the only thing they'll recall is that there sure were a lot of radio stations there! We would never have stood for such a situation when stations in one city weren't co-owned.

Imagine an event producer telling you that you were going to share your space with even three other stations. You would've either cut enough trade, used promotional leverage or even just paid enough dough for an exclusive.

Now we shoot ourselves in the foot all over the United States in the name of consolidation. It happens often because sales managers and general managers with sales backgrounds have never studied brand extension.

Most of these managers think that just because they've used the leverage of their cluster to get in on the buy or to obtain the event, it's vital that all their stations participate.

The more this process occurs, the more some folks in our business get to thinking that this is the way it's got to be from now on. It doesn't occur to anyone that they can use the power of their cluster to obtain the event and then focus the beam on one property.

Won't the PDs and market directors of the stations that are left out feel hurt? Won't the client get confused or anxious by not having all of our stations participate?

Perhaps the biggest obstacle clusters face in solving this issue is to determine who chooses which station in a cluster gets to own an event.

### Target practice

Often multiple stations target the same demo — adults 25 to 54, for example — and the event may be good for any one of them.

It's time to appoint a "marketing King Solomon" who is able to use sound judgment, at least, to properly rotate the station spotlight.

Here's perhaps the most misunderstood part of the process: Just because an event is focused on one radio station doesn't mean that it can't be promoted across sister radio stations.

It's easy, just cut the spots that don't air on the presenting station as you would any normal commercial. Leave out the call letters and highlight the commercial sponsors.

In this way you may even be able to make more money — whether it's from clients or on gate receipts when a larger crowd shows up.

A related area that I haven't mentioned is taking the name of a radio

See PROMO, page 77 ▶

World Radio History

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World Radio History

# WNYG

▶ Continued from page 70

"Not only did we want a fresh approach to radio, but with Long Island's highly-competitive marketplace, we wanted a format concept that would stand out among the other stations," said McCloy.

Indeed, Nassau-Suffolk is ranked as the 18th-largest metro market, according to Arbitron.

**Economics**

From a pure economical standpoint, the overarching benefit to such a programming concept is its immediate cost-efficiencies.

By operating as a mostly automated, training facility, WNYG has substantially reduced a large measure of administrative and overhead expenses.

In so doing, WNYG has added a new dimension to the existing business model for live-assist radio.

**WNYG(AM) relies upon computerized playlist software from OtsJuke.com, available for about $100.**

The station relies upon computerized playlist software developed and marketed by Australian Internet company, OtsJuke.com. At the time of this writing, this basic software package was available for about $100.

WNYG also depends upon several mainframe computers including one tied directly to its main studio console, providing the station's on-air format. Others computers are being used for programming and production functions.

According to McCloy, WNYG's total upfront first-year operating costs for equipment and additional software, including the creation of a Web site, falls under $10,000.

The major challenge, however, remains drumming up enough advertiser support to remain a viable format for the long haul. To that end, the station is positioned to local merchants as the quintessential community-driven broadcast outlet.

Those who help underwrite the WNYG concept will receive a "We support Student Radio 1440" sticker for their place of business acknowledging their backing, McCloy said.

Meanwhile, to solidify WNYG's new connection with teen and young adult listeners in its core service area, the station is planning to be visible at local school events as well as shopping malls.

# *Promo*

▶ Continued from page 75

group and using it as the umbrella to market the stations.

An example of this is when one cluster names a Web site something like "pittsburghradio.com" and then puts all its station Web sites in this one area. Click on the home page and you'll see all the stations owned by this group in Pittsburgh (the name of the city has been changed to protect the mislead.)

**Let's not forget that the ratings game is still recall-driven.**

If this trend continues, I can see the day coming when a cluster attempts to market all it's stations on one TV spot.

For any of you doubting Thomases, try this trick: Take a normal sheet of paper and put four radio station logos on it. On a second sheet of paper take one radio station logo and make it as large as you can. Have someone hold them up about two feet away. Now try to imagine what this looks like on 14 by 14 banner.

Still doubt it? Record eight radio station names on audiotape. Play them for a focus group. Wait 30 seconds. Have each person in the group write down as many stations as they can recall. Don't be shocked if they write down a few you didn't even mention.

Confusion — that's what happens when we confuse marketing with sales.

■ ■ ■

*Mark Lapidus is president of Lapidus Media.*

*Reach him via e-mail at* marklapidus@yahoo.com


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***Air Studio Production Bonus:*** AXS 3 also gives you *another* stereo production output and record input. You can record and edit phone calls or spots and auto-delay news *and* audition them in a cue speaker while playing triple overlap on the air!

***Premium Hard Drives:*** The 3 also tells you that AXS 3 gives you a ***3 year limited warranty*** on hard drives. AXS 3 uses ***exceptionally reliable*** and ***fast*** 10,000 RPM 18GB (or 20GB) ***hard drives*** from top quality suppliers (like IBM, Seagate, Western Digital and others you trust) to keep your precious commercials, jingles and other recordings ***always*** at your fingertips. Other systems cut corners with slower and less reliable drives that sometimes choke and sputter with triple overlap and music from hard drive. AXS 3 won't jeopardize your cash flow with unreliable drives that might crash.

***Awesome Sound Quality:*** AXS 3 uses only the best *non-*proprietary +4 balanced digital audio cards by Audio Science. These are also sold by most of the major brands of digital systems, but only in their top-of-the-line models costing ***lots more*** than AXS 3. Scott Studios uses premium audio cards in all our systems, although AXS 3 software will work with any good Windows sound card. Of course, if any card develops a problem, we'll replace it under warranty. You'll also be able to get these non-proprietary audio cards from us, the manufacturer, and several other vendors of high end digital audio systems.

***Easy to Use:*** AXS 3 was ***designed by jocks***, for jocks. It's 100% intuitive. AXS 3's big on-screen intro timer and separate countdown timers on every deck make pacing a snap.

If you know how to work cart decks, you know how to work AXS 3. It's so simple, everyone can run it! AXS 3 has ***big*** buttons. Other systems use complex multi-step mouse mazes. AXS 3 gets things done with one simple touch.

***MP3 Import:*** AXS 3 plays MP3's, MPEG II and uncompressed (linear) recordings.

***The Music's Easy:*** AXS 3 is delivered with ***your*** music library already pre-dubbed for you at no extra charge. AXS 3 also comes with Scott's time-saving TLC (Trim, Label & Convert) CD Ripper software. It runs in your Program Director's computer and uses a CD ROM drive to digitally transfer 5 minute songs to hard drive in 15-30 seconds.

***The Best Voice Tracking:*** AXS 3 works with Scott's optional Voice Trax. Announcers hear surrounding music and spots in their headphones in order to match their voice to the moods and tempos of the music.

***The Best Air Studio Recording:*** AXS 3's built-in recorder has a graphic waveform editor for ease of recording and editing phone calls, spots, news or announcer lines. AXS 3's log editor lets you add new items to your schedule.

***Quality Hardware:*** You get an industrial Pentium III rack mount Windows computer and a 1RU (1-3/4") tall case is available when space is tight. Jocks can use a keyboard or mouse, or optional button box or touch screen for fast control.

***Jocks love AXS 3, (shown with Scott Studios' 1RU rack mount case and optional flat panel touchscreen). AXS 3 works with three cart players on the right side of the AXS 3 screen. The program log (at left) automatically loads the decks, or you can insert anything from pick lists. The far left of AXS 3 has 12 Hot Keys that can play any time at a touch of a Function key.***

***The Best Tech Support:*** Toll-free emergency phone support is available 24 hours a day, 7 days a week (including holidays). Software updates with new features are available for AXS 3 customers several times per year to stations on our annual support plan.

***Easiest to Install:*** AXS 3 comes with a pre-wired connections to CAT5 LAN cables for snap-in installation on the AXS3 end of the wiring. Satellite control logic is also a plug-in snap. Your first two satellite audio connections for music format and news network, as well as another for your production console, are built into AXS 3 so interface cards or external switchers are not required.

***LAN and WAN:*** AXS 3 and other MPEG and uncompressed WAVE Scott Systems use the same recordings. You don't have to dub the same spot several times for several stations.

***The Best Production Studios:*** AXS 3 is compatible with popular multi-track systems you may already have, like Sound Forge, Vegas, Cool Edit Pro, Fast Edit and others. Simply add our time-saving $500 no-dub instant LAN spot upload option.

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World Radio History

BOOK REVIEW

# The Good, Bad and Ugly at ESPN

**Peter King**

It began as a cable network losing $30 million a year. More than 20 years later, it has evolved into a multimedia business whose primary cable networks alone are worth upward of $10 billion.

"It" is ESPN, whose upside includes expansion into radio, pay-per-view, Internet, publishing, restaurants and merchandising. ESPN is now, arguably, the most-valued component of the Disney empire (except, perhaps, for "Who Wants to be a Millionaire").

But there is also a dark side to the ESPN story, which includes incidents of sexual harassment, gambling, drug and alcohol abuse and sweatshop conditions, from the first days of its cable division and through the advent of ESPN Radio and its other entities, according to Michael Freeman, author of "ESPN, The Uncensored History."

### Tell-all

We get both sides in the tell-all book by Freeman, a New York Times sportswriter.

The author spent 5 years researching and writing the project. Many current and former ESPN employees agreed to be quoted — but only if allowed to remain anonymous. This does not detract from the book. Throughout "ESPN," Freeman writes that ESPN acknowledged that there had been problems at the company, but declined to answer any specific allegations.

Many ESPN stars are quoted, though, including former ESPN Radio stars such as "The Fabulous Sports Babe" Nancy Donnellan and Keith Olbermann, who helped launch ESPN Radio in 1992.

Freeman describes how ESPN built

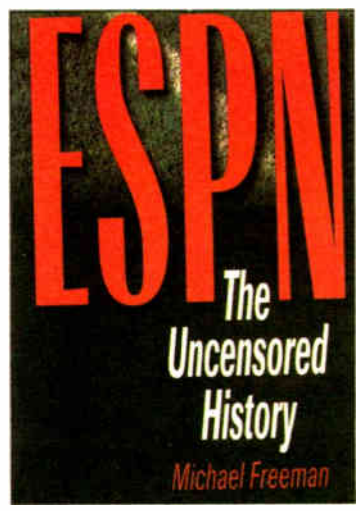
See REVIEW, page 79 ▶

## The Start of ESPN Radio

*The following is an excerpt from the Michael Freeman book, "ESPN: The Uncensored History."*

"The early days of the radio network mirrored the humble beginnings of ESPN television. There was a general manager, two producers, two associate producers, an update man, several board operators, two tape editors, a technical supervisor, a researcher, one secretary and three hosts: Chuck Wilson, Tony Bruno and Keith Olbermann.

"The three men, and later Mark Mason, the general manager, helped build ESPN radio from dust, turning it into a prosperous, shrewd addition to the franchise.




"The price of success, as on the television side, was again 18-hour days and no personal life. A typical radio shift lasts 4 or 5 hours, but ESPN radio shifts went 7. Most of the programming was outstanding, and a fortunate portent occurred on the first day when Olbermann broke the story of Danny Tartabull signing with the New York Yankees.

"Mason's day usually began at 3 in the afternoon and did not end until well after 1 in the morning. Bruno's schedule was horrific but illustrated his dedication to the job. A morning radio host on WIP radio in Philadelphia during the week, Bruno would leave on Friday afternoon for the 5-hour drive to Bristol, where he taped several interviews for ESPN Radio, then began a 7-hour shift at 6 on Saturday evening and another the next day at the same time.

"He would sign off the air at 1 on Monday morning, just in time to make the 5-hour drive back to Philadelphia to be on the air by 6.

"(Executive Editor John) Walsh expected ESPN radio to uphold the standards, at least the ones he was trying to establish, of ESPN television. A stickler for attaching some fact to a score, just as on "SportsCenter," Walsh declared the ESPN radio updates could not simply report a game's results; they needed to add additional facts about the game, for instance, how many times Joe Montana was sacked."

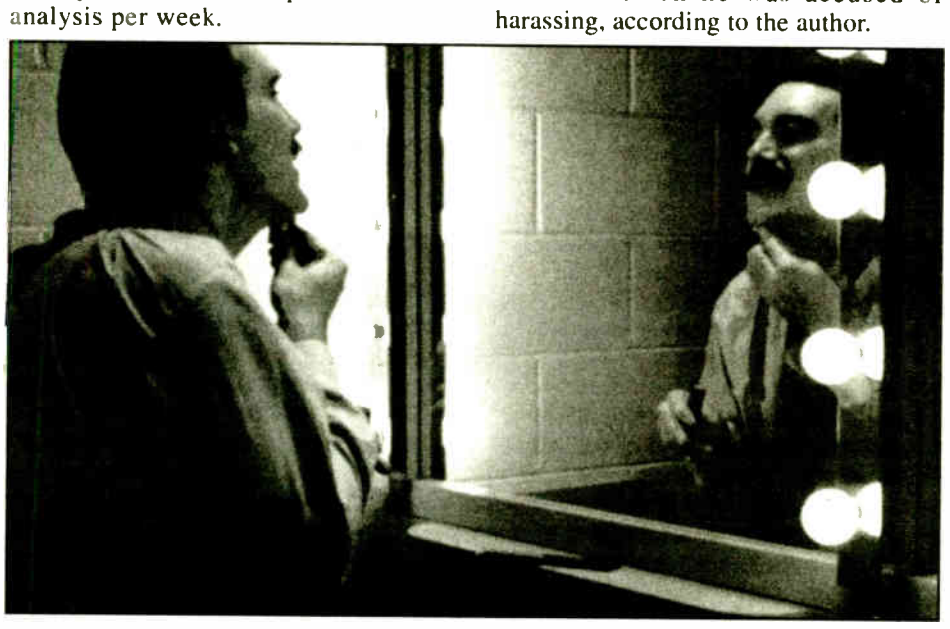
*"ESPN: The Uncensored History" by Michael Freeman, $24.95, Taylor Publishing Company, Dallas.*

World Radio History

# Review

▶ Continued from page 78

the radio division in cramped quarters in the company's Bristol, Conn., campus. The radio network initially featured just 16 hours of sports news and analysis per week.



Former ESPN Host Keith Olbermann, applying makeup before a 'SportsCenter' broadcast in 1992

In addition to Olbermann, the radio network's initial staff included two other hosts, Chuck Wilson and Tony Bruno, a general manager, two producers, two associate producers, an update man, several board operators, two tape editors, a technical supervisor, a researcher and one secretary.

There are plenty of attributed stories and memos to provide depth and context. If you're expecting a history of the sports and major events covered by ESPN, you'll be disappointed, but if you're hoping for a look behind the scenes, complete with warts, you'll find "ESPN" an addictive page-turner.

### So far so fast

"ESPN" tells of the network's humble beginnings as former light bulb shipper, sports broadcaster and PR man Bill Rasmussen conjured up the idea of leasing transponder space for what would be a regional sports network for Connecticut called "ESP," or Entertainment and Sports Network.

Freeman writes of how Rasmussen got organizations like the NCAA onboard (which offset the "novelty" sports such as Australian Rules Football), then put together patchwork financing and an investor group that included Getty Oil. To prove that no good deed goes unpunished, Freeman writes that founder Rasmussen was pushed out the door and virtually written out of ESPN's history.

He gives due credit to the founders, producers, directors, talent and unsung heroes that it took to put ESPN on the map to stay. The ESPN startup story alone is worth the price of admission.

But much of "ESPN" is a story of darkness that involves some of ESPN's biggest names. Freeman says the sexual harassment of women was open and blatant. One producer used the phrase, "get the broad out of broadcasting," which seems to have set the tone for many women working at ESPN.

Freeman says the sexual harassment included propositions, dirty e-mails, stalking and producers trading time in edit bays for sex.

Almost an entire chapter, entitled "Crisis," is dedicated to stalking charges leveled against the talented and charming Anchor Mike Turico, who was interviewed for this book. In "ESPN," Turico refers to the incident as a "bump in the road" without admitting any wrongdoing — and without showing compassion for the women he was accused of harassing, according to the author.

Yet Freeman writes that today, Turico is among the most-liked ESPN employees. One close friend attributes his indiscretions to youth — he was in his early 20s when he started at the network.

Freeman writes, "However wrong the things he may have done, they were done innocently. He does not deserve a scarlet letter."

Anchor Katie Ross remembers that on her very first night on the air in 1987, producers watched pornography in the newsroom, to elicit a reaction from her later. She became the "sounding board" for dozens of subordinate women who came to her because she was the one woman who "possessed even a shred of clout."

ESPN founders Scott Rasmussen and father Bill, circa 1979

By 1989, Ross became so frustrated with the situation, Freeman writes, that she addressed the problems at a staff meeting. Shortly after that, ESPN's parent company Capital Cities-ABC introduced sexual harassment seminars, which, Freeman writes, were probably more designed to protect the company than its female employees.

Sweatshop allegations in "ESPN" include bad treatment of many lower employees, mostly production assistants, who worked long hours for low pay, often going weeks without days off, and often penalized should they ask for a holiday off or time off to attend family weddings or other "real-life" events.

Drugs and booze were apparently prominent at the network and its parties. Producer Stephen Bogart told Freeman that in the early '80s, there was so much cocaine use at ESPN, one of the wire printers "had so many razor blade nicks (on it), they had to replace the top of the machine."

And Freeman writes that ESPN employees routinely used network phones to call their bookies.

You'll see plenty about the "stars" of ESPN, from Chris Berman to Keith Olbermann (the current Fox anchor who is the source of many stories and memos used in this book) and how they made ESPN the sports fan's first stop on TV.

"ESPN" is sensational without being gossipy, and it's not all darkness. There are plenty of stories of triumph, stories about how ESPN's Sportscenter became "must-see TV" for fans — and players — and how the network rose from the "little engine that could" status to become the most-influential voice in sports journalism.

■ ■ ■

*Peter King is an Orlando, Fla.,-based reporter-anchor for CBS News radio.*

**If you're hoping for a look behind the scenes, complete with warts, you'll find 'ESPN' an addictive page-turner.**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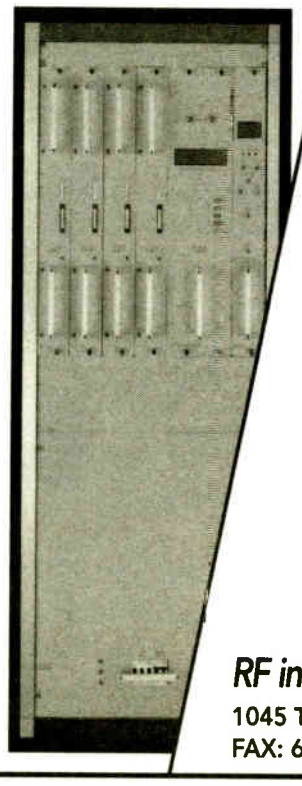

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World Radio History

# Fines

▶ Continued from page 74

responses to Letters of Inquiry. In fact, under the federal criminal code, a person who makes "knowing and willful" misrepresentations or omissions may be subject to possible criminal penalties.

Based on the response received, the FCC may decide to end the investigation without further action, send a follow-up Letter of Inquiry requesting additional or clarifying information or take direct enforcement action.

***Field Inspections and Investigations*** — In response to a complaint or on their own motion, the FCC staff may conduct inspections of a station. Over the years, the commission's field staff has diminished in numbers. But, this doesn't mean that you won't have an FCC inspector on the doorstep of your station next month.

### What happens next?

Once it has determined that a violation has occurred, the FCC next decides on the appropriate enforcement action.

The commission says its primary goal in enforcement is to bring licensees and others into compliance with the FCC rules. While warnings sometime suffice, imposing penalties often is the means used by the FCC to bring stations into compliance. The range of FCC "actions" includes:

***Letter of Admonishment/Warning*** — In some cases, the FCC simply gives an "admonishment" or warning. The warning points out that the station has violated an FCC rule and warns the station to take steps to ensure compliance in the future. But, this isn't necessarily the end of the matter. Often the commission will re-inspect the station — with a much more severe penalty imposed if the station has kept violating the rule.

***Notice of Violation*** — Like a warning letter, a Notice of Violation informs the broadcaster of the violation, but it also requires the station to submit an explanation as to how and why the violation took place.

The response generally must be filed within 10 days of receipt of the notice. The station's response may close the matter; but it also could lead to further investigation or more serious enforcement action.

***Monetary Forfeiture*** — In assessing a monetary forfeiture for violations of its rules, the commission generally first issues a Notice of Apparent Liability ("NAL") to the broadcaster. The NAL states why the commission believes the station has violated a specific provision of the Communications Act and/or the FCC's rules and also states why a certain "dollar value" fine is appropriate.

The fine amounts are based on the commission's "forfeiture guidelines" (discussed on page 74). A station receiving an NAL may either pay the forfeiture or file a response explaining why the NAL either should be reduced or should be cancelled.

If the FCC finds, based on the station's response, that the forfeiture is not warranted, it will issue an order canceling the NAL. But, in most cases, the commission determines that the forfeiture is warranted, and it then issues a Forfeiture Order.

The Forfeiture Order may be for either the same or a lesser amount than that proposed in the NAL.

If the station doesn't pay the forfeiture within 30 days from the date it was issued, the commission may refer the matter to the U.S. Department of Justice for collection action in federal district court. The commission may also issue a forfeiture after a hearing before an administrative law judge.

***License Revocation Proceedings*** — The commission always can begin a proceeding to revoke a station's license from a broadcaster who has violated the FCC's rules. This process generally is reserved for the most serious cases, such as those in which the station has misrepresented material facts to the commission or where, despite warnings or other types of enforcement action, the station continues to violate the FCC's rules.

Prior to revoking a party's license, the commission must issue an "Order to Show Cause," directing the station to tell the FCC why the broadcast license should not be revoked.

The Order to Show Cause must also offer the party an opportunity for a hearing prior to the FCC issuing a decision revoking the license.

***Seizure of Equipment*** — As we've seen in the "pirate radio" area, the commission has authority, in coordination with the U.S. Department of Justice, to seize equipment that is manufactured, sold, rented or used for the purpose of violating the Communications Act.

In such cases, the U.S. Department of Justice must initiate a proceeding in a federal District Court to obtain a warrant for seizure.

***Criminal Prosecution*** — In addition to the penalties discussed in this article, a broadcaster can face a criminal fines for any "knowing violation" of the Communications Act. The Act sets criminal penalties for specific violations, such as up to $10,000 and one year of imprisonment for violating the statutory sponsorship identification requirements.

The commission itself does not have the authority to conduct criminal prosecutions or impose prison sentences for those convicted of violating the Communications Act. But, the commission can ask the U.S. Department of Justice to do so.

### FCC'S greatest hits

For radio stations, there are several areas where there is risk of violating an FCC rule. Here is a "top 10" list of where the FCC appears to be the most active in enforcing its rules. So while it's important to remain in compliance with *all* FCC rules, these are the current speed traps:

***EEO*** — Whether you've chosen "Option A" or "Option B" (see *Broadcast Law Review*, **RW**, March 29), be sure to maintain full records and frequently "self assess" how your efforts are working. Look for heavy fines and license renewal hang-ups for stations evading their EEO responsibilities.

***EAS*** — Be sure your EAS equipment is installed and working properly, and that you abide by your state plan and the commission's EAS rules.

***Telephone Broadcast Rule*** — Don't forget to inform the person on the other end of the phone line that he or she will be broadcast live, or taped for later broadcast, *before* you air even the first part of the conversation and/or before you roll the tape.

***Tower Painting/Lighting*** — The safety of the public is involved here. Zero-tolerance is the usual FCC standard for tower lights being out.

***Indecency*** — This isn't just a "big city" or "network personality" issue. Stations in all sized markets are fined each year for the language of air talent that goes too far.

***Main Studio Location and Staffing*** — The FCC has given stations greater latitude in moving main studios and consolidating operations. But, make sure your main studio meets the location standards and also has staff and management "presence."

***Public File Rules*** — Are the issues/programs lists in there, as well as everything else called for in the commission's laundry list of what should be in the public inspection file? Also, make sure the political file is up-to-date throughout and after the election season.

***Contests/Lotteries*** — Does the air copy for your "licensee-conducted contest" (*i.e.* a station promotion or co-promotion with local sponsors) fully disclose the "material terms" of the contest — such as how to enter, the nature of the prizes, the method for selection of winners, tie breakers, etc.?

Be sure that contests you run or air for advertisers comply with your state's lottery laws. If you violate state lottery laws, you've violated federal lottery laws.

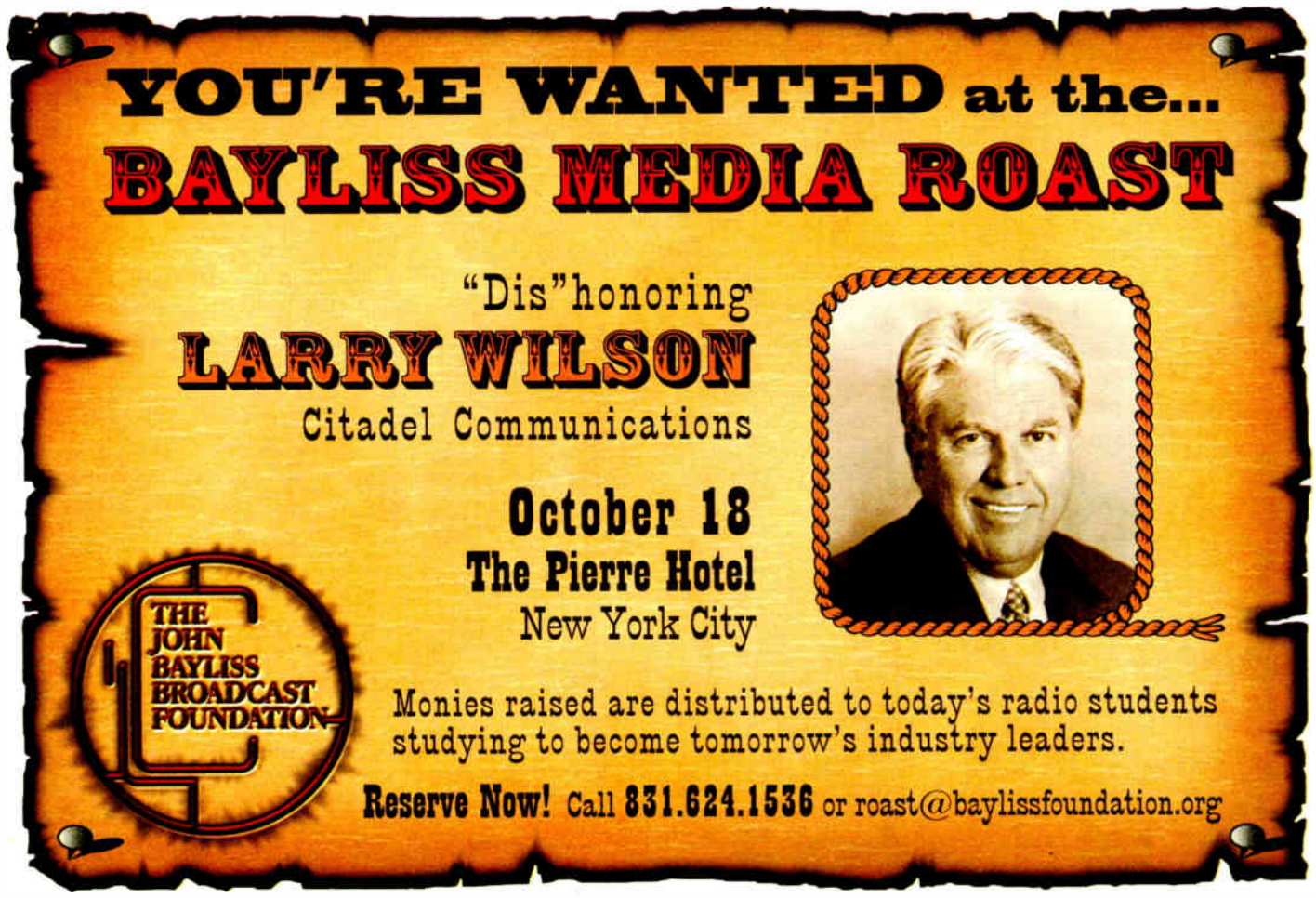
***RF Radiation and Tower Fencing*** — Again, this is a public safety issue; it also deals with protecting your workers and protecting your station from lawsuits.

Be familiar with the FCC's RFR exposure standards and make sure your station has effective policies that prevent anyone (station employees, contract employees, other stations' employees and the public) from being exposed to RF levels above the FCC's guidelines.

***Unlawful or Premature Transfer of Control*** — It is essential that your LMA deal or "management contract" doesn't amount to someone other than the station licensee making "licensee decisions." Be particularly careful that no one other than the licensee has ultimate responsibility for matters involving programming, finances and personnel decisions.

It's hard to ensure that your station always will be bullet-proof when the FCC inspector comes to call. And complaints continue to be filed against stations at the FCC, regardless of whether the complaints are valid.

Today is the day to take those steps to help avoid an enforcement hassle — and to learn how to defend yourself in the process.

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World Radio History

Studio Sessions

Radio World — Resource for Radio Production and Recording — September 13, 2000

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Page 93

PRODUCT EVALUATION

# Nagra Makes Digital Portable

**Ken R.**

It is not easy to fit the Nagra ARES-P into any existing category of equipment, so I will call it a PDR, for Portable Digital Recorder.

Dr. McCoy never had one of these

Calling to mind the stir caused by the Alesis ADAT, this can be considered a breakthrough product.

Dan O'Grady, Nagra sales and product specialist, said, "In short, it's a palm-sized digital recorder and player. It uses removable PCMCIA linear flashcards. With a built-in omnidirectional mic built in Switzerland using an electret element made in the United States by Gentex Electro-Acoustics, you are good to go for about four hours of operation using five AA batteries."

One 192 MB PCMCIA card will hold about three hours of stereo audio at 128 kbps using MPEG Layer II compression. A 20 MB card will hold about 40 minutes of mono MP2 audio.

### Plugging in

This PDR is available with an integrated electret omni mono or cardioid stereo mic which attaches by a 12-pin DIN connector at the front. This connector also provides input for external dynamic microphones or line-level signals through a cable with two XLR connectors. The input level can be adjusted ±40 dB. A jack allows the unit to run on external DC power.

This unit is a bit like a DAT recorder in that it can search and assign a new "take number" at will, similar to write codes on a DAT machine. However, there is no tape to get mangled and no lengthy rewind times. All the audio is accessible instantly.

It is also a bit like a portable cassette recorder but with higher fidelity and an easier method of finding a specific audio chunk.

I was given a prototype of this unit to use during the spring NAB2000 convention. There was no manual available, but I had little trouble figuring out how to record interviews and play them.

I was amazed at how clear the audio was, even though I was recording under noisy convention floor conditions.

"The ARES-P is designed for field recording," O'Grady said. "It has one-button recording and uses arrow keys to scroll through the setup and later find desired takes."

One downside is that the only output is through headphones, which runs through an amplifier with an adjustable output. Luckily, most newsrooms do not have a need for balanced outputs. I will describe later in this article how to access the bits directly.

It also has a built-in compressor and limiter that sounds good.

A person using this PDR can switch from mono to stereo operation. Recording levels are indicated by three LEDs for low, normal and high levels as well as a bargraph level display across the lower portion of the LCD window.

The audio specs are not as good as those of audiophile recorders, but it provides 80 dB S/N and a good frequency response.

Recording on the ARES-P is intuitive. Once the device is set up, pressing record automatically assigns a "take number." A glance tells how much record time is left.

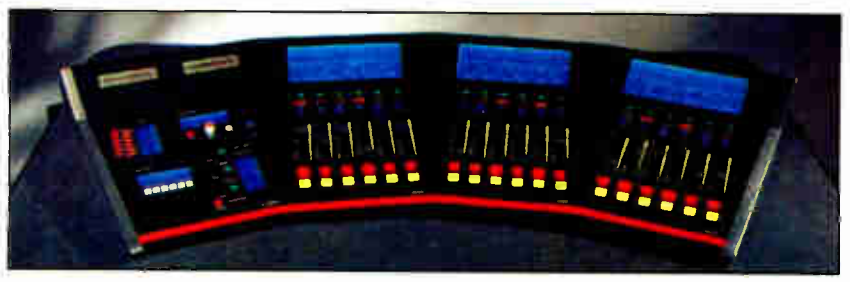
See NAGRA, page 90 ▶

# *AES Showcase of Products in L.A.*

**Alan R. Peterson**

The two biggest shows of the year to check out new equipment are the NAB convention in Las Vegas every spring, and the fall AES convention, to be held this year in Los Angeles.

The 109th AES is Sept. 22-25, so it literally overlaps with the end of The NAB Radio Show in San Francisco. Many exhibitors and attendees will go to both.



Logitek's Numix Digital Console

As in years past, no one attending the AES program at the Los Angeles Convention Center will be disappointed; there is always something for everyone.

While much of what is shown at the AES convention is designed for audio pros with interests other than radio broadcast and production, manufacturers have not ignored the needs of broadcasters. There are plenty of products that can go to work

See AES, page 86 ▶

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World Radio History

# Powder-Puff AM Is Coming Along

**Alan R. Peterson**

Before my foray into Omaha, Neb., radio in the Aug. 16 issue, I began telling you about Annandale Terrace Radio, "ATR 1170," and the preparations being made to put the project on the air.

If you joined this movie late, here is the plot thus far.

ATR 1170 is to be a license-free 100 mW AM station, originating from the utility room in my basement, broadcasting to whatever bugs and worms are in my backyard and in the yards of my neighbors up to three blocks away. The programming will be as local as possible, emphasizing the goings-on of a neighborhood immediately served by two public schools right up the street.

The proposed music mix has already inspired a cluster of promo and bumper ideas. Show concepts are being suggested by the people around me whose lives I am disrupting in the first place by putting this thing in the basement.

It is not up yet, but the day draws closer.

### I'll bet I can use this ...

DJs and engineers have a curious desire to see how small or inexpensively they can build something, often resorting to items meant for other purposes. Combine these qualities in the same person and the result is cheap, small *and* inventive.

ATR 1170 is going on the air with equipment I obtained in the most interesting ways.

The LPB AM-2000 transmitter is the same one reviewed in **RW** a few issues ago, all paid for and mounted on my roof with a few lengths of heavy black 2-inch pipe from the local home-improvement emporium. (I never cared much for those commercially available TV antenna masts.)

My main mic is an Earthworks SR71, intended for voiceovers and sold to me by Eric Blackmere, right off the floor of the AES convention two years ago. The audio console is an Allen & Heath MixWizard from my home music studio.

A used Arrakis rotary-pot broadcast console I had spotted on eBay sorely tempted me, but I reasoned, "This basement's not big enough for *two* mixers, pardner."

A 14-year-old Alesis reverb will help give that big fat "boss jock" sound needed for AM, and a pair of $20 Walkman-type CD players will spin the hits.

I built studio furniture and cabinetry out of 3/4-inch particleboard, just to see if I could do it. Luxo booms were passed over in favor of a couple of inexpensive goosenecks obtained from a local music superstore.

Although I would like to stay home all day and play to my local audience, I realize I need to go out and earn a legit paycheck; that means turning the station off when I leave home or automating it.

**ATR 1170 is to be a license-free 100 mW AM station, originating from the utility room in my basement.**

Leaving a Part 15 transmitter turned on and unattended appears to be no biggie, as those "talking house" real estate transmitters are left on all the time on vacant properties. I would rather turn it off, but would be the same as announcing, "Hey, I'm gone for the day. Help yourself to my silverware and DVD player."

A few months ago, a company called IIGYS asked me to help beta-test "WebJockey," its new $150 automation software package. This is basically a three-deck MP3 and WAV player, random playlist generator and 36-button DJ "happy box" for jingles and sound effects. After trying to get it to crash for three months, I put it to work on the basement computer.

Now ATR music programming can run unattended without my control. But I can still turn it off anytime with "PC Anywhere" software loaded into my laptop computer.

### Play to the crowd

So what do I do for programming?

Already, there is plenty of mail coming from the school district regarding events at the two schools in my neighborhood. Also, the local Neighborhood Watch expressed an interest in providing reports, home safety tips and volunteer information. There is no shortage of sports activities at these schools, so I may be able to drum up some interest from students doing play-by-play to tape for playback later.

That leaves only the music.

Oddly enough for a radio guy, my CD collection has never been comprehensive. I hardly accept freebies when offered, and basically turned off the job when I went home — the music I listen to at home was not what I played at work. Now my shortsightedness has caught up with me and left me with maybe 85 songs to play.

But this weakness also offered a creative turn. The first promo in the ATR computer is scripted as:

"(Flame-thrower whoosh) We only have 85 records ... (laser zap) ... and we're gonna *play them all, understand*? ... (zap) ... ATR 1170."

Which set the tone for more promos to follow:

"Broadcasting to the four corners of the earth ... but we'll settle for four blocks ... ATR 1170."

"Yeah, it's AM ... so what? ATR 1170."

"We're so close ... (wolf whistle) ... we can see in your window ... (shriek) ... ATR 1170."

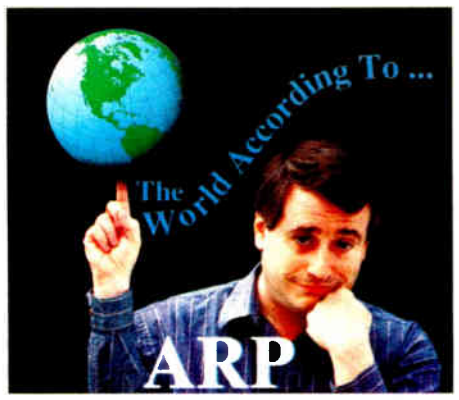
And when I get around to buying that 86th CD, you can bet there will be hoopla to spare.

### Specials

Audience research and demographics, begone with ye. The true essence of ATR is the filling of empty hours with programming that can be called "different" at best and "weird" at worst.

Such as "Mar-tune-ies," a weekly show thought up by my fiancée, celebrating those wonderfully drippy lounge records of the '50s.

It was a different world some 45 years ago. Mom would have a meatloaf going in the oven while the siblings watched Mickey Mouse or the Three Stooges on TV after school. Dad would drag himself home from the office, his fedora in one hand and the first of three martinis deftly placed in the other by Mom when he entered. Something by Martin Denny or




Xavier Cugat was always playing on the hi-fi in the background.

I was amused to see in a recent **RW** that comic Drew Carey has the same taste in music and is syndicating a similar show. There is something both comforting and hysterical about the old LPs from that era. Because the houses in this community were built in the mid-1950s, that bossa nova fluff is perfectly appropriate.

Another show will be "The Girl Power Hour," hosted by my fiancée's daughter (no nepotism *here*), with all the bells, whistles, gingerbread and tidbits that are important to the preteen female. The music, the fashions, the how-will-I-ever-make-it-to-my-teens concerns, all addressed by her and a cluster of her friends. I had better clear some hard drive space for Britney Spears and the Backstreet Boys.

One of these days, somebody is bound to e-mail me to say they already own the radio rights to the program names "Mar-tune-ies" and "The Girl Power Hour" and try to haul me up before a judge somewhere. To the best of my knowledge, neither title is in use anywhere, but that's radio. Just ask every Johnny Michaels or Deejay Marky out there today.

And, before you write the editor to complain: *yes*, I contacted both BMI and ASCAP to find out the legality and fees for broadcasting music on a non-commercial station that goes a whopping four blocks. At press time, I am waiting for a response.

### Almost ready to open

So this is where the tale hangs for now: I still have more wiring to complete, a few more CDs to locate and some mail to wait on. I am bolstered by how close I am to completion and the expectations of a handful of folks around the block who have nothing better to do but tune in my peanut-whistle AM signal.

However, something is missing. I need a really cool studio clock before I hit the air for keeps.

I have always enjoyed those 1950-60 era animated station clocks with the neon tubes, the color wheels and little lightning bolts zapping out from the center of the clock face. These were often found in the reception areas of old stations and sometimes were handed out to select clients. Rarely do these relics surface, but when they do, they are generally rusty, broken or expensive.

Next time around, I'll tell you how, with a little ingenuity and a trip to the mall, I whipped up my own version of the classic studio fixture.

■ ■ ■

*Al Peterson is still waiting for that dream job to materialize. Until then, he remains active in the free-lance radio and TV arena and as a technical adviser to **RW**. He can be reached via e-mail at* alanpeterson@earthlink.net *or at* TerraceRadio1170@aol.com

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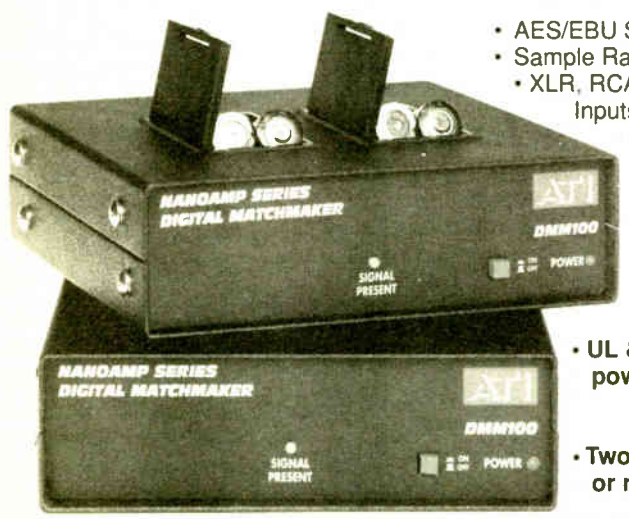


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PRODUCT EVALUATION

# Cheapie Mic Gets the Job Done

**Carl Lindemann**

Can a mic that lists for $14.99 collect decent audio?

Rumors surface occasionally about incredibly cheap consumer gear that puts pricey pro equipment to shame. I helped start this one, so I feel some responsibility to share the facts about the Labtec AM-222.

It started when I received a piece of demo software that came with this cheap mic as part of the promo package. It looked to be a garden-variety "consumer" mic — just something designed to get audio into a computer through a SoundBlaster card.

The mic came complete with a 1/8-inch TRS plug on an integrated cable.

On a lark, I attached it to a MiniDisc recorder to see what it sounded like. The mic sounded good — too good, in fact.

Comparisons with far pricier mics like the EV 635A and beyerdynamic MCE 58 were impressive. The Labtec mic managed to hold its own against other mics that cost more than 25 times as much.

When visiting friends, I let them have a listen. One found this to be up-to-snuff when he tried the Labtec mic against his all-time favorite field mic, the EV RE50.

**Product Capsule:**
**Labtec AM-222 Microphone**

**Thumbs Up**
- ✓ Cheap mic that (sometimes) produces quality audio
- ✓ Condenser element
- ✓ Mini-plug for portable devices

**Thumbs Down**
- ✓ No uniformity of quality
- ✓ Hot output

For more information contact Labtec in Washington state at (360) 896-2000 or visit the Web site at www.labtec.com

Chat on an independent producer group confirmed that others had been impressed with the AM-222.

Fearing that the company would discontinue production — this seems to happen just when I have made such a discovery — I ordered a bunch from an online discount site for $6.95 each. The company was having a special — no shipping charges.

So, I ordered five for $34.75 including delivery. What a great stocking stuffer!

The AM-222 I initially tested is not without its faults. The output is *very* hot, which is probably to compensate for the low sensitivity of the typical PC audio card.

In fact, the output is too hot for the automatic levels on my Sony MZ-R55 MiniDisc recorder. I had to adjust the levels manually to keep it from overmodulating.

Handling noise is not too bad, though it is sensitive to wind. I went to Radio Shack to buy a foam windscreen, which was almost as expensive as the mic itself.

Also, the mic is small. If you need to reach through a crowd to put this mic in someone's face, you'd better have long arms.

Further investigations with the manufacturer revealed the technical details.

The AM-222 is an electret condenser powered by the "plug-in" power found in most consumer recorders.

It is designed for gathering audio for voice recognition software. As such, the baffles inside the mic are designed to increase intelligibility.

What could the secret behind this inexpensive rig be? It simply boils down to manufacturing economics. Except for the plastic housing, everything in this mic is mass-produced.

These same components are found in many different consumer devices. The electret elements are produced by the tens of thousands.

The downside is that quality control is minimal. In other words, not every mic performs equally as the next.

As it turned out, the first unit I tested, the one that got me excited, turned out to be rather exceptional. Unfortunately, I gave it away as a gift before testing the rest.

The 1/8-inch plug might be useful for consumer gear.

Of the remaining bunch I still have, I found one that is almost as good. The others suffer from shortcomings like sub-par condenser elements. But, keep in mind that "par" here is with professional mics. This complete rig costs less than an XLR cable.

No, the AM-222 is not going to undermine the pro mic business anytime soon. But this is a fine piece, especially if you get a good one, to keep in the glove compartment with a cheap recorder, just in case you happen on a story.

Students learning the ropes should find this microphone to be an excellent learning tool, if the particular unit is not in the low end of the range of what comes off the assembly line.

One of the premiums of a "pro" mic is uniformity from unit to unit.

The AM-222 is a hit-or-miss proposition. But when it's a hit, it's really a home run.


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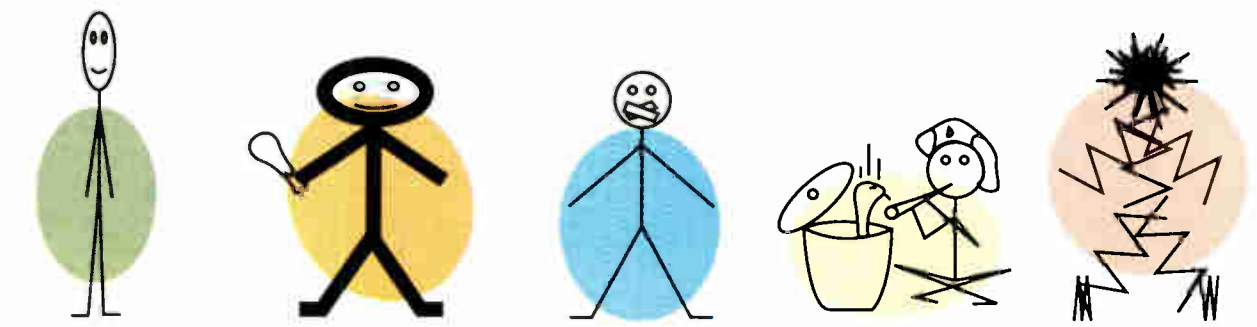


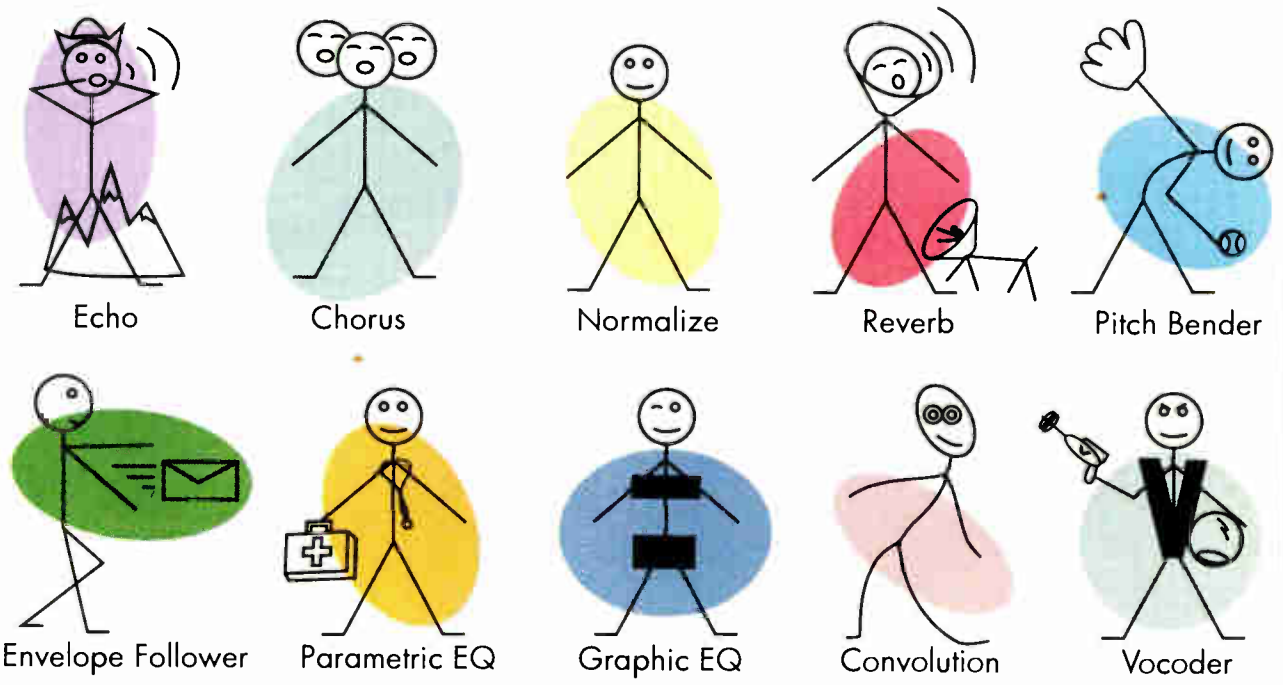


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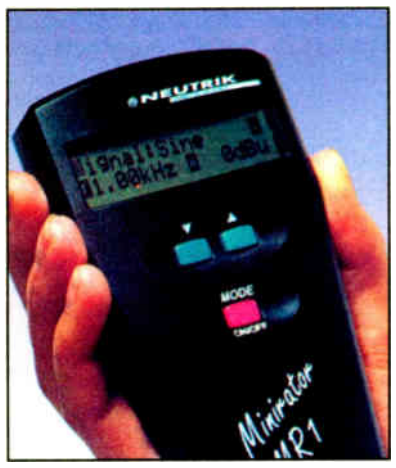
World Radio History

# AES

▶ Continued from page 83

right away in on-air studios and production rooms.

Here is a sampling of what you'll see. This is by no means a comprehensive list, and the show always has a surprise or two waiting in the wings. When attending this convention, watch for some of these products. We will have a comprehensive wrapup of new products after the show.




Neutrik Minirator MR-1

**SADiE** will feature the ARTEMiS digital audio workstation, a Windows-based system that can edit and mix at 192 kHz.

Features include full surround sound panning and up to 32 inputs and outputs. All internal audio processing utilizes 32-bit floating-point accuracy.

If an ARTEMiS system is too powerful for the production room, the new RADiA may be a better choice. The system replaces the SADiE Classic as the company's new entry-level radio production platform. With four I/Os and up to 24 replay tracks at 48 kHz, the RADiA comes as either a single PCI card for a homebrew editor or as a complete 19-inch rack unit with removable SCSI audio storage.

**Aphex Systems** rolls into Los Angeles with the Model 1100 mic preamp, a discrete Class-A tube preamp with integrated 24-bit 96-kHz A-to-D converter. Also on display, the 1788 remote-controlled mic preamp with eight preamplifiers in 2 RU space, adjustable maximum output level of +27 dBu and the MicLim limiter.

### Favorites

Aphex favorites will include the Compellor 320A dual mono/stereo compressor/leveler/limiter, and the Aural Exciter 104 with Big Bottom. Of note will be the Model 2020 FM Pro, a complete FM broadcast audio processor in a single chassis.

New monitors from **Westlake Audio** include a redesigned version of the BBSM-5, a two-way nearfield reference monitor. The unit has a one-inch dome tweeter and proprietary dual five-inch drivers. The passive crossover allows bi-amp or bi-wire operation. The bass-reflex cabinet uses a single port with a shock-absorbing mounting system that reduces cabinet vibrations.

Westlake is also offering the three-way Lc3w10V monitor speaker, with a 10-inch polypropylene woofer, a 5-inch midrange and a 3/4-inch tweeter. This monitor weighs in at 71 pounds.

It may not be glamorous, but a new connector from **Neutrik** will make life easier for broadcasters that use 1/8-inch (3.5 mm) TRS mini-plugs with their new line of 1/8-inch stereo plugs. Among other features, the plug fingers have oversized solder terminals.

### Audio analysis

The company will also bring in the Minilyzer, a palm-sized analyzer that monitors levels in RMS or peak, and can conduct distortion and frequency measurements. Distortion is measured as THD+N, where the Minilyzer rejects the fundamental frequency of the test signal and calculates the THD+N value in dB or percent. A set of audio weighting filters can be activated in all measurement functions.

The Minilyzer joins its companion piece, the Minirator, a handheld audio tone generator introduced two years ago.

Digigram also collaborated with **Nagra** to introduce the RCX220 Portable Digital Audio Recorder, a handheld stereo recorder and engine for a PC-based audio workstation. The RCX220 operates on removable Flash RAM media with up to 3 hours and 15 minutes of recording time using MPEG coding. When connected to a PC by USB link, this unit appears as a Digigram PCX sound card. This enables the use of Digigram-powered applications without additional hardware. Nagra will sell the RCX220 exclusively.

Few engineers are unfamiliar with Rupert Neve. The legendary designer of console circuitry is represented at the **Amek** display. For the first time, an entry-level audio console — the Media 51 — will incorporate Mr. Neve's designs.

The Aphex 1788 Eight-Channel Mic Preamp

**Denon** offers the DN-F20R Portable Compact Flash Field Recorder, recently reviewed in **RW**. Similar to a portable cassette deck, the DN-F20R records on solid-state media (up to 192 MB), supports MP1, MP2 and WAV files. With stereo XLR inputs, a mic limiter and RCA-type I/O jacks, the DN-F20R is ready for a busy radio newsroom.

Denon will also bring along the DCM 5000 and 5001 100-disc CD changers, a pair of programmable dual-transport CD "jukeboxes." Each features analog and digital outputs, RS-232/422 ports to communicate with computers and a composite video output for a video monitor.

The Denon DN-F20R IC Recorder

New developments from **Digigram** include the PCX924 and PCX22 PCI-bus stereo soundcards. The PCX924 is a full-duplex soundcard, while the playback-only PCX22 provides 24-bit converters, balanced analog and AES/EBU or S/PDIF output, external AES/EBU synchronization input and a headphone jack. These cards replace the PCX9, PCX11 and PCX20 cards.

Speaking of consoles, **Audio Toys Inc. (ATI)** will introduce a new 64-input Paragon II production console. With an array of mixing and routing features including ATI's distributed intelligence control system, this flexible console could find a home in any aspect of audio production.

**Alesis** is getting lots of mileage with the GT Microphone line. New this year is the MasterLink ML-9600, combining hard-disk recording, editing, digital signal processing and CD-R recording for creating two-track masters in a single unit. This unit creates standard 16-bit Red Book CDs, as well as AIFF-compatible high-resolution disks up to 24-bit, 96 kHz.

German manufacturer **SEK'D** has distributed Samplitude for several years in the U.S.— a DAW software package that has not experienced widespread use in radio. The company is hoping to break into radio with Samplitude version 5.57, which adds better track performance and more MIDI options. SEK'D may also use the AES show to introduce Samplitude Studio 5.5, a low-cost eight-track editor.

SEK'D will also use the convention to roll out SIENA, a PCI audio card that provides eight analog I/Os at up to 24-bit 96 kHz and two MIDI ports. For those looking for automation systems, the company will introduce the Audio Caster automation software.

**Klotz Digital** will debut a new eight-fader version of its Paradigm console, the Vadis D.C. II production console, and the Vadis 880 — a new audio/media platform for mixing consoles and control surface manu-

See AES, page 87 ▶

Stealth Processor.

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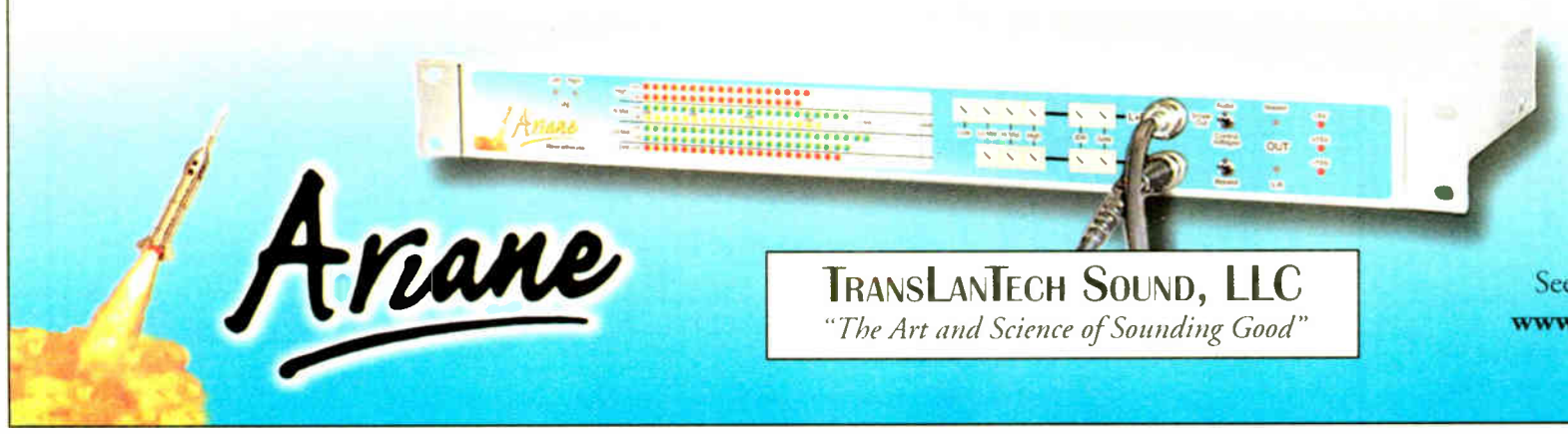


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World Radio History

▶ AES, continued from page 86

facturers. The platform is an efficient approach to audio routing, fiber optic distribution, format conversion and machine control.

It wouldn't be an AES show without those big meters from **Dorrough Electronics**. Expanding on its 280/380 series of analog and digital meters, they will introduce a wired remote control unit to access the sum and difference, phase, various peak hold functions, digital overs and the new expanded scale along with an alarm function for monitoring these features.

### Analog lives

Analog tape lives on at the **Otari** exhibit, with the MX5050B III, an updated version of their two-track reel-to-reel machine. Of course, the company will also display their entire product line including the ADVANTA and Elite+ audio consoles, the RADAR II 24-track digital recorder, and the MTR-90 III 24-track analog recorder.

**Logitek** will show its complete line of audiometers, including mechanical (analog) meters, the curved-style Tru-VU meters, bar graph Super-VU and Ultra-VU meters, and the 5.1 and 7.1 surround sound meters.

The company will also feature the Numix digital console. All Logitek consoles are based on the Serial Sound Audio Engine, which provides centralized I/O, mixing and routing functions for the facility.

Yamaha AW4416 Professional Audio Workstation

The expanding product line from **Mackie Designs** will now include the Fussion Series of active sound reinforcement speakers. Also at the booth will be the d8b digital audio console and the companion HDR24/96 24-track hard disk recorder.

### Stand-alone system

**Microboards Technology** will show the Saturn IIP, a stand-alone 12x CD-R publishing system. It allows asynchronous duplication, which lets each of the recorders operate independently. It also has ability to print and record simultaneously. The autoloaders are gravity-fed.

**Ward-Beck Systems** introduced the R2K broadcast console at the 1999 NAB show. At the AES convention, the company will feature the new XTM4 extended range meter, as well as new AES digital cards such as D8205 processing amplifier, D8206 DARS generator, D8207 SRC and D8208 adjustable gain amplifier. Also, look for new PODS for AES digital and serial digital signals.

**Yamaha** revamped its A3000 digital sampler and is rolling out the A4000 and A5000 units for creation of loop-based production music. A bundled native format CD-ROM library and front-end CD-R software complete the sampler line.

Nearby, Yamaha will exhibit the S-REV reverb, AW4416 audio workstation, MV800 rackmount mixer and mLAN technology. Existing new products that should begin shipping soon are the PM1D digital console and DME32 digital mixing engine. The XM Series multichannel power amplifiers, and the MSP5 and MSP10 powered monitor and SW10 subwoofer will also be on display.

New from **360 Systems** is the Short/cut 2000 with a much faster editing operation. Firmware upgrades are available from the factory for all earlier models. The TCR8 and TCR4 synchronous hard-disk multitrack recorders are back that now include DVD-RAM drives with real-time audio read/write capability. The company will also show Instant Replay and DigiCart.

Will all this stuff to see, will four days be enough time?

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World Radio History

GUEST COMMENTARY

# Digital Consoles Offer Advantages

**Paul Anderson**

*The author is sales manager of Logitek Electronic Systems in Houston.*

I was interested by the replies to a question posed in your July 5 issue as a part of the article "Digital Consoles Come of Age."

The question was "What can a digital board do that an analog board cannot?" The replies were varied but some digital capabilities were not mentioned.

One is that digital allows the "board" to become virtual. For example, if computer automation is in control of the on-air system, the console may not even need to exist from a user interface point of view.

In the analog domain, computer automation has used switchers to mimic this functionality but the proper digital architecture allows full console functionality without the physical hardware even being there.

This is not just remote control of a conventional analog or digital console design. The console may just be a process in software. Here is a concept with which it may take a little thought to reach a suitable comfort level. It does offer a great deal more freedom in studio design and functionality though.

### Virtual nature

The virtual nature of the "console" also allows easy changing of the control point of the console. Where the user interface is located is really not important.

A hardware control surface (the thing that looks like a console) could be taken to a remote broadcast site very easily. Or a "glass" console (software running on a computer) could substitute for the hardware user interface.

In this design concept, every hardware "console" is a control device operating at someplace other than the audio crossroads of a broadcast facility (what we might call Master Control). So any control function can occur from anywhere.

Digital allows building a large audio system easily with many studios interconnected and able to share any audio source. Hook up any audio once and it can be used anywhere in the system.

The functionality of any studio can also change quickly including the console functional layout (do I have one mic or three, phone hybrid or none?) as well as how the studio is used in the system. Is this studio on air for station A or B or is it a production room?

**Digital allows a much broader definition of what a console is and does.**

And with the already mentioned concept of control surfaces, any given studio in a system could have a choice of several user interfaces, whether hardware or virtual.

### Shareable sources

Shareable audio sources leads to the next item. Digital consoles with proper architecture can also function as routing and distribution systems including translation of analog sources to digital destinations, digital sources to analog destinations and sample rate matching. The user really doesn't care what is what.

To summarize, digital allows a much broader definition of what a console is and does. Such mundane things as the number of inputs allowed on a fader are no longer limited. You can have a pre-selector on any fader, for example.

Think of having a white board on which you can "draw" your own console and you are closer to the capabilities of digital in the console domain. Extra functions can be built in because they are "created" by the DSP running the whole show anyway. Include such things as profanity delay, dynamics processing and many other functions and you are no longer trying to make many boxes work together but are using your "white board box" to do the jobs you need done. You have "created" the console that matches your requirements.

Digital consoles do offer distinct advantages. Anyone looking for a digital console should look carefully at all the possibilities and be open to new ideas during the search process.

■ ■ ■

*Reach the author via e-mail at* paul@logitekaudio.com

***RW** welcomes other points of view.*

### Five Years Ago

We asked readers to submit methods they have discovered to trick DAT decks into believing a hypothetical "cut 100" on a 120 tape is a new Zero location.

A 15-second tone is recorded as cut 1. The tape is left to run, recording silence for 108 minutes. Another tone is recorded is recorded, which the DA-30 identifies as cut 2. The tape is rewound to cut 1 and used normally.

The bogus cut 2 ID should occur around the time cut 99 goes by. The recorder reads the marker and writes subsequent IDs from that position.

*"Fool That DAT: Readers Tell You How"*
*Oct. 4, 1995*

### Ten Years Ago

A major drawback of DAT tape is that you can't edit the tape by splicing it. If your DAT master tape needs to be edited or resequenced, you must copy from one DAT machine to another changing the order of selections and deleting noises during the copying process.

Yet another drawback: You can't leader the DAT tape to provide silent spaces between songs. That is, you can't splice in leader tape just before a song starts and just after it ends to eliminate noises that occurred just before or after each song.

*"Understanding DAT Technology"*
*by Bruce Bartlett*
*Sept. 12, 1990*

### Thirteen Years Ago

Think of the time and costs savings in recorder alignments in a digital world. ...

Digital audio's major drawbacks at the moment are:

- Its complexity; it's cumbersome, and not as flexible or versatile as analog in terms of production, and it's new.
- Its incompatibility, both with the analog system, and among the various digital systems.
- Its cost.

*"The Pros and Cons of Digital"*
*by Skip Pizzi, NPR*
*Sept. 15, 1987*

See us at NAB Booth # 232

World Radio History

## Booth Sampler

*This is a sampling of exhibitors scheduled to be present at the Audio Engineering Society's 109th Convention in Los Angeles, Sept. 22-25, at the Los Angeles Convention Center.*

Aardvark
Acoustical Solutions
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Aphex Systems
API Audio Products Inc.
Applied Microphone Technology
ART — Applied Research & Technology
ASC, Advanced Sonic Concept
ATI — Audio Technologies Inc.
Audio Accessories
Audio Engineering Associates
Audio Independence Ltd.
Audio Precision
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AudioControl Industrial
Audix Corp.
Auralex Acoustics
B & C Speakers
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Behringer Spezielle Studiotechnik GmbH
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Beyerdynamic
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Bryston Ltd.
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CAD Professional Microphones
Cadac Electronics Ltd.
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Community Professional Loudspeakers
Cooper Sound Systems
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Dan Dugan Sound Design
DB Technologies
dbx Pro
Demeter Tube Amplification
Denon Electronics
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DK Audio
Doc's Proplugs
Dolby Laboratories
Dorrough Electronics
DPA Microphones/TGI North America Inc.
Drawmer (USA)/Transamerica Audio Group
DSP Media
E-mu Systems/Ensoniq
Earth Works
Eastern Acoustic Works
Equi=Tech Corp.
ETA Systems
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Event Electronics
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KRK Systems
Lectrosonics
Leitch
Lexicon
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Liquid Audio
Location Sound Corp.
Logitek Electronic Systems
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QSC Audio Products
Radial Engineering (A Division of CableTek )
RDL Radio Design Labs
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Scarab Technology
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Sennheiser Electronics Corp.
Serafine Inc. (The Serafine Collection)
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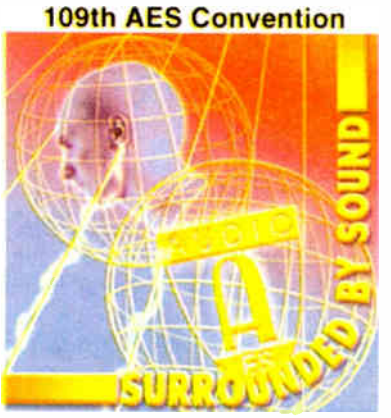
**109th AES Convention**

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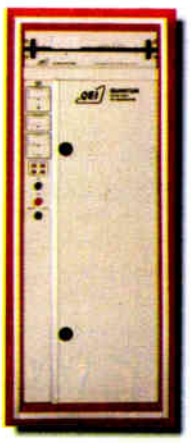

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World Radio History

# Prepping Audio for the Internet

**Mike Sokol**

As hard as it may be to believe, audio recordings destined for Internet distribution need as much or even more attention than their CD audio counterparts.

In order to get the bandwidth down to a size that everyone can download, there are some production techniques that may not be obvious. Despite the talk of lightning-fast Internet connections, few people have fiber-optic connections in their home.

The majority of uses are on dial-up connections with a maximum speed of 56 kbps, and this will be the case for at least the next few years.

### Ninety percent

Therefore, cutting the size and bandwidth of soundfiles down by 90 percent or more becomes important — yes, that number is accurate. Most of the compression codecs, such as MP3 and RealAudio, throw away 90 percent or more of audio data.

Depending on how well soundtracks are prepared in advance of data compression, the results can either be quite acceptable or downright awful.

Here are some basic techniques that will get you going in the right direction.

I am going to concentrate on spoken-word recordings, but most of these same rules apply to all sorts of musical recordings, too.

While most files destined for downloading or streaming on the Internet will be compressed via MP3 or RealAudio, audio tracks that are part of a training or interactive CD typically will be finalized in uncompressed PCM digital audio at a somewhat lower data rate than 16-bit/44.1 kHz.

Despite this, with some preproduction work, even 8-bit/11.025 kHz can yield quality narration work.

### High quality

The first thing to do is to record and edit at the highest resolution possible. In spite of the current 24-bit/96 kHz buzz in the audio industry, 16-bit/44.1 kHz turns in capable performance.

If the audio will be resampled at a lower clock rate, try to record at a multiple of the eventual sample rate being used to avoid extra conversion artifacts.

For instance, 44.1 is evenly divisible by 22.050 and 11.025, both common low-resolution sample rates. If the recording is made at 48 kHz or 32 kHz, then additional interpolation must occur to "split the bits."

With only 20 dB of dynamics, compressors like the 160 keep the signal loud without adding much noise

Remember the old axiom "garbage in = garbage out."

Just because a lot of dynamics and frequency response are being thrown away, do not assume that the recording can be cheated on. Bad sound is bad sound and will be heard at even the highest compression rates.

Do not cripple yourself with bad microphone techniques. This means using the best microphone you can afford.

In the same vein, avoid using the "mic in" port on the back of the computer at all costs. It is unbalanced and you lose the main benefit of balanced operation — hum rejection.

Also, these ports typically lack the gain needed to boost the signal levels of dynamic low-impedance microphones.

It will sound better if you get something like a little Mackie mixer, an ART tube-based preamplifier or some other good preamplifier and run the signal into the line-level port.

This also allows you to use some of the excellent condenser microphones that are on the market these days.

Also, a good windscreen or pop filter will go a long way toward eliminating plosives and pops, both of which can be deadly when processed by a codec.

Stedman makes an excellent pop filter that looks a like a bunch of miniature airplane wings, but a variety of such filters are on the market. If infrasonic garbage is eliminated at the start, the rest of the recording and processing chain will come out better.

### Maximum levels

Contrary to what some believe, you cannot record on a digital medium with -20 dB to -12 dB on the peaks and expect the audio to sound its best.

Because each bit represents a 6 dB higher noise floor, if the recording never exceeds -18 dB, then a 16-bit recording has the S/N of a 13-bit recording. Then, if a digital editor is used to normalize the low-level signal, it just raises the noise floor.

I like to use basic analog narration

See AUDIO, page 91 ▶

# Nagra

▶ Continued from page 83

Delegated buttons enable the normal tape playback functions. There is no danger of accidentally overwriting an audio file. Instant replay of the last recorded file is as simple as hitting the play button after recording.

Weighing in at less than one pound, the ARES-P is easy to hold in one hand.

The sound quality is good, especially using the automatic level control. While it is possible to put the ARES-P on a tabletop and pick up conversation clearly from several feet away with no off-axis artifacts, it is suggested that the unit be held closer to the subject for broadcast applications.

When the reporter returns to the station after a day pounding the pavement, a Windows program called ARES 95/NT allows downloading and conversion of selected audio clips into a PC for editing. The reporter removes the card from the unit and inserts it into the PCMCIA slot in a computer.

"The computer reads the card's index and displays the information, allowing all cuts or just the selected cuts to be transferred to the hard drive in seconds," said O'Grady. "From there, options include Read, which stores selected cuts on the hard drive, Read and Close, or Read and Call which reads the information, stores it on the hard drive and calls up Windows MediaPlayer or other programs that can read the files."

ARES 95/NT will convert the original audio into WAV files, O'Grady said.

With Pentium III processors, the conversions can be made in 6x speed and stored on the hard drive. Sampling frequencies can also be changed during this operation by implementing either the VX pocket card or NP runtime software by Digigram. All changes are a result of editing the program's INI file and are transparent to the user.

A Digigram version of this product, the RCX220, is available with a USB port and a limited version of their Xtrack editing software for those who want to leave the audio in its compressed form. The RCX220 will also be available through Nagra.

Both Netia and Dalet also make programs and devices for edition MPEG audio.

This is an amazing product. Many vendors on the floor in Las Vegas were interested in seeing how it worked.

With a list price of $1,900, it is a bit expensive. However, it is fun to use and it will help create a situation where cassette recorders are obsolete for field reporters.

**Product Capsule:**
**Nagra ARES-P**
**Portable Digital Recorder**

**Thumbs Up**
- ✓ Easy operation
- ✓ Built-in mic allows one-hand operation
- ✓ No accidental erasing of data
- ✓ Good audio quality
- ✓ Automatic gain control works well

**Thumbs Down**
- ✓ Card slot is easy to open
- ✓ Cost
- ✓ Additional software needed for editing
- ✓ Data window hard to see in direct sunlight
- ✓ Only has a headphone output

For more information contact Nagra in Tennessee at (800) 813-1663 or check out the Web site at www.nagra.com

World Radio History

# Audio

▶ Continued from page 90

processing during recording with an easy/over peak limiter such as a dbx 160X compressor/limiter, which guarantees the peaks will just hit -3 dB to -1 dB on the DAT meters. Then add a noise gate to get rid of the room tone once the signal drops to about -40 dB.

This also helps knock out residual noise from tape transports or computers that are in the same studio.

The basic SoundBlaster-type card simply will not work for professional recording. Most consumer-grade cards have too much residual noise to work for this application.

Ideally, a professional audio card with a S/PDIF digital-in connection should be used, as it allows audio to be imported directly from a DAT recorder or CD player bit for bit.

It is also worth getting a card that can handle multiple analog tracks at a time. A number of excellent multitrack I/O cards that will handle at least 20 bits are currently on the market.

### Chain of filters

After the tracks are imported into the computer, the real fun begins.

Narration processing can be applied in a variety of orders, but here is what works best for me. For musical editing, ignore the parts about gating, but do apply appropriate compression to control the dynamics.

First, mute all breaths. This will allow more aggressive processing without sounding like the talent is struggling to catch his breath. Generally, I do not paste in room tone because I plan to gate it all out later anyway.

Second, normalize each piece, sentence by sentence if necessary. This pulls the recorded peak level up to 0 dB FS in the sound file. Some programs offer additional level compression, but do not over-apply it.

For music files with a lot of dynamics, apply some level compression to get the soft sounds up into the mix. You can use only about 20 dB of dynamics for this type of work, so lose the "quiet, sensitive" passages.

Third, gate out the grunge. Most editing programs have a de-noise filter that knocks the noise floor down. This helps get rid of the static on low-level passages that occurs with 8-bit resolution.

Fourth, if the final product will be a low-resolution PCM file, resample the data at a rate of 22.050 kHz or 11.025 kHz as determined by listening tests.

If the option is available, use an anti-alias filter. This may take a few moments longer to process, but the results will be well worth the time spent.

### Alias tones

Alias tones occur when the sample rate is less than twice the highest recorded frequency. So a sample rate of 22.050 kHz uses a steep 10 kHz (audio) roll-off to keep this from happening. A sample rate of 11.025 uses a 5 kHz (audio) anti-alias filter, which sounds similar to AM radio.

The Aardvark Direct Pro offers an easy way to upgrade the soundcard. It performs both mic pre-amp and virtual console functions.

Fifth, dump the extraneous bits, going down to 8 bits if necessary. Generally, there are three options at this point: truncate, rounding and dithering.

Truncating simply removes the least significant 8 bits and keeps the upper 8. This is quick, but it adds the most quantization noise and distortion.

Rounding simply remaps each original bit to the closest one in the new file, reducing quantization noise somewhat.

Dithering adds a special Gaussian noise that can be adjusted to reduce distortion and mask quantization noise on low-level passages.

It is important to experiment with this and to test various settings. There is a fine line between masking the existing noise and adding extra Gaussian noise.

### Don't eat up bandwidth

For those preparing the file for MP3 or RealAudio compression, pick the highest data rate you can get away with. But realize that hogging too much Internet bandwidth will result in frustrated customers.

I recommend actually creating a representative sound file and tweaking it for maximum quality with minimum download time.

If it is a streaming audio piece, try downloading it along with whatever video or graphics (if any) that will run at the same time as the audio.

Also, make sure the test is conducted via a dial-up connection. Someday, we might all have cable modems, but for now think dial-up for the majority of listeners.

A test audition with playback speakers both great and small is also called for.

If music is used, get a sample of each proposed piece. If the music has not been chosen or written, get something representative. Make sure you include any dynamics that might be involved. Fade-outs and big crescendos tax the medium to its fullest and reveal potential problems.

Next, edit together a few minutes worth in the highest-quality format available and get ready to experiment.

For voice, the process is similar. Use both male and female test voices of good quality recorded in a quiet environment.

The last point is especially important, as background noise from the studio will be more evident when bits are removed.

Go through the above processes on the test file, exporting files at various sample rates and resolutions. If you are using MP3 or RealAudio, adjust the bit rate and make sample files to try.

It is important to use the original, high-resolution file for each export at a lower bit-rate. Do not use a low-resolution file to make an even lower-resolution one, thereby compounding errors.

Then play these files back over a sound system that most listeners will be using. Do not expect 8-bit, 11.025 kHz or 64 kbps to make those big monitors rock; there simply are not enough bits. What you are listening for is intelligibility and lack of noise.

Use computer speakers if that is the expected playback vehicle, checking on the full-bandwidth monitors for signs of trouble.

Finally, do not expect someone on the Internet to wait 10 minutes or more to download a high-resolution toccata. At this point in the digital audio distribution game, some compromise of file size and bandwidth usually is necessary.

The trick is to control those compromises early in the production cycle, instead of being forced to do a last-minute save just to get something audible.

Worst of all, if the right bandwidth choice is not made early on, some other producer or editor may end up having to do a hatchet job on your audio without due consideration to the above techniques.

■ ■ ■

*Your thoughts on preparing audio for the Web are welcome at* radioworld@imaspub.com

*Mike Sokol is an audio engineer, musician and communications integrator with 30 years experience. Visit his Web site at* www.soundav.com

## Zipping Surround Sound

I love experimenting with various processes in ways they were never designed.

Here is something interesting to try, especially when working with Dolby Digital Surround files. I found that a 256 to 384 kbps AC-3 file saved as a WAV file can be compressed with a Zip program, such as PKWare PKzip, by 5:1 or more.

This allows creation of downloadable Surround files that are around 2 MB per minute of Surround audio.

In essence, this process stacks lossless compression (PKzip) on top of lossy compression (AC-3). Because most Web browsers can unzip files with a ZIP extension automatically, it is transparent to the user.

They simply download the AC-3 file and click on it to unzip it to the original size. Then, if the computer has an S/PDIF port hooked up to a Dolby Digital decoder or speakers, the 5.1 Surround tracks can be played back instantly.

Check out my Web site (*www.soundav.com*) for some examples to download.

*— Mike Sokol*

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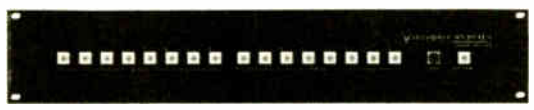

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PRODUCT EVALUATION

# Sony 7509 — Premium and Pricey

**Carl Lindemann**

For some time, Sony has offered a range of serviceable, fine-sounding headphones for studio use. The MDR-7509 is the latest addition.

The new model is aimed at the high end of the market by enhancing the low-end frequency response. These reach above and below what is likely to make it through the transmitter to listeners.

In fact, these will reach above and beyond what can be heard from the studio console.

## Specs

According to the specs from the Web site, the frequency response ranges from 5 Hz to 30 kHz and can handle up to 3,000 mW. The headphones incorporate 50 mm Neodymium magnet with amorphous diamond evaporated diaphragm drivers.

For production directors who like to crosscheck their work after listening to work on the studio monitors, the MDR-7509s are an excellent reference source. Audiophile announcers, too, may opt for plugging in with their own pair for on-air work.

However, the price of $250 list for accuracy and transparency may be prohibitive as standard radio equipment. Sony acknowledged these "cans" should not be left lying around the studio by providing a carrying case.

The MDR-7509 phones will be immediately familiar to anyone who has used a set of Sony headphones. I wore a similar pair during a stint as the morning news sidekick on a soft rock station.

They have the characteristically comfortable closed ear design. The cushions wrap around the ears isolating most of the sound from passing either from inside or outside. Adjustments on the headpiece and ear attachments make it easy to get a comfortable fit. It is not feather-light, but not an onerous burden to wear, either.

One particular feature that Sony sensibly includes is the coil cord. It is unimaginable to me why many manufacturers insist on equipping headphones with a straight cable.

Over the years, I have trashed a pair of AKG 240s as well as various Sennheisers, thanks to that straight cable. I would forget I had them on and would walk away without taking them off.

Unlike vocational music listeners, I usually have my mind on something else, like doing a show, while wearing headphones. Yanking out the cord accidentally is a rude reminder compared to feeling the tension increase on a coiled cable.

Another nice feature in this "Age of the Eighth-Inch Plug" is that the connector comes with a quarter-inch adapter that screws on. The usual pop-out plug-in adapters are too easy to leave in a headphone jack. This keeps it where it is needed.

So far, these are features found on most of the pro Sony headphones.

Where the MDR-7509 sets itself apart is with its exceptional bass range.

## 'Feeling is believing'

Reproducing bass in headphones is a tricky task in that much of the "thunderous" low end is more visceral than auditory. As one bass amp manufacturer puts it, "feeling is believing." It is a bit different with headphones.

I tested these by listening to Mobile Fidelity Sound Lab's Gold CD remaster of Stevie Wonder's "Innervisions."

The recording captures some amazingly low frequencies generated by the synthesizer. The bass notes came across as clean and well-defined.

Lesser rigs tend to stumble and make these muddy and murky. I might hear a "thud" instead of a note but not with these cans.

At higher frequencies, it seemed clear and flat past my ability to hear. But what gives these a unique flavor is how the higher frequencies take on a different character when put in the context of the much fuller lower range.

Compared to listening on speakers without an extended low-frequency response, the vocals on this CD seemed to be layered under the rich detail of the instrumentation.

This is likely closer to what the mastering engineer heard on his monitors but sounds different than what I have grown accustomed to.

For radio production, it is debatable whether the extended range of the MDR-7509 will come into play. For those producing music, the utility is more apparent.

Still, if you have the budget for a top-of-the-line set of reference headphones, these are sturdy, comfortable and sound terrific.

■ ■ ■

*Carl Lindemann is a frequent contributing writer to* ***Radio World.***

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World Radio History

LINE OUT

# Create a Concert Promo

**Bruce Bartlett**

Here are some tricks that production experts know and students might want to learn.

Suppose you want to create a promo for a concert by a band called Thunder Head. You will play cuts from several of their records under two announcers.

One announcer will say something like, "Live, at the Omega Theater this Saturday ... get ready to rock!" During pauses in this narration, another announcer will say the phrase "Thunder Head" with heavy effects on the voice.

The promo will run 29 seconds long. To fill this time slot, you could use four-second segments of up to five songs, plus one four-second segment of another song.

First, using multitrack editing software, record several seconds of each song onto hard disk. Usually the chorus part of a song works well for promos because it is easy for the listener to recognize. The last song in the music bed should end with a strong finish, rather than a fade-out.

Now you want to excerpt a five-second length of music from each song, so open the waveform view. In the first song, mark the beginning of the five-second length, mark the end of that length and save this highlighted area as a segment or region. Name the segment with the song title and repeat for each song.

For the last song, define a four second segment as you did before, but have the end of the segment be the end of the song.

## Sequential song segments

Join the song segments by placing them sequentially on one stereo track.

Once all the songs are in place, double-check the playlist to make sure it runs 29 seconds. If not, usually you can time-compress or time-expand the program with a digital audio editor that has this feature, or simply trim the song segments to the correct length.

So far, you have 29 seconds of edited music. Add some quick crossfades between the songs and your music bed is ready.

In the promo, you want the music bed to play at full volume for a few seconds, duck under the announcer and then come up at the end. That will determine the length of the narration.

Suppose you want the music to play three seconds at the beginning before it ducks and you want the music to play two seconds at the end after the announcer is finished. Because the music bed is 29 seconds long, the narration should be 24 seconds long.

Time to record the narration. It is a good idea to play the music bed over headphones to the announcers as they are recording. This helps them adjust their timing and get a feel for the material. Some announcers are skilled at pacing their reading to end right on time.

You will record the announcer in mono onto hard disk for later editing. If the announcer goofs a sentence, have them re-read it from the beginning as it will make editing easier.

## Make your mark

To keep track of voice edits, follow along with the script as the announcer reads and make a mark on the page at the beginning of each misread sentence.

Using your editing software, edit the waveform on-screen. That is, edit out the misread sentences according to your marked script. Then check the timing. To get it down to 24 seconds long, either use time compression or remove small pauses.

At this point, you have one stereo track of edited music and one track of edited narration. Now you are ready to add the second track of the announcer saying "Thunder Head."

Play the music and narration tracks to the announcer and record the phrase at the correct cue points on a new track.

What if your editing software cannot play and record at the same time? Just record the announcer saying "Thunder Head" a few times, define each "Thunder Head" as a region and place each region where it belongs in time on the new track.

The announcement "Thunder Head" should sound really compelling, so add some cool effects to that track — perhaps some pitch down-shifting and doubling. Most editing software has effects or accepts third-party plug-ins.

A few digital editing systems let you use an external effects unit, such as an Eventide Harmonizer. If not, you could use your mixer's aux bus to add outboard effects as you record to hard disk.

Play the multitrack program from the beginning. Three seconds after the music starts, duck it under the announcer by moving the on-screen fader or by specifying the fade levels and fade start/stop points.

Also set a fader level for the "Thunder Head" announcements. You might want to pan the first "Thunder Head" left, pan the second one right and so on.

Finally, when the narration ends, set up a fade there to bring up the music tracks. The music should end right on cue. Maybe add a little overall compression and there is your finished promo.

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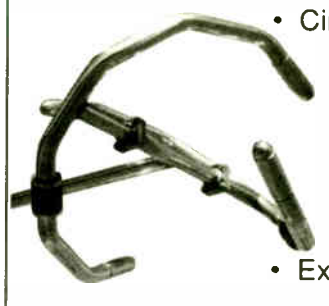

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TieLine displays the line quality when connected. With its modem, the unit adjusts to the quality of the phone line and can achieve higher connection speeds as line conditions improve.

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The Rack-Mount TieLine

talk show information originating from the studio by the RS-232 port.

A free software package allows the user to remote control the TieLine from a PC, save 99 phone numbers by name, monitor connect levels and more. The unit can be upgraded over the Internet.

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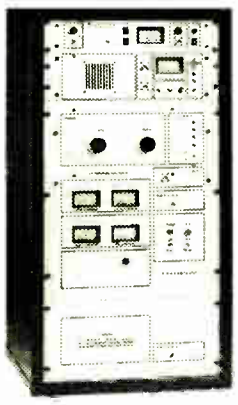

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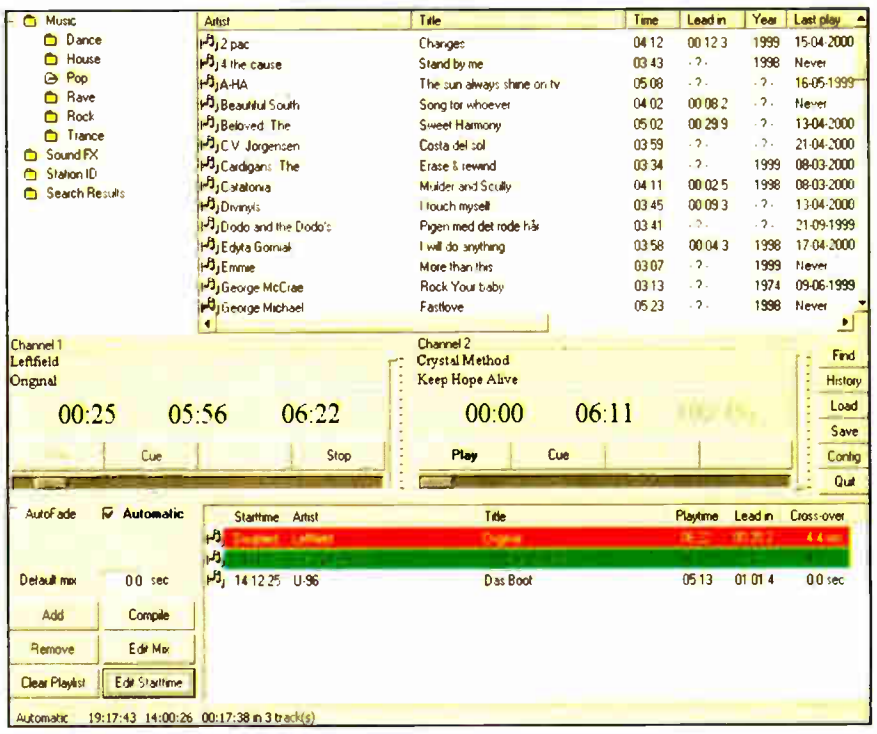
Fifth Dimension Studios of Copenhagen, Denmark, has a free demo version of Broadcast Assistant Pro automation software. For $45, the software can be unlocked for unlimited capacity, whereas the demo version only allows you to build a playlist of three tracks.

A 200 MHz Pentium PC with one to four soundcards is required. The software can handle WAV, MPEG Layer II and III files as it uses Winamp as a codec.




On the main screen, the software shows a database of all the sound files stored with the length and lead-in on each track, the year of the recording and the last time it played. It also shows how much talk time remains and creates fades.

The software has a graphical preview and cueing of mixes, and it can produce airplay charts/reports. Also, the software automatically can compile a program of music with the profile you enter.

Other features include an offset of the playlist start time, the edit mix screen for changing crossfade times and the properties window that shows additional information about each track.

*Visit* www.caiki.com *for more information and to download the demo version.*

World Radio History

# Radio World
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### Want to Sell

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**Fostex 812** console/R-8 8 track, 1/4" analog r-r, digital display w/manuals & original boxes, excel cond, $900. G Parmelee, Audio Tracks of Vermont, POB 5515, Essex Junction VT 05453. 802-288-1033.

### Want to Buy

**Yamaha BP-2** bass pedal generator. Need schematic & any literature or manual. Bob Meuse, Muse Audio Arts, 191 E El Camino Real #209, Mtn View CA 94040. 650-969-2433.

## AUTOMATION EQUIPMENT

### Want to Sell

**APTX Series** M audio cards, used in "The Managements" automation systems. Jim Parman, WHIR/WRNZ/WHBN, Danville KY 40422. 859-236-2711. hometownradio@kih.net.

**Sparta automation system**, BO. Will Dougherty, WLD, Rt 1 Bo0x 1548, Mill Spring MO 63952. 573-998-3117.

### Want to Buy

**Electric Works AS-28** audio switcher, used in "The Managements" automation systems. Jim Parman, WHIR/WRNZ/WHBN, Danville KY 40422. 859-236-2711. hometownradio@kih.net.

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**NAB cart deck**, new Telex 36, rack mount, no electr, includes blank carts & new tape, will trade for tube audio equip or BO. Ed Davison, 1129 Willowbrook Dr, Springfield IL 62707. 217-793-0400.

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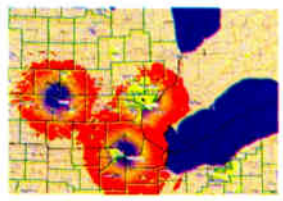
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**Shure AMS 4000** automatic mic mixer, 4 inputs w/3 model AMS22 low profile mics, $250/BO. Ed Davison, 1129 Willowbrook Dr, Springfield IL 62707. 217-793-0400.

**Shure M267** pro portable mic mixer w/limiter, 4 input, Phantom pwr, battery/AC powered, nice, clean cond, $350; Tascam MM1, 20 line input stereo mixer, midi mute, rack mount, treble/bass, effect sends, $600. Mark Hughes, Fresh Start Music, 13500 Vandalia Dr, Rockville MD 20853. 301-962-6823.

### Want to Buy

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## DISCO-PRO SOUND EQUIP

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**Gemini Discomix** CDJ-10 CD players (2); one DMX 40 mixer; one headphone mic combo; one custom D.S. case, new cond, $360 +shpg. James Licano, 1170 AM, 402 Reppy Ave, Miami AZ 85539.

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### Want to Buy

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### Want to Sell

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**Optimod 8000A** recapped totally up graded, currently in service, $1500. Gene Kirchner, WRDN, 114 W Main, Durand WI 54736. 715-672-8989.

**Orban 8200** digital audio processor w/version 3 software & digital I/O cards, Fully loaded, $6000. C Reid Murray, KMGE, 925 Country Club Rd, Eugene OR 97401. 541-484-6220.

**CBS Labs 4500** mono dynamic presence EQ in gd working order, BO. Joe Vilkie, Great Circle bdctg Co, Box 397, Meadville PA 16335. 814-724-1111 x238.

### Want to Buy

**Urei broadcast limiter model 1176**, 1178, LA-2 or LA-3. Ken Gold, 403-543-3333; gold@nucleus.com.

**Inovonics David** or similar FM audio processor, must be in gd cond, all or part payment as non-profit tax deduction or very reasonable. James Goggan, KGNV, POB 87, Washington MO 63090. 636-239-0400.

**Universal Audio**, Urei, dbx, Collins, RCA, Gates. Tim Coffman, 858-571-5031.

**Teletronix LA-2A's,** UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

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### Want to Sell

**RCA BK-5B** (2), BO. Mike Glinter, WZNO, 2070 N Palafox, Pensacola FL 32501. 850-434-1230.

**Crown CM300** differoid condenser, $200; EV RE11, $320/pr; EV1751 cardoid electret condenser, $100; EV PL9, $90; MB Quart 301 ribbons vintage, matched pair, restored, $850 ea; Sony ECM16 lavalier, $125; Sony ECM50 lavalier, $150; Astatic PPS1 phantom pwr supply, new in box, one channel, $150; Audio Technica mic cable XLR to 1/4", 5 for $100. Mark Hughes, Fresh Start Music, 13500 Vandalia Dr, Rockville MD 20853. 301-962-6823.

### Want to Buy

**RCA 77DX**, yoke & shock mount. Mark Schackow, Mark Schackow Recording, 307-4th Ave, E., Lemmon SD 57638.

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**Philips 76S** CD recorder, new cond w/cables, must sell. James Licano, 1170 Am. 402 Reppy Ave. Miami AZ 85539.

### Want to Buy

**Ampex 350/351** electronics. J Hartt, Hartt Audio Transfers, 2418 36th Ave West, Seattle WA 98199. 206-282-0720.

**Tube recorder electronics**. Mark Hughes, Fresh Start Music, 13500 Vandalia Dr, Rockville MD 20853. 301-962-6823.

## REMOTE & MICROWAVE

### Want to Sell

**Burke 16** & VRC 2000 Gentner; TFT 7601 remote, BO. Mike Glinter, WZNO, 2070 N Palafox, Pensacola FL 32501. 850-434-1230.

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**Starguide Model II**, BO. Mike Glinter, WZNO, 2070 N Palafox, Pensacola FL 32501. 850-434-1230.

**Wegener Unity 4000** satellite receiver MPEG 2 IRD, like new, $2000/BO. Carl Haynes, WZRX, POB 9734, Jackson MS 39286. 601-981-9080.

**Decibel Products** DB 5007 antenna side mount kit, original box from Marti, never used, no rust; Decibel Products DB-4028-2 dual cavity passband w/950MHz STL region, rack mounted w/jumper cable between cavity's, used to reject 900MHz poaging & cellular interference, BO; Cablewave P/N 738350 3-1/8" gas stop connector, used, but in very gd cond, BO; Kintronic Labs L5-20 coils for AM ATU (2), new in wrapper, never used, BO. Joe Vilkie, Great Circle Bdctg Co, Box 397, Meadville PA 16335. 814-724-1111 x238.

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**Otari MC5050 MKIII-2** & MX5050BIII-2, BO. George Molnar, WNDU Stations, 54516 US 31 North, South Bend IN 46637. 219-631-1616.

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**Potomac FIM 41** in gd cond, BO over $2700. Mike Glinter, WZNO, 2070 N Palafox, Pensacola FL 32501. 850-434-1230.

**HP 201-C** tone generator, continuously variable, tube type, needs work BO. Joe Vilkie, Great Circle bdctg Co, Box 397, Meadville PA 16335. 814-724-1111 x238.

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**Energy-Onix Legend 1000**, 1992 1000W FM solid state tuned to 91.1 FM, less exciter, vgc, $5000. John Wilsbach, WMSS Radio, 214 Race St, Middletown PA 17057. 717-948-9136.

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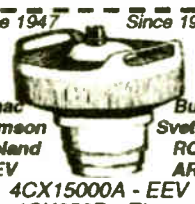
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| 86 | TransLanTech Sound, LLC | www.translantech.com |
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| 104 | Wheatstone | www.wheatstone.com |

World Radio History

# ◆READER'S FORUM◆

### ARP fan

Dear **RW**,

I always enjoy Alan Peterson's pieces. I liked the *World According to ARP* column in the Aug. 16 issue, "Can I Request 'Stormy Weather?'"

I was doing the Metropolitan Opera broadcasts in the Midwest in the late '70s and never did a listener complain when I interrupted the broadcast for weather warnings. (The listeners) were wonderful. The first year I was there, I had to cut into every single Met broadcast; it was a bad year, especially for Allegan, Mich.

I seriously doubt that many of the local stations would (a) know how to cover storms, (b) want to, (c) get management approval.

"We've got a twister headed our way, and we'll have more on that one right after this ... "

*Tom Carten*
*Manager*
*WRKC(FM)*
*Wilkes-Barre, Pa.*

### Let AM rest in peace

Dear **RW**,

In response to the guest commentary in the Aug. 2 **RW** by Mr. Scott Todd ("AM Isn't Bad — Its Receivers Are").

Mr. Todd is about 20 years too late. Now with the merger of USA Digital Radio and Lucent Digital Radio, more momentum has been lent to moving IBOC broadcasting to AM. Wide-banding analog AM receivers will only allow analog AM radio listeners to hear digital information for IBOC in the form of "apparent noise" in the form of data transmission.

I was involved back in the '70s when AM stereo broadcasting was being evaluated. It was clear then, as it is now, that consumers just don't care about it.

On top of lack of consumer interest, the C-Quam method of AM stereo chosen actually degraded coverage for stations that operated with it. Poor system bandwidth, transmitter lash-ups to accommodate AM stereo exciters, poor stereo separation, frequency response that couldn't come close to FM stereo, and the inability to modulate above 100 percent positive modulation were only some of the reasons AM stereo was doomed.

Receiver manufacturers are in the business of making a profit. Mr. Todd is being naive in thinking that manufacturers did not do any research prior to developing AM stereo receivers for the United States. The fact remains that there was no market for it.

I challenge Mr. Todd to prove that any broadcaster has ever made back their investment, or one red cent because of sponsor or listener interest in AM stereo.

I just cannot fathom why a small-market AM station, as noted in Mr. Todd's commentary, would lobby the FCC for better AM receiver standards. Like anything, moving toward a wide-band receiver for AM is a tradeoff. Wide-band AM receivers typically have less sensitivity than their narrow-band counterparts.

Small-market station owners are trying to wring every penny out of their markets to remain viable, and would risk potential loss in "fringe" coverage area either by installing AM stereo in their RF facilities, or by the loss of sensitivity from some new, (government-mandated), wide-band receiver.

Electrical interference is also more prevalent today than it was 25 years ago when AM was looking at increasing audio fidelity. Noisy AC transformers, trolley lines, neon signs, electric motors, computer monitors, etc., all take their toll on AM.

I suggest that you discontinue badgering the commission, Mr. Todd, with antiquated ideas that, if ever enacted, could actually hurt small-, and large-market AM broadcasters. AM stereo, let it please rest in peace.

*Kelly Alford*
*Vice President of Engineering*
*AK Media Group Inc.*
*Seattle*

### Kudos to Ken R., WNIC

Dear **RW**,

I want to compliment Ken R.'s story on WNIC(FM) in Detroit ("At WNIC, Nice Guys Finish First," **RW**, Aug. 2).

In this day of "radio attitudes" prevailing as the cool trend, it was great to read about a station that really cares about the individual listener.

I was especially impressed by the Elaine Ellis' statement, "The focus is always on the listener."

The family-sensitive format, the longevity of the staff, and statements like the one from Elaine make for a winning combination for a station. It's truly great radio that offers a positive impact for the communities they serve.

*Ron Maxwell*
*President*
*OnlineAudio.com*
*Fort Myers, Fla.*

## Radio's Happy Days

At trade show time, we at **RW** like to pause as well, to see how radio is doing.

When it comes to its financial health, we're doing damn well, thank you.

Ad revenues were up 21 percent in the first half of 2000, according to the Radio Advertising Bureau, and sales departments keep churning out big increases. Just six years ago, radio had its first billion-dollar month. This May, revenue hit $2 billion. Even the smallest markets have enjoyed big gains this year.

This is the year radio said it smacked through the old 7 percent "glass ceiling," earning 8.2 percent of all ad revenue in 1999. The RAB called it a phenomenal breakthrough. And a $20 billion year now is achievable for radio.

Radio has picked the fruits of the historic economic boom. It also has squeezed out many of its inefficiencies. To use a racetrack analogy, radio has shown itself to be a randy thoroughbred, not a tired old Nellie after all.

Eternal optimist Gary Fries of RAB thinks radio could earn 10 percent of the ad pie. Maybe. We certainly agree that radio has never seen this level of acceptance from the global ad industry.

Countering the worriers who feared that the Net might devastate radio — and we've done our share of worrying — many experts now feel radio is well situated to take advantage of the Net. The recent boom in dot-com advertising was one example. Longer term, radio has the content expertise and talent to make hay in the Internet economy — hay that will keep our racehorse running for a long time.

On the personal level, big consolidation has taken its toll. Now many radio managers and engineers have adapted to the demands of this new environment. We take computer classes, learn HTML and Java, get certified in networking. Our investment is paying off. Techies see opportunity as online engineers as well as RF experts. PDs find jobs with satellite providers or the Web. Managers develop skills to integrate online sales with their airtime pitch, and land jobs with exciting new-media titles at radio groups.

Job security is better. Our 401(k) plans have more money in them. Smart employees are in demand.

And when our friends who changed horses to the dot-com world tell us that their stocks dropped or their IPOs flopped, we who still bet on good ol' radio feel just a bit better about our faith in this particular pony.

Fries says radio now must change to a branding medium and demand premium pricing. "Pricing power will be in our hands," he said earlier this year. "if we change our mindsets and become what we deserve to be: the largest, most aggressive, most intimate advertising medium in America."

That would put radio in the winner's circle for years to come. Meanwhile, let's enjoy the good times.

— **RW**

### It's all about $$

Dear **RW**,

Regarding the story "The New Face of Engineering" in the Aug. 2 **RW**, the lack of radio engineers coming into the industry has to do with money, number one. Any other answer is just plain bull.

The days of glamour have been gone ever since the bean-counting corporations took over entertainment. It used to be "a love of radio" that might keep a guy going until he figured out that the house payment was easier to make when you were paid more money.

Paid enough, one didn't even mind the, "Hey, fix the toaster in the break room, would ya?"

They say "love the work, and the money will come." Right! Learn and learn more and look for the right place to earn the money you deserve for that knowledge and ability to perform. I don't think terrestrial radio will be the place.

I left radio for hotel entertainment years ago. The 24-hour days and carrying three beepers just didn't do it for me anymore.

*Ralph Hamilton*
*President*
*High Mountain Sounds*
*Las Vegas*

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World Radio History

# THE WHEATSTONE D-5000
## DIGITAL AUDIO CONSOLE

***This new D-5000 audio console from WHEATSTONE gives you our top-of-the-line D-600 digital technology—at a modest price!***

- Totally modular design lets you hot-swap all modules for on-air servicing; even DSP and CPU functions reside on easily changed modules.
- Traditional user interface with clean layout and familiar control surfaces.
- Available with up to 26 input modules (any mix of analog and digital).
- 4 stereo mix busses, each with digital and balanced analog outputs.
- Flexible mainframe layout options.
- Inputs can be field-converted from analog to digital (and back) through a simple daughterboard change.
- Choice of 32, 44.1 or 48KHz console clock rates (can be synced externally).
- Serial port allows true integration with routers and automation systems.
- Dedicated phone module with DSP generated MXM—two modules can be combined for up to 4 MXM sends
- 8-character alphanumeric source displays above each fader.
- All channel fader, display and switch settings are addressable via the serial port for remote control and router/automation communication.
- Exclusive VDIP™ software lets you configure console with a laptop PC (no pulling modules, installing jumpers or setting dipswitches). Once configured console runs standalone.

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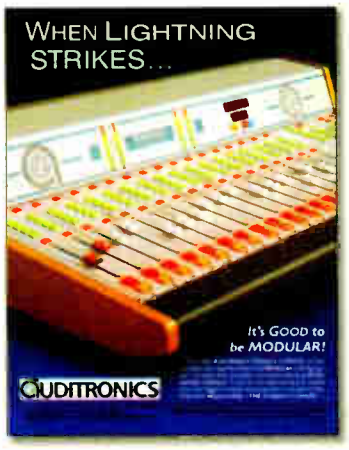
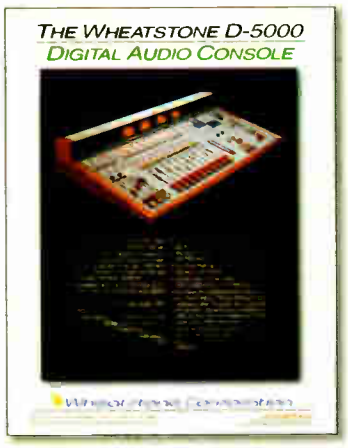



## AUDITRONICS 220

Modular, easy to install, serial control standard to work with most automation systems. Auditronics quality at a price to keep you under budget.




## WHEATSTONE D-5000

D-600 technology at a modest price; serial control for most automation systems, 8 character alpha source displays, hot-swap modules.

## D-70 — THE LATEST SUPERSTAR FROM AUDIOARTS

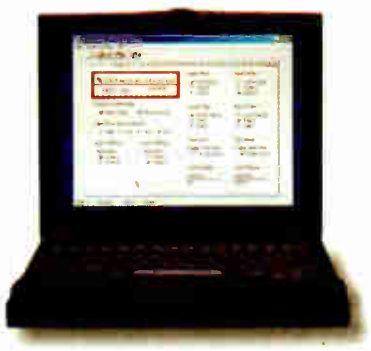
Serial interface, digital domain metering (fullscale digital peak plus simultaneous dual ballistic VU), sample rate conversion on all digital inputs, plus selectable console clock rates. And you can get one for less than $7900!

## AUDITRONICS NuStar 4.0

A whole new generation NuStar can handle up to 128 input/output signals in its rackmount engine, letting you select any source directly to each channel. Eight character alpha displays above each fader keep your operator informed and in control.

## WHEATSTONE ATC-1

A digital AES router with all the routing capability you need today—plus the expansion you'll definitely need tomorrow. Handles up to 256 AES inputs and routes them to 256 outputs. All switching done in the digital domain, with sample rate convertors on every digital input, plus a complete family of X-Y and input controllers for every need.



## WHEATSTONE'S VDIP™

Virtual Dipswitch Software lets you configure our consoles with a laptop computer. There's no pulling cards, setting dipswitches or installing jumpers. Once configured the consoles run standalone.

## CONSOLE MOUNT X-Y

Controller can bring hundreds of shared resources to your station.

**TEAM PLAYERS** — Wheatstone D-600 and D-700 CONSOLES command the ATC-1 digital router; the ROUTER talks to the 8-character console channel displays. Station AUTOMATION can talk to BOTH.

## WHEATSTONE'S D-700

Serial protocol is only part of the story! Each input channel can also have two stereo aux sends, four bands of EQ, compression, assignable ducking, and digital input gain control, panning and HPF—with all settings stored and recalled in up to ninety-nine security protected presets—so your talent can be up and running in just seconds. Presets can even recall bus assigns, source selection, mode, channel ON/OFF and fader settings—all through simple front panel control.

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