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Tuning India
This nation of a billion potential listeners looks at DAB, satellite radio and converting to stereo.
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Radio World®
The Newspaper for Radio Managers and Engineers
July 19, 2000

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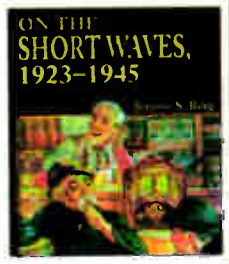

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▼ We look at the JK Audio Innkeeper 1 hybrid, the Digi 001 editing system and the latest choices in production mixers. In This Issue

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Richardson Takes Over Richmond

Richardson Electronics' Acquisition of Broadcast Richmond Creates Bigger Prewire Supplier

by Naina Narayana

RICHMOND, Ind. Trading its talents for a bigger customer base, Broadcast Richmond has become the newest part of Richardson Electronics Ltd. Terms of the deal were not disclosed.

On May 31, Richardson acquired the privately owned Broadcast Richmond, adding to its portfolio of worldwide distributors of broadcast components, transmitters and audio/digital systems.

Richardson, a publicly traded company, had made a similar acquisition in April by purchasing Apoio Tecnico Brazil, a broadcast distributor. Previously in late 1998, Richardson had purchased Sahabsa S.A., a broadcast transmitter and component

See RICHMOND, page 10 ▶

Westwood One Preps Olympic Coverage

by Randy J. Stine

ARLINGTON, Va. With only two months until the 2000 Summer Olympic Games in Sydney, Australia, Westwood One executives are preparing for the task of covering the huge event.

vice president of sports programming at Westwood One. "The good news is that this will be our fourth consecutive Summer Olympics we've covered."

Westwood One broadcast its first Summer Olympics from Barcelona, Spain, in 1988. The network holds the

The main Olympic stadium

A 15-hour time difference and more than 9,000 miles stand between Sydney and a successful broadcast back in the United States.

"This is an enormous undertaking and made more difficult by jumping across so many time zones," said Larry Michael,

exclusive U.S. radio broadcast rights to the 2000 Summer Olympics in Sydney. It maintains the broadcast rights through the 2008 Summer Olympics.

From the toss of the first shuttlecock in badminton to the final lunge of the foil in

See OLYMPICS, page 8 ▶

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World Radio History

◆ NEWSWATCH ◆

Breaks for NAB Radio Members

WASHINGTON The NAB Radio Board is giving a couple of breaks to the association's radio members, for dues and Radio Show registration.

The board has voted to give a 2-month "dues breather" for radio members who are up to date on their dues beginning in January 2001. Such stations would not owe dues until March 2001. NAB is calling the dues break a "temporary, one-time bonus."

The board also has authorized a free registration for each paid registration from an NAB member station to the Radio Show in San Francisco Sept. 20-23.

NAB is offering the so-called one-for-one registration as an incentive for stations to allow more employees to attend the show.

For every paid registration, the station gets to take another employee for free. If, for example, the station paid for six registrations, another six registrations would be free, said a spokesman.

The offer is open to all approximately 5,500 NAB radio members in good standing.

Whether the incentive would be applied for the spring show has not been discussed, said the spokesman.

DOJ Nixes Hispanic Bid

DALLAS Hispanic Broadcasting Corp. says the Justice Department won't allow it to pick up Clear Channel stations in Denver, Phoenix and Austin, Texas. HBC had been the prevailing bidder for the three stations at a proposed $127 million purchase price.

Clear Channel and AMFM must divest several stations to comply with ownership requirements in several markets and complete their merger. In such cases, the DOJ will not allow the seller to have any financial interests in the buyer. Clear Channel has a 26-percent passive ownership stake in HBC, and that's why its bid is disqualified.

McHenry Tichenor Jr., HBC CEO, said he was disappointed and had hoped the DOJ would create a new rule for this case and apply it retroactively.

Noncoms Fight Spectrum Bids

WASHINGTON Noncommercial stations don't want to bid at auction for new spectrum and have gone to court to try to get an FCC ruling about that reversed.

National Public Radio, the Association of

See NEWSWATCH, page 7 ▶

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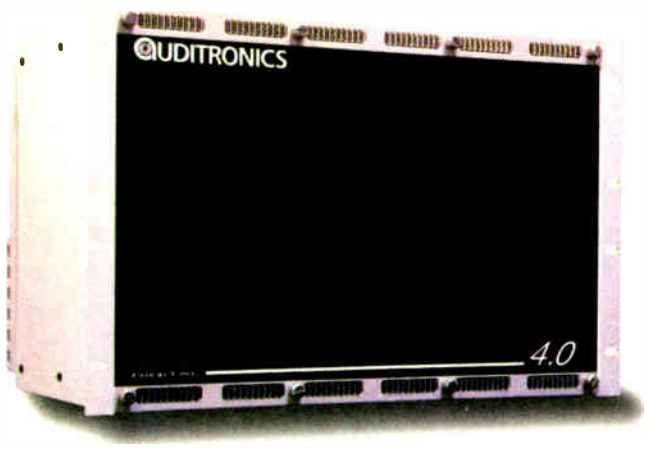

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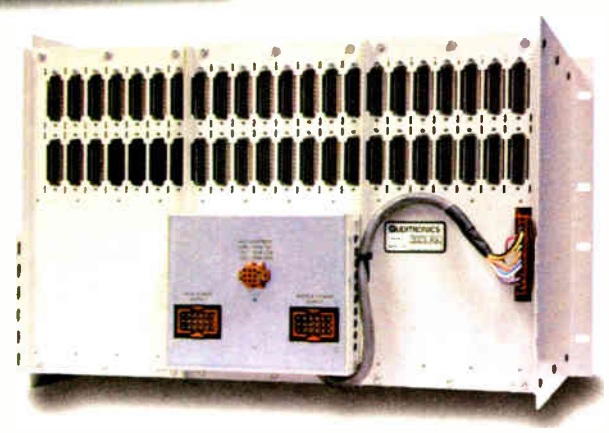

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Fidelipac Is Now Part of LPB

by Randy J. Stine

PHILADELPHIA When Tom Spadea decided he wanted to expand the holdings of LPB Communications Inc. he didn't have to look far — 30 miles down the road suited him just fine.

Spadea's LPB has acquired the Fidelipac division of Amplifonix Inc. Terms of the purchase were not disclosed. The sale closed in early May.

A 'perfect fit'

"I believe this is the perfect fit for us right now," said Spadea, LPB president. "In particular the Dynamax modular board was attractive. And the digital console work Fidelipac has done probably saves (LPB) two years in R&D."

Spadea likes the idea of integrating Fidelipac's digital console experience with LPB's manufacturing techniques.

"(Fidelipac) has had digital stuff in the field for nearly six years; not many companies can say that. They have taken the experience from the user and been able to transfer some of the expertise to ... modular consoles," Spadea said.

"We want to establish ourselves as a very serious player in the console markets, digital and analog. Fidelipac brings us that mid-range console that has been selling so well," he said."

LPB will keep the Fidelipac name as a division. Spadea said plans call for all on-air consoles to be produced by LPB and its Fidelipac division to eventually carry the Dynamax name.

Fidelipac, located near downtown Philadelphia, and LPB, located in nearby Fraser, Pa., have both "built similar reputations for offering high-quality, low-cost products," Spadea said.

LPB manufactures AM and FM transmitters, on-air consoles and automation software. Fidelipac produces on-air consoles, both analog and digital, and on-air and custom warning lights.

Spadea said LPB would honor Fidelipac product warranties. "For customers and vendors, this will be an absolutely seamless transition for them."

George Kuchmas, former Fidelipac operations manager, and David Strode, former Fidelipac sales manager, have joined LPB. Spadea said some former Fidelipac production personnel could also be offered positions with LPB, which has 18 employees.

All Fidelipac operations are set to move to LPB's manufacturing facility this summer.

Spadea said LPB is now better-positioned to pursue the proposed low-power FM market.

"We will aggressively go after the business. We are offering full turnkey packages for $30,000, which includes all of the FCC license paperwork, studio design, studio equipment, transmission equipment and engineering work."

Spadea formed LPB Communications Inc. in 1998 and purchased LPB (Low Power Broadcasting) Inc. The company has built radio broadcast equipment for more than 40 years.

Spadea said Amplifonix, a manufacturer of hybrid amplifiers for the United States military, acquired Fidelipac in 1996. Fidelipac did not fit into the long-term goals of Amplifonix, said Spadea.

"Sometimes when you try to focus on both commercial and military contracting it doesn't always work," he said. "We will focus on only one thing."

"Fidelipac wasn't growing at the rate we wanted it to because we couldn't devote the time to it," said Amplifonix President Arthur Riben. He believes LPB will be able to make Fidelipac grow much faster than Amplifonix could.

Spadea said LPB has a fairly aggressive growth plan and that consolidation within the broadcast supply industry has created growth incentives.

"If you don't do two or three really creative things within a year, like acquisitions and new products, you get left behind," Spadea said. "With consolidation, the opportunity to grow is there."

Spadea predicts the radio equipment market will merge into the Internet and TV supplier market. "It's all becoming the communications market. Because the guy who is doing Webcasting needs much of the same equipment radio stations do, we will eventually all end up in the same pot."

George Kuchmas (left), former Fidelipac operations manager, and David Strode (right), former Fidelipac sales manager, have joined LPB. The large board is an MX18E and the smaller board is an MX8E in a 12-channel frame, short-loaded.

Fidelipac brings us that mid-range console that has been selling so well.

— Tom Spadea, LPB

LPB'S Manufacturing Integration Floor Plan

World Radio History

Berg Goes On the Short Waves

From the Editor

Paul J. McLane

I love books.

Among my recent reading adventures are "Audition," by Michael Shurtleff; "1898: The Birth of the American Century," by David Traxel; "The Witches," by Roald Dahl; "The Year 1000: What Life Was Like at the Turn of the First Millennium," from Robert Lacey and Danny Danzinger; "The Light of Falling Stars" by J. Robert Lennon; "Why People Believe Weird Things," by Michael Shermer; "Harry Potter," by J.K. Rowling; "The Club Dumas," from Arturo Perez Reverte; "Calendar," by David Ewing Duncan; and "Silent Running: My Years on a WWII Attack Submarine," by James F. Calvert.

Books are tumbling off the shelves in my home, books are beginning to stack up on my bedroom floor and live in the back seat of my car.

Among the more interesting is "On the Short Waves," published by McFarland & Co., which tells the history of this important system of communication through 1945.

Author Jerome S. Berg believes the story of shortwave broadcasting has been told only in small pieces or by authors who failed to emphasize the listeners who actually tuned in.

"Shortwave broadcasting gave birth to a special aspect of the radio listening culture that survives to this day: a body of enthusiastic shortwave listeners — some who tune the bands to enjoy the programming, and others whose main interest is DX, or long-distance reception, pursued mainly for the thrill of the hunt," he writes.

"The purpose of this book is to relate the story of the rise of shortwave broadcasting and the listener community that was attracted to it."

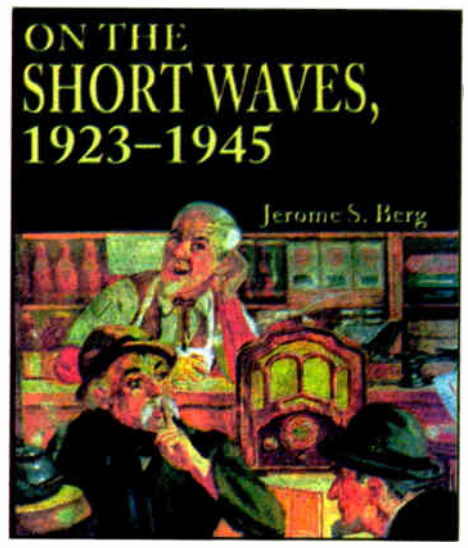
He succeeds in marvelous fashion.

Berg, a Massachusetts attorney and member of the Executive Council of the North American Shortwave Association, discusses many aspects of SW: its early days, its roots in AM broadcast, its maturing process in the 1930s, shortwave in the United States and its role in the war years of the 1940s.

Radio history buffs will enjoy this hardcover. I loved the black and white illustrations, and couldn't stop flipping through.

Berg gives us pages and pages of studio and tower photos, licenses, QSLs and promotional brochures from early AM stations. He reprints receiver ads and samples of publications like The Dialist, The Globe Circler, Radio Guide and Radio Digest.

The intriguing topic of verifications merits a chapter, and Berg knows this material well; he is chair of the Committee to Preserve Radio Verifications.



The founding of Voice of America is here. We read about broadcasters like W8XAL, the shortwave outlet for WLW programs, and about PCJ in the Netherlands, still a presence today.

People had an intense relationship with their radios back then, as Berg demonstrates through editorial cartoons, poems and elegies.

One Shakespeare-inspired QSL from Jack D. Rhea and Lee Baker of Kickapoo Prairie Broadcasting station KICK(AM) in Springfield, Mo., was written in 1950. Their response to distant listeners began:

To verify or not to verify, that is the question.

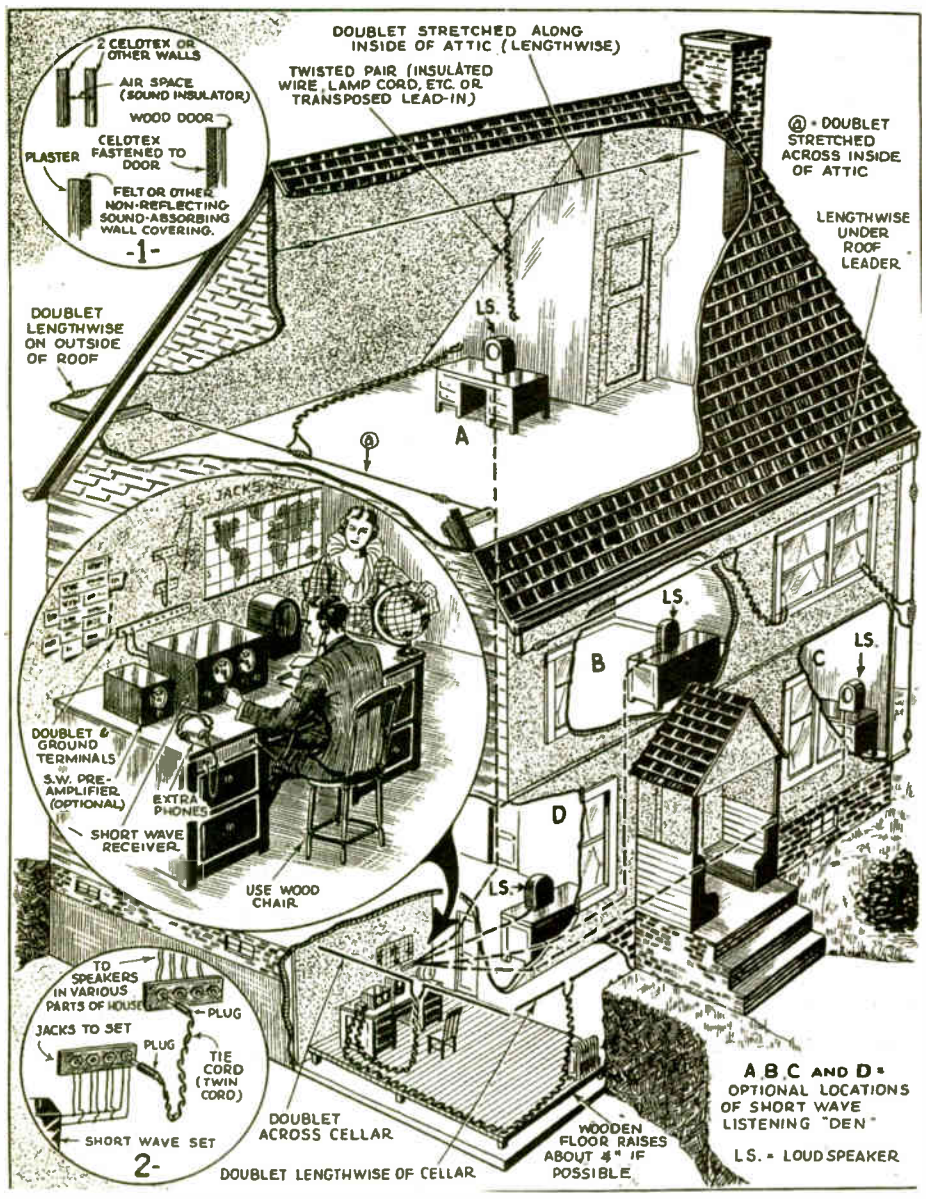
Whether 'tis nobler in your mind to suffer

Wondering of your outrageous fortune in hearing our call

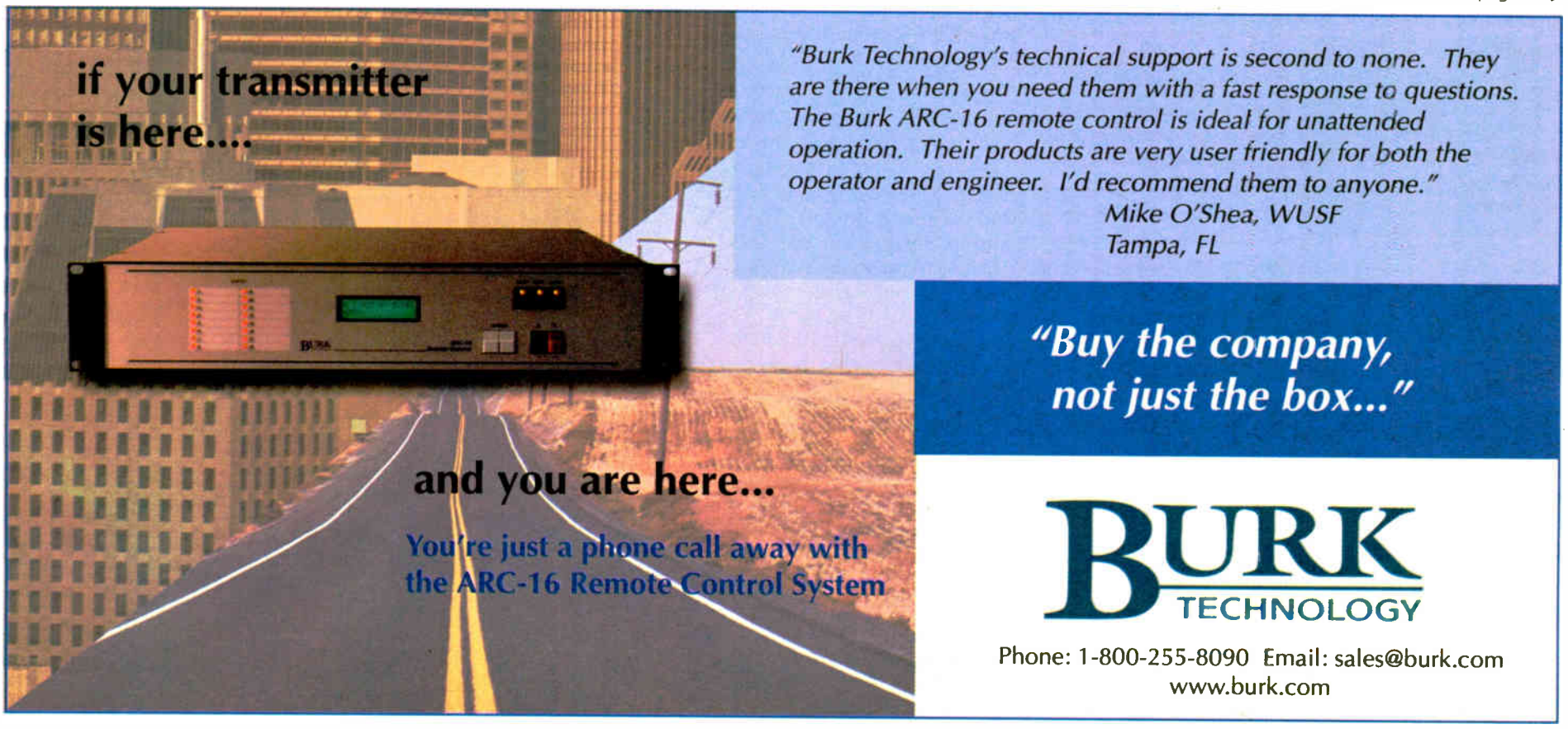
Or for us to take arms against a sea of reports, and

By verifying, deplete them?

See SHORTWAVE, page 8 ▶



'On the Short Waves' includes this setup for the well-equipped DXer of 1935, first published in the 'Official Short Wave Listener' of that year



World Radio History

First LPFM Filings Are In

As Lobbying Intensifies, 722 Low-Power FM Applications Arrive in First Commission Window

by Leslie Stimson

WASHINGTON FCC staffers are reviewing about 722 applications for 100-watt low-power FM stations. They hope to have the first LPFM construction permits out to those deemed eligible to own the stations by mid-August.

Participation

At 309 applications, California had the most entities interested in owning an LPFM. The District of Columbia had the least participation, at four applications.

Interested filers from the following states were eligible to send in the first applications: Alaska, California, the District of Columbia, Georgia, Indiana, Louisiana, Maine, the Mariana Islands, Maryland, Oklahoma, Rhode Island and Utah.

The first application deadline was extended three days to June 8 because of computer problems at the commission that delayed staffers reviewing what had been filed.

A second filing period for the next batch of states begins at the end of August. At that time, the commission will accept applications from Connecticut, Illinois, Kansas, Michigan, Minnesota, Mississippi, Nevada, New Hampshire, Puerto Rico, Virginia and Wyoming.

As applications came in, opponents and supporters continued to lobby Congress on the issue.

The folk duo Indigo Girls used their music to encourage lawmakers in June to support allowing more low-power FM allocations at an event sponsored by the Low Power Radio Coalition.

Photo by Leadership Conference on Civil Rights

Amy Ray and Emily Saliers of the Indigo Girls perform in the Senate Commerce Committee room at a press conference to support LPFM

"In our industry, we know all too well that there will never be enough room on the dial to provide access for all deserving music," wrote Amy Ray and Emily Saliers of the Indigo Girls, as well as several other performers, including Bonnie Raitt and Joan Jett, in a letter sent to members of Congress.

In a letter to colleagues supporting LPFM, Sens. John McCain, R-Ariz., and Bob Kerrey, D-Neb., said they believe the FCC addressed technical interference concerns to existing stations in its LPFM rules.

In response, NAB said Sens. Connie Mack, R-Fla., and John Warner, R-Va., have signed S. 2068, bringing to 36 cosponsors of the measure that would retroactively prohibit the FCC from implementing the new service.

National Public Radio President/CEO Kevin Klose said the FCC is acting so quickly to get the new stations on the air that the FCC is not acting in the public interest.

The first applicant list is available online at *www.fcc.gov/bureaus*. Click on "Mass Media," "Public Notices," "Brdcast Applications" and then "ap000621.txt."

NPR Streamlines EAS Notification

by John Holt

ORLANDO, Fla. Still waiting for an emergency alert system test over the newswire or your radio network? When was the last time you looked at your authenticator word list? Do you know what a Primary Entry Point is?

Don't worry about the first two questions; the national networks were officially disconnected from the EAS in November 1998 and the authenticator envelopes have also disappeared.

It is not clear whether the EAS waivers will be extended or if stations will have to provide EAS equipment at all repeater locations.

But PEP is a different story.

These points were addressed at the Public Radio Conference this spring in Orlando, Fla. Richard Rudman, director of engineering for KFWB(AM) in Los Angeles and chair of the FCC's National Advisory Committee for the Emergency Alert System, spoke to public radio engineers at the session titled "EAS — Three Years Later."

Rudman also serves on the Primary Entry Point Advisory Committee.

PEPs replace networks

Rudman said Primary Entry Points, or PEPs, have replaced the national radio networks. Rudman defined PEPs as "a small group of primarily AM stations peppered throughout the continental United States, Alaska, Hawaii and Puerto Rico and fed from a headend in Washington."

Rudman said it is impossible to cover the continental United States with 30 AM stations.

Communications

According to a paper distributed to attendees at the session by National Public Radio, "The FCC's Emergency Alert Advisory Committee has been interested in establishing first-level, reliable, communications to a broader number of broadcast facilities, especially those in state capitals, to help facilitate communications to local governments in the event of the disruption of essential federal functions."

In the statement, NPR announced that it is now distributing national-level EAS activation by monitoring a PEP station and passing the signal to NPR member stations via the existing so-called News Squawk satellite channel.

Stations need only connect to a spare input on their EAS decoder. This may provide national-level Emergency Action Notification to areas where it was previously not available, or was only available as a secondary method

See EAS, page 11 ▶

World Radio History

DIGITAL NEWS

Changes Lie Ahead for India

by Frederick Noronha

NEW DELHI, India This nation of 1 billion potential listeners is planning digital audio broadcasting pilot services, access to the WorldSpace satellite system and the conversion of mono FM stations to stereo.

All India Radio Director for Planning and Development Dr. Hari Om Srivastava said DAB pilot services, using the Eureka 147 system, are planned to start in India soon.

"Our proposal is before the government. Maybe we could start it by next year in the four main metro cities of India," including Delhi, Mumbai, Calcutta and Chennai-Madras, Srivastava said.

The cost of DAB receivers will be a major issue in a country such as India, where the bulk of the population earns low incomes.

Pricing

Srivastava said receiver prices are coming down. Last year, DAB receivers cost the equivalent of $1,180. Now prices have come down to $150 to $300, he said.

There are no Indian manufacters for digital audio receivers.

"We feel that if DAB is started, because of India's large population (including a significant middle class), the need for receivers will be high and the costs could drop further," he said.

Meanwhile, Srivastava has announced that All India Radio — government-controlled and historically the only broadcaster in the country — is planning a tie-in with WorldSpace for satellite digital radio.

WorldSpace is beaming satellite services to Africa via its AfriStar satellite.

"We plan to hire one beam to cover West Asia and East Africa," Srivastava said. This would carry programs from the AIR External Services division to expatriate Indians in Africa and the Middle East.

Later, AIR plans to cooperate with WorldSpace in providing programming for the AsiaStar satellite, which launched in late March.

Srivastava hinted that India is discussing a variety of ways to extend radio coverage across the country.

"Earlier the emphasis was on medium-wave broadcasting in a big way. Some 10 years back, we started FM to provide high-quality service. There are now some 110 FM stations, many mono, broadcasting across India," Srivastava said.

The government of India is to lose its control (over radio and TV broadcasting) in the near future.

— Hari Om Srivastava

"We are also converting our Vividh Bharati (music and commercial radio stations) to FM."

He said that the mono FM stations were being converted as well to stereo in all state capitals. India has 25 states within its borders and a few more centrally administered union territories.

Localism

As it is in the United States, localism is an issue in India. Asked about the limited number of local broadcast hours heard on a number of radio stations, Srivastava said there were "some problems in the sanction of staff."

But, he said, the problem has been "sorted out" by the redeployment of staff, and cited plans to increase local broadcasts from some 70 transmission centers from one shift to three shifts each day.

He also said long-overdue changes in making the Prasar Bharati Broadcasting Corp. autonomous were "coming shortly." The PBBC is a holding company for publicly funded broadcasting companies in India.

"The government of India is to lose its control (over radio and TV broadcasting) in the near future."

The other major issue facing Indian broadcasting, Srivastava said, was the bidding for 108 private FM stations being set up across 40 broadcasting centers in the country.

This is the first time private stations are being allowed in India. Earlier, private FM broadcasts were carried via AIR stations and transmitters.

Bidding was much higher than expected. There were 360 applications from 103 companies for 108 FM licenses covering 40 cities.

Plans to open the airwaves of India took far longer than expected, and there was a great deal of criticism over the high rates for which licenses were sold at the March auction.

India Today, a national news magazine participating in the scramble for FM licenses, said the bidding came "perilously close to a gambling den."

In some cities, bids were low and therewere few takers. But the Information and Broadcasting Ministry netted about $95 million, more than four times the amount earned by the government's All India Radio in 1999.

Hari Om Srivastava

Some of the big names involved in the bidding were New Media Broadcast Ltd., which owns Zee Telefilms, and the Observer Network. Many large newspapers including Times of India, India Today, the Observer and Business India Publications have rushed into the FM world.

But some quarters have voiced fears that the fees being charged to run FM stations could inhibit their growth or result in the success only of highly commercialized operations.

New stations

The new stations are likely to be on air by the end of October. In the next phase of bidding, some 80 additional localities will be given private FM stations.

Asked about fears of excessive commercialization at the expense of educational and informational programming, Srivastava said Prasar Bharati planned more educational programs.

He said some educational centers like the Indira Gandhi National Open University and the Santiniketan, another university in eastern India, had shown interest in using radio and TV for educational purposes. "We are in dialogue with them," he said.

Srivastava said the Doordarshan (DD) state-run, national TV service had recently set up an educational channel.

However, he said that with the loss of government control, broadcasting in India would also be hard-pressed for funds. It would have to stand on its own and raise its own revenues, Srivastava said.

He said AIR and DD were earning approximately $113 million and current expenditures (not including expansion costs) run about $272 million.

"The pressure (to earn more funds) is already on," he said.

Some revenue will be generated from the granting of FM licenses to private broadcasters, he said. Cricket matches and other popular events could also bring in additional revenue.

"Previously (radio and TV broadcasters) were treated like any other government department," said Srivastava. "But soon, there will be a change in terms of our budgetary allocations and the funds will come in terms of grant-in-aid and loans (which would have to be repaid)."

AIR has 184 full-fledged stations, 10 relay centers and three exclusive Vividh Bharati commercial centers. It operates 145 medium-wave, 55 shortwave and 105 FM transmitters.

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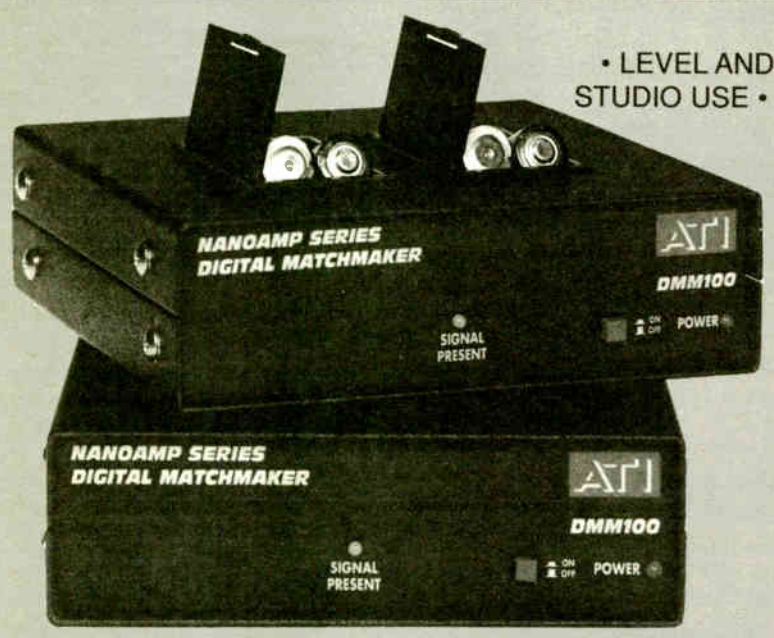

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World Radio History

◆ NEWSWATCH ◆

▶ NEWSWATCH, continued from page 2

America's Public Television Stations and the Corp. for Public Broadcasting have asked the U.S. Court of Appeals for the District of Columbia Circuit to reverse a recent FCC ruling that would make noncom radio and TV stations bid for new spectrum not specifically reserved for noncoms.

Commercial stations already must bid for new spectrum after Congress ruled the federal government should be compensated when stations receive new frequency allocations. At the time, the FCC said it would decide later how noncoms would be affected by that ruling.

The FCC ruled June 8 that noncoms must bid in the open market for new spectrum that is not specifically reserved for noncom stations. That is what NPR, APTS and CBS are disputing.

NPR President/CEO Kevin Klose called the new ruling "bad public policy."

NAB Opposes More Fees

WASHINGTON NAB says radio stations that have already paid licensing fees for music shouldn't have to pay another fee to air the music on the Internet. That is NAB's position whether the station is simply duplicating its format on the Internet or whether the station is Internet-only.

The House Copyright Subcommittee heard viewpoints at a hearing on whether radio and TV should pay ASCAP, BMI and SESAC separate fees when streaming music over the Net. The Recording Industry Association of America says stations should pay the fee to performers as it is a different use of the music.

More than 2,000 stations duplicate programming on the Net, said NAB President/CEO Eddie Fritts. He also said the relationship between stations and record companies is "symbiotic," and quoted one record executive as saying, "Without airplay, we'd all be in the door-to-door aluminum siding business."

Cumulus Q1 $47.7 Million

MILWAUKEE Cumulus Media Inc., the third-largest radio group at 300-plus stations, reported first-quarter net revenues at $47.7 million. That compares to $31.2 million for the first quarter of 1999.

Broadcast cash flow in the first quarter of this year was $5.4 million.

"We believe that our performance relates to a practice of large discount sales that drove down our average unit rate," said Lew Dickey, executive vice chairman and newly appointed president of Cumulus Broadcasting.

BUSINESS DIGEST

Dalet Goes Public

PARIS Broadcast software developer Dalet Digital Media Systems has gone public.

The French company has raised about $32 million in an initial public offering on the Paris stock exchange. The stock began trading on the Nouveau Marché portion of the Paris stock exchange using the designation "7617" on June 23. The Nouveau Marché is designed for companies seeking capital to finance business development

Dalet offered about 1.9 million shares on June 22. On June 23, the first trading day for the stock, the price was about $16 a share. A Dalet spokeswoman said that price was about where the company expected the stock to trade.

Of the total stock purchasers, more than 60 were institutional investors. Dalet said the proceeds would go towards continued corporate expansion.

U.S. investors interested in purchasing the stock can look it up on Reuters (DALE.LN) or Bloomberg (DALE NM.)

ARMA Grows in Baltimore

BALTIMORE A regional trade show sponsored by a manufacturers' group attracted a bigger audience in its third year, and plans are in the works for another.

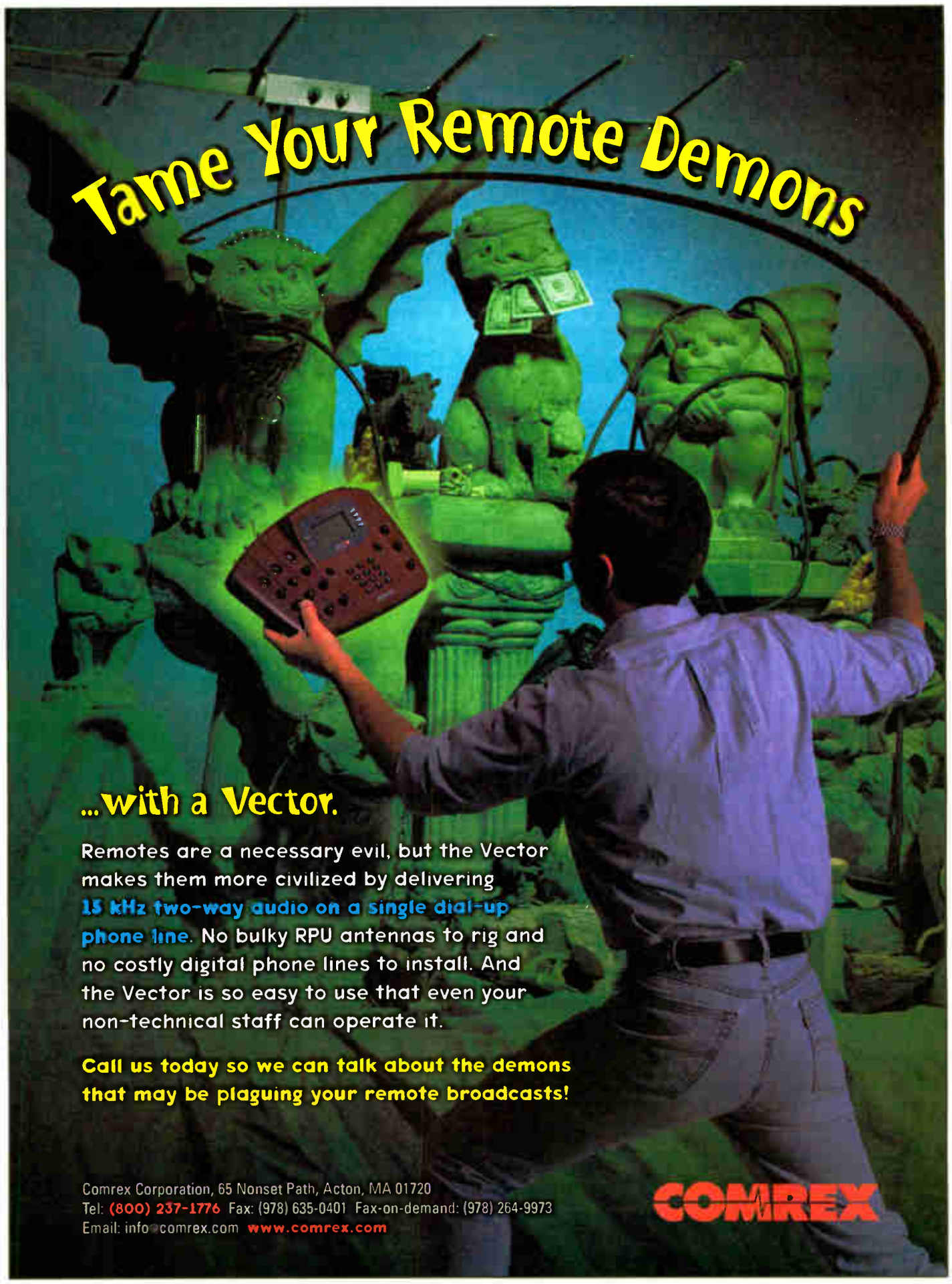
ARMA Expo 2000 was held in a hotel at the Inner Harbor of Baltimore in June. It drew 182 people, mostly engineers from the Mid-Atlantic area. Of that number, 34 were exhibit staff.

Seventeen companies sponsored booths. Sessions were highlighted by a keynote from Tony Masiello, vice president of broadcast operations for XM Satellite Radio, who gave a peek at plans for XM's 86-studio facility in Washington (**RW**, May 10).

SBE chapters from Baltimore, Washington and Ft. Meade held meetings concurrently.

The expo was sponsored by the American Radio Manufacturers Association. Organizer Vince Fiola of Studio Technology said ARMA will definitely hold another show, probably next year in a city yet to be decided.

The Aug. 2 issue of **RW** will include photos from the Expo.



World Radio History

Olympic Setup Planned

▶ OLYMPICS, continued from page 1

fencing, Westwood One plans to provide more than 520 hours of Olympic coverage.

Programming includes live coverage of events from 5 to 9 a.m. Eastern and again from 8 p.m. to midnight. West Coast affiliates will receive the feed on a delayed basis.

Michael said more than 250 Westwood One affiliated stations are expected to clear the long-form programming.

Olympic updates

Olympic updates will be broadcast three times an hour. Michael said updates would include both Westwood One-branded reports and unbranded reports to accommodate as many affiliates as possible.

Westwood One distributes CBS Radio, CNNRadio, NBC Radio and Fox News Radio.

Seventeen announcers, five producers and three engineers will make up the Westwood One broadcast team. Everyone except the engineers will arrive in Sydney one week prior to the Sept. 15 opening ceremonies.

Engineers will arrive a month early to build radio studios in the NBC Television complex inside the International Broadcast Center located in Homebush Bay. The International Broadcast Center will house studios, control rooms, edit suites and transmission facilities.

WW1's short-form combo control room at the 1996 Atlanta Olympic games

"They'll literally be building studios and wiring them from scratch. Only the walls and some studio furniture will be there," Michael said.

Westwood One has worked closely with the Sydney Olympic Broadcasting Organization. SOBO will handle equipment needs from the 39 Olympic venues.

That includes building and wiring the commentary units Westwood One will use for its live coverage.

The commentator positions include a mixer board with connections for headsets and playback of taped material from MiniDisc or DAT.

"We won't cover every venue. Things like track and field, swimming, basketball and baseball are what we'll concentrate on," Michael said. "However, the results from all of the events will be relayed."

Michael said Westwood One is sending a veteran crew of announcers to Sydney. Larry Rawson will host track and field events, while Kevin Calabro and Billy Packer share the call on USA basketball games. Barry Landers will handle the network's swim coverage.

George Thomas, director of broadcast operations at Westwood One, said WW1 and NBC TV would share facility space and some equipment inside the IBC.

Westwood One will have three complete studios there, Thomas said. One will be for long-form programming and include a complete control room. A "combo studio" will be used for the hourly updates. The third studio will accommodate the Spanish-language talk and sports radio network Radio Unica.

Westwood One's studios will use Logitek ROC-10 audio consoles.

"We really like the flexibility (Logitek) offers. That is the one thing you need at the Olympics when situations can change on the fly. We can set these up for any particular need we may have," Thomas said.

Sydney 2000 Games At a Glance

Sept. 15-Oct. 1 in Sydney, Australia
More than 10,300 athletes from more than 200 countries
37 Olympic sports and disciplines
300 medal events
39 Olympic venues
Main Olympic Stadium is in Homebush Bay

One will have ISDN capability on a Telos Zephyr on a direct dialup to New York. However, Thomas said the reliability of an E1 circuit is "very good."

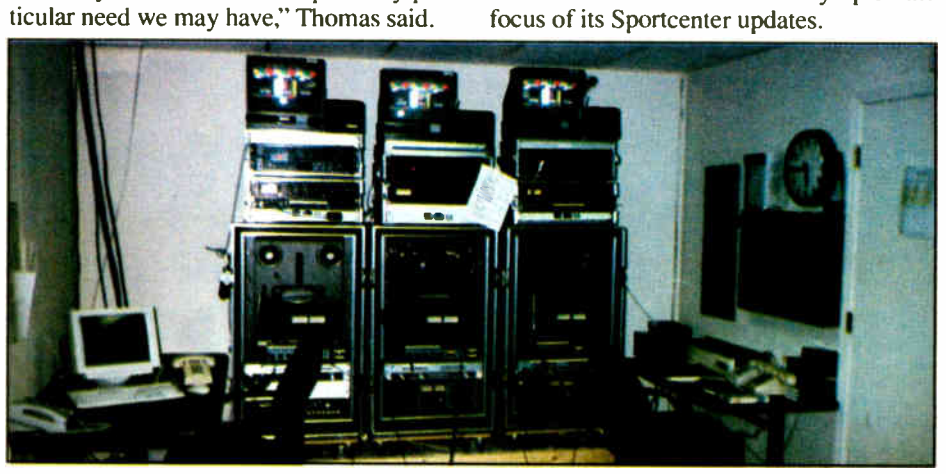
"It's a wider band width than a T1, which is what we normally use in the U.S.," he said. "We used an E1 circuit from Barcelona in 1992 with only one failure over the two weeks. I'll take that anytime."

Thomas, along with Westwood One engineers Wally Tienken and Ted Schneider, will make the trip to Sydney. Thomas said engineering an Olympics is always a challenge.

"You don't quite know what to expect until you get on site. But it's been my experience that the host broadcaster, in this case the Sydney Olympic Broadcasting Organization, will be our best friend once we get there."

Westwood One will certainly not be the lone radio broadcaster in Sydney.

Washington Post columnist Tony Kornheiser will broadcast his ESPN Radio midday show from the IBC compound. The network will make the Olympics the focus of its Sportcenter updates.



WW1 edit stations at the Atlanta games

Three digital editing stations equipped with Cool Edit Pro software will be available for announcers and producers to mix reports and record the hourly updates.

Thomas said the commentator positions at the venues would include four-wire circuits to feed audio from the venues to the IBC. IFB talkback circuits return to the announcers on site.

Commercial origination will take place on site in Sydney.

Thomas said 360 Systems Instant Replay machines would be loaded with commercials and music bumpers. The result will be a fully mixed show sent to New York.

An E1 circuit provided by NBC Television will be the primary path from Sydney to New York.

"It will be uplinked to 30 Rock in New York, where (Westwood One) will have a T1 line installed to bring those channels of audio to our facilities on West 57th Street," Thomas said.

If the primary path fails, Westwood One-On-One Sports Radio Network host Jay Mariotti will broadcast live for two weeks from Sydney. Along with Mariotti's show, the all-sports network will air "Olympic Minutes" updates three times an hour.

Listeners may be able to hear first-hand accounts directly from U.S. Olympic athletes on the SportsFan Radio Network. PD Ryan Williams said the network is attempting to line up a few USA gold medal hopefuls to file reports from down under, "maybe like a diary kind of thing," Williams said.

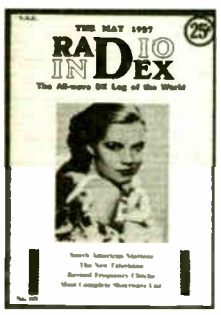
USA Today columnist and SportsFan Radio contributor Rudy Martzke will report from Sydney, Williams said.

The number of individual radio stations broadcasting from Sydney will be significantly lower compared to Atlanta four years ago. The U.S. Olympic Committee, which is issuing media credentials for the 2000 Games, expects just a handful of large market stations to make the long and expensive trip to Sydney.

Short Waves, Great Pix In Book

▶ SHORTWAVE, continued from page 4

Reached by phone at his law office, Berg told me that this is his first book, "almost a lark, really." The history is detailed and well documented. If the law gig ever dries up, he has a second calling.



RADEX was widely read by long-distance listeners. This copy is from 1937

I only wish he had devoted as much energy to describing the medium today. His story concludes with WWII, at what Berg calls "the end of the beginning of shortwave broadcasting."

Shortwave may not be what it was, and even Berg says it is in decline today. But SW remains an important part of the global communication landscape. At the recent NAB2000 convention, Adil Mina, an executive of Continental Electronics Corp., told me, "Satellites fail. The Internet can be stopped. Shortwave is today the only way you can send a message and be sure no one can censor it, no one can stop it."

Perhaps Berg can be persuaded to take on the challenge of describing the current role of shortwave. Meanwhile, buy this one for the radio buff in your life, or for yourself.

Call McFarland & Co. in North Carolina at (800) 253-2187. The cost is $46.50 including shipping.

Tell me about your own favorite radio books at *pmclane@imaspub.com* or write to the address on the inside last page.

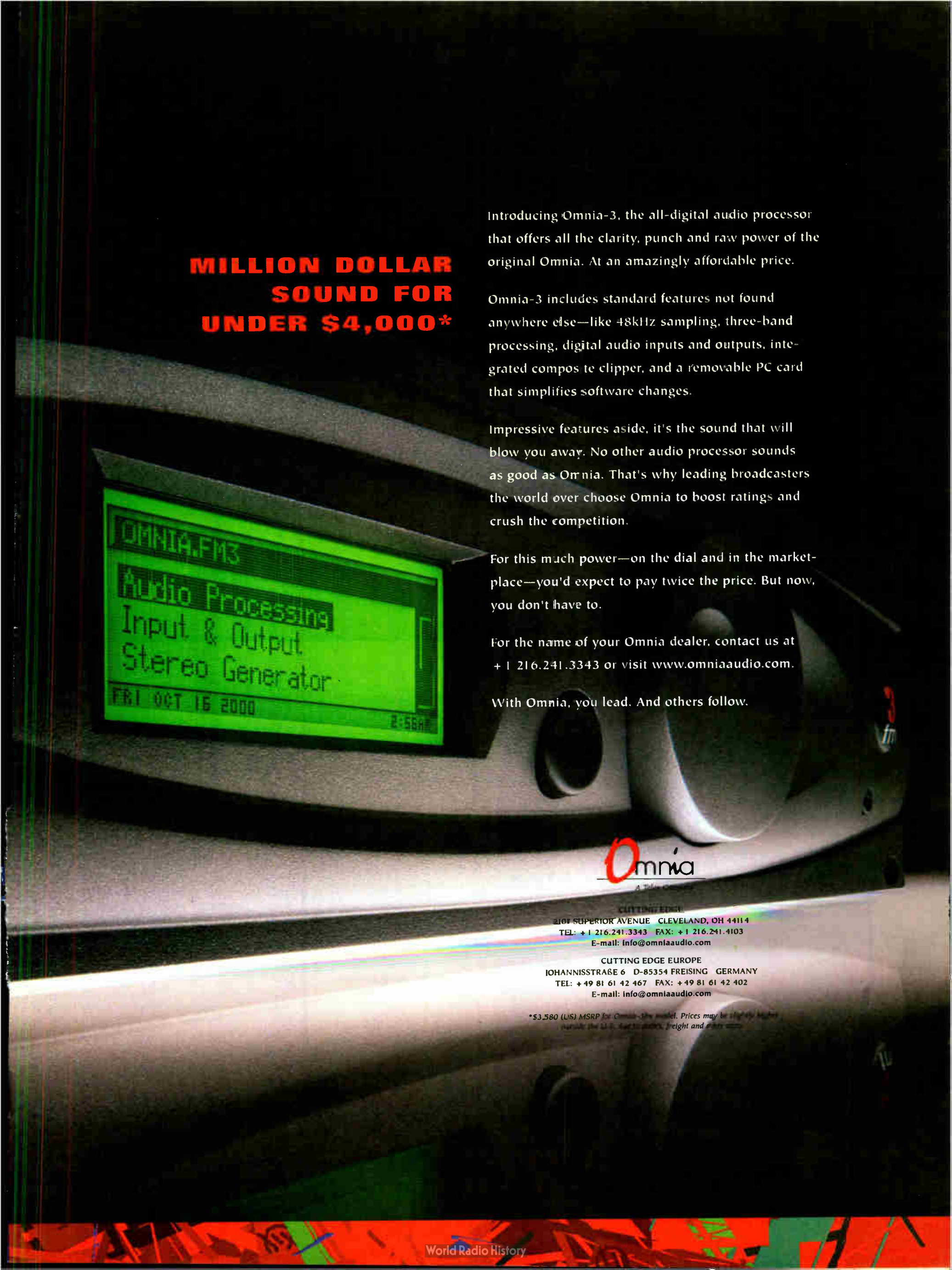
WESTWOOD ONE

Bound for Sydney: WW1 Studio and Field Gear

Logitek ROC-10 audio consoles
360 Systems Instant Replays
Denon DN-C630 CD players
Fostex D-5 DAT recorders
Sony MDS-E11 MD recorders
Marantz PMD-650 field MD recorders
Shure SM7 microphones
Koss headphones
Fostex 6301BX speakers
Sony APR5003 open-reel decks
McCurdy KP950 keypad and CS9500 Intercom/IFB system
Datatek 50/25 routing switcher
Telos Zephyr ISDN
Telos 100 hybrids
Furman 60FUARPRO 220-/110-line voltage regulators

World Radio History

MILLION DOLLAR SOUND FOR UNDER $4,000*



Introducing Omnia-3, the all-digital audio processor that offers all the clarity, punch and raw power of the original Omnia. At an amazingly affordable price.

Omnia-3 includes standard features not found anywhere else—like 48kHz sampling, three-band processing, digital audio inputs and outputs, integrated compos te clipper, and a removable PC card that simplifies software changes.

Impressive features aside, it's the sound that will blow you away. No other audio processor sounds as good as Omnia. That's why leading broadcasters the world over choose Omnia to boost ratings and crush the competition.

For this much power—on the dial and in the marketplace—you'd expect to pay twice the price. But now, you don't have to.

For the name of your Omnia dealer, contact us at +1 216.241.3343 or visit www.omniaaudio.com.

With Omnia, you lead. And others follow.

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*$3,580 (US) MSRP for Omnia-3fx model. Prices may be slightly higher outside the U.S. due to duties, freight and other costs.

World Radio History

Purchase Creates Broadcast Richardson

▶ RICHMOND, continued from page 1

distributor in Mexico.

The two entities will share products and talents and operate together under the name Broadcast Richardson. The six Indiana staffers who made up what was Broadcast Richmond will continue to operate from the Indiana facility. The new Broadcast Richardson will retain Richmond's six overseas staffers as well.

Ziemer stays

Joe Ziemer, founder and president of the former Broadcast Richmond, will serve as vice president and general manager of the new Broadcast Richardson.

Bruce Johnson, Richardson's president and CEO, said the acquisition allows the company to use Broadcast Richmond's talent to expand its international sales, which accounted for 10 percent of Richardson Electronics' broadcast sales last year.

BROADCAST RICHMOND

"We have a lot of synergy we can share as a result of this acquisition," Johnson said. "Joe Ziemer brings a tremendous amount of experience to the company."

With the acquisition, Ziemer said Richardson hopes to grow its broadcast business, which accounted for 10 percent of the company's sales last year, and create pre-wired, easy-to-use systems to accommodate the increasing number of non-technical employees at radio stations.

"What you have is the nontechnical people at the supplier talking to nontechnical people at the station about technical matters," he said.

As a result, "So many of the distributors in this industry have huge returns of equipment. We're going to address that problem."

As big radio conglomerates have purchased small radio stations, the number of engineers at radio stations nationwide has lessened, putting nontechnical people at the helm, Ziemer said.

He believes customers are returning products for three reasons: the product doesn't fit the application, the customer cannot figure out the product or the purchaser ordered the wrong product — all pointing to a lack of technical knowledge.

Joe Ziemer

Ziemer said the combination of Richardson's equipment with the technical talent of Broadcast Richmond's staff would allow the new, merged Broadcast Richardson to install prewired, straightforward solutions for multiple studios in a stereo or mono configuration.

Prewired program rack designed and integrated by what is now called Broadcast Richardson

"Companies that do not have major resources backing them can't do that," Ziemer said, citing Richardson's 1,000 employees and $400 million in net cash from operating activities in 1999. "That will be a novel offering."

To meet the anticipated demand, the new entity expects to add two Richardson employees as well as other industry talent to its staff later this year and will continue to operate from its Indiana facility.

Ziemer is also looking forward to being able to service and honor the warranties of the former Broadcast Richmond's 800 customers, who are predominantly international, as well as new clients through Richardson's offices.

"No company in broadcast equipment supply in the United States has ever had so many overseas offices that accept local currencies as payment."

If you want to know what's new in AM processing, ask the guy who's been thinking about it since 1962.

BOB ORBAN is a quiet legend in radio. Which is ironic, considering all he's done to engineer louder, clearer, punchier sound in AM broadcast. But after nearly four decades studying, listening, and thinking about audio processing, that wealth of experience has found its way into the latest release of the OPTIMOD 9200 version 2.0. What began as the industry's first 100% digital, fully programmable AM processor is now ready to take major market sound into the new millennium – with unmatched performance, price, and, of course, Orban engineering.

ART AND SCIENCE

Version 2.0 takes the polished, proven sound of the OPTIMOD-AM and blends it with exceptional digital controllability. So now you have a much wider range of sound signatures at your fingertips, with factory presets that guarantee outstanding results even if you aren't an audio processing expert. Day-parting is easy, too, just by using the 9200's versatile remote control to recall presets. Whether it's sports, news/talk or music, Orban's exclusive receiver equalizer overcomes the muddy sound of typical AM radios without sacrificing loudness or coverage. The 9200 delivers a bright, clear, punchy sound at a price that's even less than its analog predecessor. So small market stations can easily achieve major market sound, while larger stations can customize their sound precisely for their format and target demographic.

NOW HF READY

Version 2.0 adds presets that improve punch and intelligibility for narrow-bandwidth audio like shortwave. The same presets are perfect for MW stations needing to cut through co-channel interference at night. So the 9200 is now the perfect choice for MW broadcasters and HF broadcasters alike.

What's more, programmable bandwidth gives MW users the ability to tailor bandwidth to suit their program, and optimize coverage. You can use full bandwidth for music, lower bandwidth for voice. Or reduce your bandwidth if it's required for AM IBOC broadcasts. No other AM processor offers you more options, better engineering, or greater investment protection. That's why in just a few short years, it's become the best-selling digital processor in AM. With nearly four decades of Orban expertise behind it, it's the digital solution that deserves to be called an OPTIMOD.

THE OPTIMOD 9200

orban

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World Radio History

Stations Join NPR EAS Links

▶ EAS, continued from page 5

of reception.

NPR reported that the FCC has indicated that all stations joining the NPR national-level link should be considered LP-2 stations. An LP-2 station is a secondary monitoring source for EAN activation.

NPR is testing the system weekly but expects to drop back to monthly tests in October. For more information, NPR member stations can contact the master control supervisor, Rich Rarey, at (800) 344-3890.

Non-NPR stations can pick up their participating NPR member station as an additional input to their EAS receiver. A list of participating NPR member stations will soon be on NPR's Engineering Online Web site. Go to *www.npr.org/euonline* and scroll down to Euonline Public Pages.

Inadequate reception

Session attendee Randall Rocks, of the Montana contract engineering firm Rocks Broadcast Engineering, asked if it was appropriate to fill the void in Montana and northern Wyoming, where reception of primary stations is not adequate, by petitioning to become an alternate outlet using NPR's PEP relay.

Rudman's response was "absolutely," and that it made his job easier as stations found ways to make these plans work. He said that use in the field is affiliate-driven.

Some broadcasters asked about the National Weather Service and problems with EAS activation. EAS, with its accurate identifier codes, Rudman said, works very well, sometimes too well. EAS is faster than the old Emergency Broadcast System, so when an alert is sent, whether intended or by accident, it spreads through the system of connected EAS stations quickly.

For example, last fall, when a hurricane was traveling up the East Coast, the NWS issued a tropical storm warning for the Washington, D.C., area. But there is no EAS code or "event" for a tropical storm, so the NWS sent a hurricane warning instead, and that's what some station announcers read over the air.

EAS supporters hope to avoid this problem in the future by having the NWS create more weather "events" for EAS.

Rudman also discussed building the public/private partnerships and how EAS can add value to what stations do in their communities.

"Anything you do to make your station sound local will better ensure your station's future," said Rudman.

Multiple jurisdictions

Eric Hoehn, state EAS chairman for the District of Columbia and chief engineer of WETA(FM), discussed the problems that areas bordering on more than one jurisdiction have with implementing EAS.

Many stations in the Washington metropolitan area serve not only the District of Columbia but also parts of Maryland and Virginia. Some stations in the Washington area monitor primary stations from two jurisdictions but pass on only the monthly test from the area in which those stations are located.

Hoehn urged everyone to get involved in EAS and in their local plan. He also addressed the problem of expiring EAS waivers for repeater stations. He said the FCC granted the waivers so stations could have more time to budget for EAS equipment for repeater stations.

All stations joining the NPR national-level link should be considered LP-2 stations.

It is not clear, Hoehn said, whether the waivers will be extended or if stations will have to provide EAS equipment at all repeater locations. The only time a waiver is allowed is if the station is 100-percent simulcast, he said. Stations should check with their lawyers to be sure.

Rudman predicted the FCC would soon issue a further Notice of Proposed Rule Making concerning EAS. Among the proposals he expects to be included are requests from the National Oceanic and Atmospheric Administration for additional weather-related events codes as well as some requests from the Society of Broadcast Engineers, including one request to extend the test window from 15 minutes to 1 hour.

Rudman said he wants to see stations transmit the monthly test and is not so concerned about the time taken to do it.

World Radio History

NEWS MAKER

AudioSonix Delivers Audio and Text

Robert Rusk

AudioSonix is knocking on radio station doors, trying to raise its profile after incorporating last August.

The company calls itself the first Internet-based automated delivery system. It serves industries that move media or data files, including radio and the voice-over market. It distributes product that traditionally has been received on tape or CD, received via FedEx or distributed by specialized digital services.

AudioSonix uses ISDN, dial-up, T-1, cable modems or DSL to deliver the content.

Val Davis, vice president of sales and marketing and a co-founder, said the company can move media files of any format or size. The only limitation is the connection speed of the sending and receiving parties.

"What makes AudioSonix unique," Davis said, "is that we allow people to do single-click distribution. With a single click of a mouse, you can send an (audio) cut to 5,000 radio stations."

Cost structure

AudioSonix was conceived in 1995 and is in its third cycle of software evolution.

The company is pursuing a growth strategy and trying to raise customer awareness. Last month it offered its service free to clients who send digital files. (The service is always free to clients who receive the files, as is the software, which stations can download at *www.audiosonix.com*.)

"We're giving (the service) away just to get the software into stations, to get people to use it and pound our server," Davis said.

Regarding the promotion last month, Davis said, "This is a good opportunity for advertising agencies to jump onboard and do their thing."

Ad agencies might want to use AudioSonix to deliver a spot to any number of radio clients.

AudioSonix is privately held and has six employees. The company is based in Olney, Md. There are three co-founders: Eugene McGirr, president, was a consultant to the state of Maryland's Y2K program. He began his career at IBM, with management experience in marketing, systems architecture and services.

Darrell L. Davis, vice president of technology, developed the AudioSonix server system. He was a consulting developer and technology consultant to companies such as G. E. Information Systems. Davis, the third co-founder, has experience in production, marketing and operations of broadcast radio.

Co-Founder Val Davis

"Radio stations receive commercials on a daily basis, either on a tape or CD," said Davis. "They have to open the box and play (the spot) through a console, either on a cart deck or a digital cart system." With AudioSonix, those steps are eliminated.

"Traditional delivery methods require user interaction. If you want to receive something via ISDN, a person has to be sitting there going through the process of finding, locating and downloading the file. The same holds true for deliveries with some of our competitors like SpotTraffic or SpotTaxi. They are all Web-based and browser-based systems whereby somebody has to sit down, log onto a Web site, enter a user name and password, then download the files one by one.

"This is going on in the middle of the day, and you've got a 64- or 128-kilobit ISDN. A reasonable-sized file can take 3 or 4 minutes (to download). The same holds true with e-mail files. All these systems require interaction — and they are costly. ISDN lines are pricey — a lot of small stations can't afford that kind of overhead.

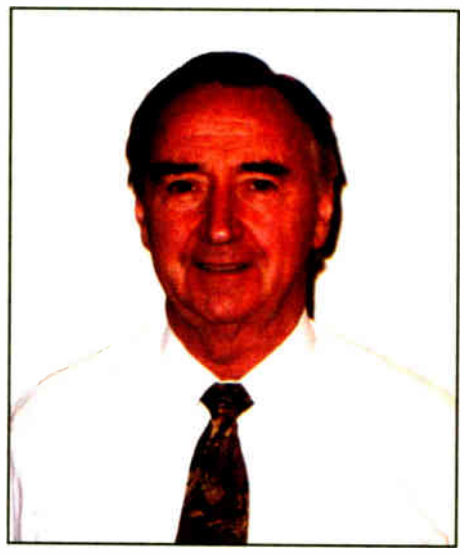
"Our deliveries can occur on any type of connection — 56k ISDN, if that's what you have, or whatever. And the whole process can be automated. You tell the software to log into the AudioSonix server at, say, 1 a.m. and pull down whatever deliveries are waiting. The only company that offers anything comparable right now is DG Systems."

He said AudioSonix differs from DG in that the delivery mechanism is the Internet.

"Our smallest package is 1.5 Megs. It can contain a 30- and a 60-second spot. This is $5 per station and the transmission can be completed easily in 15 minutes. DG charges over $50 for 1hour delivery. Their cheapest package is $13 and takes 36 hours to complete. These are all per-station per-delivery prices," he said.

Swapping production

With AudioSonix, the file is delivered electronically.



AudioSonix CEO Gene McGirr

"If you've got a computer in the production room running SAW (editing software) or Cool Edit, it arrives on that computer in a predetermined format," Davis said. "The advertising agency or other distributing party (such as a record company) is responsible for what format they send the material in."

Stations that use MP3 or other formats are able to receive cuts in a "native format" with AudioSonix.

"That means no conversion or player and exchange production on a one-on-one basis," said Davis. "That in and of itself could revolutionize a lot of what's going on in radio stations today."

Any success stories yet?

"We are still a startup company ... (but) we are getting a lot of cooperation from some of the more established broadcast entities in America."

He declined to mention specific clients.

For information about the company, call (802) 728-0044 or visit the Web site at *www.audiosonix.com*

AudioSonix calls itself the first Internet-based automated delivery system in the world.

World Radio History

THE RESULTS ARE IN:

Three out of four of the highest billing radio stations in the U.S. use Omnia.*

Four out of five of the top-rated radio stations in New York City use Omnia.**

Five out of six of the most listened-to radio stations in the U.S. use Omnia.**

AND... two out of the three top stations in Los Angeles use Omnia.***

Omnia
A Telos Company

For the name of your Omnia dealer, contact us at 1 (216) 241-3343 or visit our web site at www.omniaaudio.com.

*Source: *Duncan's Radio Market Guide*, 1999 edition
**Source: *The American Radio* by Duncan's American Radio; based on Arbitron Spring 1999 12+ TSA Cume, Mon-Sun, 6:00am-12 midnight
***Source: Arbitron Fall 1999 12+ TSA Cume, Mon-Sun, 6:00am-12 midnight

World Radio History

NEWS MAKER

New Owner, Same Bob Orban

Processing Pioneer Reflects on a New Owner, a New Optimod and the Outlook for Traditional Radio

Paul J. McLane

*This is one in a series of interviews that **RW** will publish this year with manufacturers of audio processors for radio.*

When Circuit Research Labs Inc. closed on its purchase of Orban Inc. from Harman International Industries Inc. last month, the most important asset that came with the company most likely was not a building or a room full of inventory, but the company's chief engineer.

Robert Orban, 54, founded Orban Associates Inc. along with the late John Delantoni. The company celebrates its 30th anniversary this year. It was founded in 1970 as a division of Kurt Orban Co. Inc. in the corner of the old KPGM(FM) in Los Altos, Calif. The first products were stereo synthesizers, and the company specialized in studio processing until the introduction of the Optimod-FM 8000A in 1975, the year of the company's incorporation.

Despite the sale of the company in 1989 to AKG Acoustics, again in 1994 to Harman and now to CRL, Bob Orban has been its most visible face.

His importance to the company was underscored by the new majority owner. At the time Jay Brentlinger announced the purchase last winter, he told **Radio World**, "An Orban without Bob just wouldn't be Orban."

Orban spoke to Editor Paul J. McLane during the week the sale closed.

Orban received the NAB Radio Engineering Award in 1995

RW: Where does the sale of the company by Harman to CRL stand?
Orban: Today is finally the day that the papers are supposed to be signed. There have been just a bunch of little procedural, legal things that have come up that have delayed the closing, but it has always been Harman's intent to sell to Jay Brentlinger.

RW: What are the strengths of the company? What is its mission?
Orban: Its business mission has historically been in studio products and broadcast. Seven years ago, when Harman first took over, it was decided the studio products were such a small part of the line that they would be dropped and we would emphasize broadcast signal processing exclusively. The only studio products that we make now belong in a broadcast airchain or in a broadcast production studio.

The main strength of the company ... is having a great deal of expertise and intellectual property in the broadcast transmission field. We have a strong patent portfolio and we have 25 years of experience in the business.

Another strong asset is our brand name. I believe people trust the Orban and Optimod brand names. They know we will be there for them, and when they buy an Orban product they're going to get something that meets the specifications, that is elegantly engineered and well-manufactured, and that works correctly for its stated purpose.

RW: Will the digital audio workstation portion of the business still be an important part of Orban? Workstations and audio processing are really two separate areas.
Orban: Traditionally they have been somewhat segregated, in terms of engineering particularly. Orban certainly intends to continue to sell and support Audicy.

RW: Are you doing new workstation development?
Orban: I really can't comment on the future product plans.

RW: Have you and Jay Brentlinger talked about whether you have redundant lines with the CRL products?
Orban: Yes. We're in the process of rationalizing the two product lines and figuring out where they stand in the total gamut of processing built by both companies. We will have some more announcements about that in the next few months, certainly by the NAB Radio Show.

RW: Customers would be interested in knowing how long you intend to stay together. Is there a contractual obligation?
Orban: Yeah. It's a rather long-term contract, and I have bought stock in CRL Inc. I am committed to being there and to continue to actively develop products for the company.

RW: You are a minority stockholder?
Orban: Yes. Jay has the controlling interest.

RW: Let's talk about the new Optimod-FM 8400 processor. What were the most notable comments from people when they came to your booth at NAB?
Orban: Most people saw the product as the next stage in the evolution of what has really been the thoroughbred line of FM processors for the last 25 years.

They were interested in how we had improved the processor compared to the 8200. They could see that it has more and cleaner highs, notably cleaner lows, more loudness, plus dramatic new styling, including a color LCD display.

Perhaps the most controversial aspect is that, in order to do some of the things we needed to do in DSP, we had to abandon the idea that you could listen to the output off the air through headphones if you were speaking on the air at the same time. The unit does have a 50-millisec ond time delay.

This is the inevitable wave of the future as we start doing more and more things with digital processing that we could not with analog. Most of these involve the processor knowing about the shape of the waveforms coming up. Since you can't look into the future, what you really have to do is put delays in.

In essence the audio is sensed, then delayed and operated on at some later time after the digital processing has time to chew on the information. What I'm describing is typically called "look-ahead processing."

Fifty milliseconds is still short enough that if you want to mix beats on the air, you can do it with a little bit of practice.

RW: Do programmers find that an unconquerable objection? Jocks who are used to hearing themselves in their headsets?
Orban: Forward-looking broadcasters have already realized that they're going to have to do separate processing of the headphone feeds.

In almost every case, they either have an older processor that they can put in service for that, or they have a standby air-chain, with an analog processor or something like an 8200, which does have a short time delay. They can arrange their switching so that it feeds the jock's headphones.

The more complicated question is what to do when you're out on a remote or outside broadcast. In that case, you actually can't monitor through headphones over the air anymore. You need to either have a local foldback for the jock's phones, or actually have a return path with a short delay. But 50 milliseconds is still short enough to allow reasonably tight cueing.

See ORBAN, page 15 ▶

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World Radio History

▶ ORBAN, continued from page 14

***RW:** Stereo enhancement is also a feature. Do customers want that? Is it worth the extra cost?*

Orban: We included a DSP version of our 222 analog stereo enhancer, which has been in the marketplace since the late 1980s and has received quite a bit of acceptance because of its subtle and musical enhancement.

We're also emulating another popular enhancer, whose brand name I'm not going to let escape my lips here. The patent on that expired last year. So that makes us free to offer both types of stereo enhancement.

The remarkable thing about DSP today is that the cost is coming down rapidly and dramatically. ... We have about five-and-a-half times the DSP power, as measured in millions of instructions per second, as we did in the 8200, and we're selling a box for approximately the same price. ...

From the point of view of somebody who is willing to pay about $10,000 for a processor like the 8200, they're getting a lot more value for the same amount of money these days.

***RW:** One of your competitors, Cutting Edge, just put out an inexpensive processor, retailing for under $4,000. Are you going to be active in that price-point?*

Orban: This is old news to us. We pioneered the affordable digital FM processor with our 2200 about 4 years ago. That's still in the marketplace, and we're certainly going to continue to address the affordable marketplace. Really we consider Cutting Edge a johnny-come-lately at that price-point.

I also want to respond to something Frank Foti said in his interview (**RW**, April 12) about his being No. 1 in major markets.

We have never released our unit sales figures publicly, so I don't think that anybody really knows. That was a very "on-message" thing to say, given the advertising they were doing at the time. But I don't think there is any way to actually back that up with hard numbers.

***RW:** Processing is not only subjective but also very much personality-driven. It is a personal business, is it not?*

Orban: Yeah. I think that the potential customer base is small enough that they tend to know the personalities involved. A lot of people in the industry know Frank. A lot of people know me. And I like it. It allows you to keep a personal touch, with lots of human contact.

It's also personally a lot of fun to be in these battles. It sort of keeps the blood flowing.

***RW:** Aphex and Inovonics are active in the audio processing arena, and CRL was a competitor, and there are other boxes. Who are the other players worth watching?*

Orban: Well, the ones you named. There's IDT from France, who has been actively developing processing according to its own theories.

I haven't had the IDT on the bench yet, so I really can't comment on it in any informed way. The theory behind it is interesting, but I've come up with a lot of interesting theories that, after I tested them out, proved to be nothing

See ORBAN, page 16 ▶

Past and Present

In 1969, Bob Orban had just completed a master's degree in electrical engineering at Stanford University. Not happy with the broadcast sound of albums being played on the college FM station, he developed a stereo synthesizer to enhance the station's output. This synthesizer became the first product of Orban Associates, and the first of his 25 patents.

According to a company biography, a trip to the top of a mountain led to the Optimod line of audio processors.

"I went to a mountain top with an oscilloscope to sort out an overmodulation problem we were experiencing. I found that the filters were overshooting in the stereo generator. It occurred to me that the only graceful way to solve this problem was to create a system that put an audio processor and stereo generator in one box."

Bob Orban, circa 1990

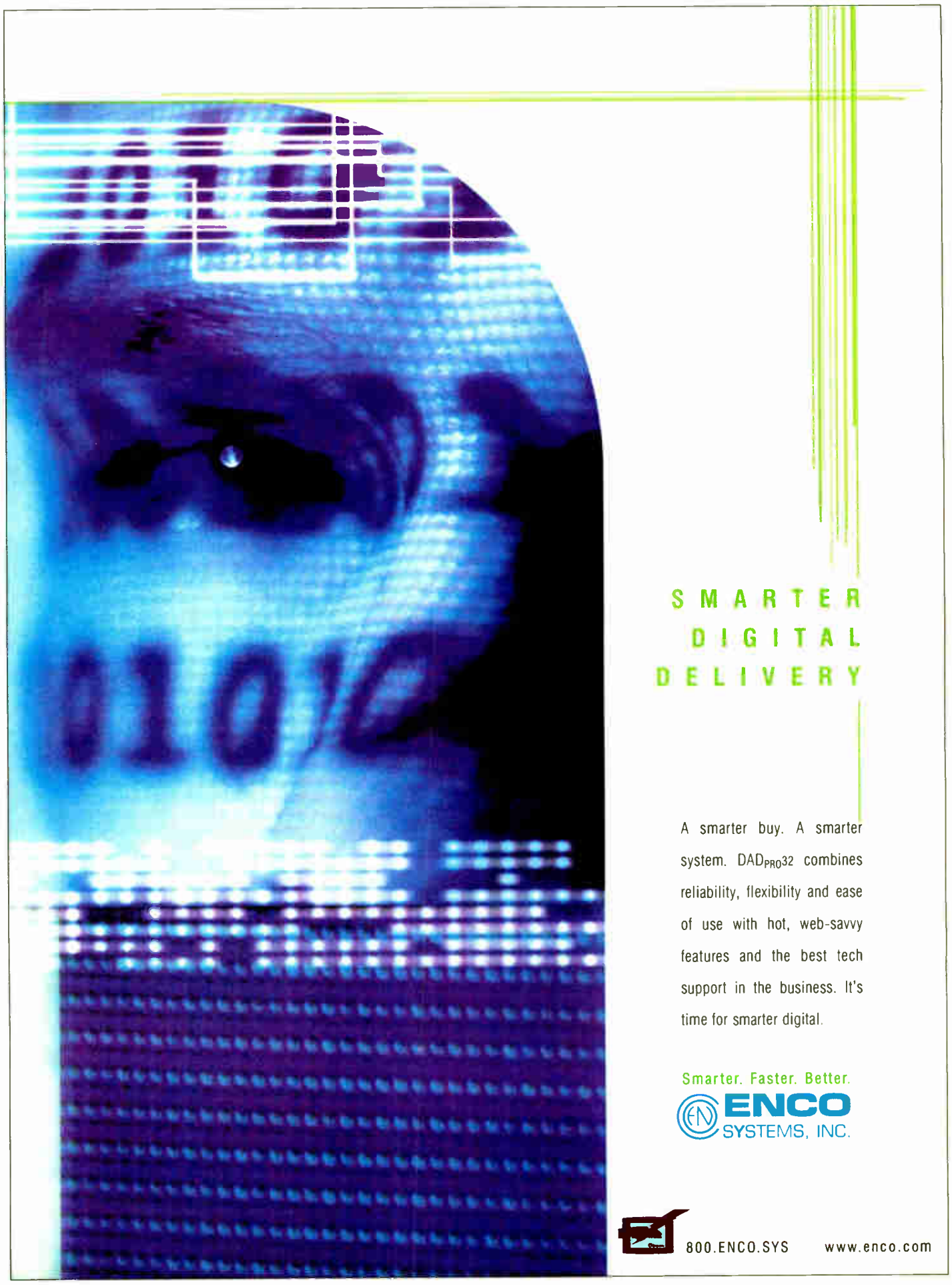
The Optimod 8000 FM processor, introduced in 1975, allowed stations to broadcast louder and more clearly while meeting government broadcast standards. A generation of "loudness wars" ensued, as did more Optimods for FM, AM, television and Webcasting, as well as the DSE 7000 and Audicy digital audio workstations.

Bob Orban was involved in NRSC committee efforts that led to the NRSC-1 and -2 standards for AM. In 1993, he shared with Dolby Laboratories a scientific and engineering award from the Academy of Motion Picture Arts & Sciences. In 1995, he received the NAB Engineering Award.

He wrote the chapter on "Transmission Audio Processing" in the NAB Engineering handbook, Eighth Edition. He is a fellow of the Audio Engineering Society.

Orban received his bachelor's in electrical engineering from Princeton University in 1967, and his MSEE from Stanford in 1968.

He also is a musician, recording engineer and producer.



World Radio History

Land the Light Where It's Needed

Charles S. Fitch

This is one in a series of articles about the National Electrical Code and how it applies in the radio station environment. Previous parts are available at www.rwonline.com

In previous sections of our series, we have covered the NEC aspects of lighting and important general concepts. Now let's get down to cases and answer the proverbial question: "Why is the light so bad in here?"

Well, why is it?

It's because you're not landing the light where it is needed and using the proper light level and/or color.

The worst production room I ever saw had harsh, widely spaced, recessed cool fluorescents with too many tubes, positioned such that the *lowest* light level was on the script stand.

Light was everywhere else. The counter tops were glossy cream. When you worked in this room, glare constantly was coming up from the counters. One switch controlled all the light in the room.

What a nightmare in bulb.

The fixture design allowed us to power down several tubes (now changed to warm white) in each fixture safely to address the problem. This was far from perfect, but it certainly improved the environment.

For production light planning, lay out the area as a function of equipment restraints and the task. Design the room to fit the ergonomic needs and equipment layout. Locate the lighting to match the activity and equipment beneath it. Then arrange the ceiling and tiles (if used) to accommodate the lights you want to install.

Install a line voltage meter on incoming AC services for the studio and the transmitter.

Penny-wise

The horrible example noted above happened because management had dictated that all space should be lighted the same, no matter what kind of work was being done, to allow easier changes to the offices. I guess this station was in the office business, not the broadcasting industry.

Why was the light so bad in this office? The architect had made a noble attempt with the given budget to locate a fluorescent over each desk in the main office, such that the long dimension of the 4-foot fixture almost perfectly occupied the space just over, and to the front of, the long dimension of each desk.

Not great, but as good as he could make it.

Just before moving in, the manager decided he wanted to squeeze in one more desk and turned the room around with the desks oriented north-south instead of east-west. Now all desks had a fluorescent in quadrature and behind each person, so that they worked in their own shadow all day, with light coming from the ends of the tubes. The light was best in the spaces *between* their desks.

Hey, but the company did get that one extra desk in.

The NEC offers little detail for businesses on the subject of light switch control. Be sensible and emulate some of the requirements for dwellings/homes.

For instance, if you have a switch for staircase lights at the bottom, install a complementary one at the top so that you do not have to climb down in the dark to turn on the lights just to see the dangerous steps you just trod in the blackness.

Similarly, in these troubled and dangerous times, leave a few select night lights on to help people find the switches and get to the doors. Or install comprehensive automatic motion detection to activate your lights.

Simple fix

A simple, cost-effective approach is to install PL porch lamps with photocells near the ceiling so that their light is cast across the room. When the main lights are on, these lamps are off. When the main lights are off, they come on.

A 12-watt PL running 12 hours a day costs about $5 a year; the bulb will last about 2 years. This is an inexpensive safety device.

Another good idea is to use illuminated light switches, or install switches near lighted exit signs so they will

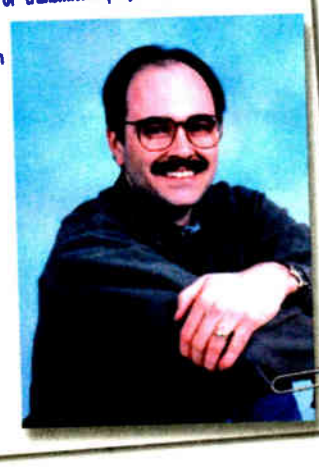
See NEC, page 22 ▶

Radio's Most Wanted

PROFILE: Jeff Littlejohn

Vice President of Engineering, Chancellor Media Corporation
Cincinnati, Ohio
Radio World reader for 15 years

Hometown: Gary, Indiana
School: ITT Technical Institute (Bachelor's Degree)
Favorite radio format: Chancellor's Jammin' Oldies
Favorite place to listen to the radio: In the car
Favorite color: Green
Favorite piece of equipment: Neutrik A2 test set
Hobbies: Spending time with my wife, Tina; my dogs, and flyfishing
Coffee: Black
Proudest moment: Any time a major studio or transmitter project goes "on-the-air."
Favorite Section in Radio World: Workbench
Best thing about your job: Working with the best engineers in the world!
Reads RW because: Radio World is the ONLY publication that focuses on the things I need to know about radio.



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Tell us why YOU read Radio World!

Send your answers to the above questions and anything else you'd like to share to: hhorris@imospub.com, or fax us at 703-998-2966 attn: H. Horris. Include your contact information, and we'll get back to you.

Fluorescent Lighting In Radio Studios

Matt Locker

In the article above, Buc Fitch concludes the lighting portion of his series on the National Electrical Code.

As a complement to that, consultant Matt Locker offers this perspective on the importance of proper bulb selection in radio studios.

The days of the sickly greenish cast from fluorescent tubes are behind us. Advances in lamp phosphors have given us fluorescent lamps that can actually make things look good and help people feel good while working under them.

'Light' discussion

In the discussion of light, three important terms must be understood: color temperature (degrees K), color rendering index (CRI) and lumens per watt (LPW).

Color temperature is described in Kelvins. The lower the number, the "warmer" or redder the color; the higher the number, the "cooler" or bluer the light.

Incandescent light is considered warm, with a temperature of around 3000 K; summertime at noon is around 5600 K. Rooms lit with warmer light tend to appear smaller; cooler light makes rooms appear larger.

A color-rendering index describes how "true" an object appears under the light source. Both incandescent and natural sunlight are rated at 100 percent.

LPW

Lumens per watt describes how much light you get per watt. The general rule of thumb has been "the better the color-rendering, the lower the LPW." Historically, Cool White has been the standard fluorescent lamp because of its high LPW.

In fluorescent lamps, an electric arc between the ends of the tube creates ultraviolet light, which strikes a phosphor coating inside the glass tube. The phosphor excites, and emits visible light.

The qualities of the light depend on the phosphor used. There are three basic formulations.

The standard lamps have been around for decades and include Warm White (52 CRI @ 3000 K); Cool White (62 CRI @ 4100 K); and Daylight (75 CRI @ 6500 K).

See LIGHTING, page 22 ▶

World Radio History

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World Radio History

Bob Orban Sees Healthy FM

▶ ORBAN, continued from page 15

special or as good as stuff I was already doing. So we'll have to see if this one indeed pans out.

There are a few processors from Italy. I haven't really spent any time evaluating them.

***RW:** How soon do you think we'll see something in the United States on the digital audio broadcasting front?*

Orban: These things always take longer than expected. Even in Europe, the Eureka system is not exactly setting the consumer world on fire, mostly because the consumers have to face the shortage and high prices of receivers.

It is going to be hard to convince consumers that FM IBOC provides enough of an improvement over FM stereo to justify a price premium on the radios, because consumers seem to be happy as clams with FM as it currently exists.

On the other hand, I think consumers will immediately see a benefit in AM IBOC. It's going to create a very dramatic improvement in the sound that they are used to getting on AM radio.

***RW:** With the IBOC plan living in the guard bands, as it were, and with FM programmers demanding that their station be the loudest, is there a conflict between the processing of audio and what IBOC intends to do with the band?*

Orban: Processing that is optimized for FM is optimized for the pre-emphasized channel, which is 75 microseconds in the United States and 50 microseconds in most of the rest of the world.

To process for this level of pre-emphasis, the most effective way we have found is distortion-canceled clipping for peak control.

IBOC, Eureka, digital television and the other digital services that use perceptual coding are a different matter altogether. None of them are pre-emphasized, and they all use a very significant amount of lossy coding. So you do not want to use clipping as a peak-limiting mechanism to drive these.

Clipping introduces extra frequencies because of the distortion it produces. This can cause the perceptual coders to waste bits trying to encode this distortion.

We have a product line, the 6200 and the new 6200S, which is a single-rack spaced version, designed for the requirements of these digital media without pre-emphasis — particularly media that use heavy perceptual encoding.

Instead of clipping, we use look-ahead limiting. This produces far fewer extra frequencies. In technical terms, you can say that the bandwidth of the modulation distortion caused by this peak-limiting process is much lower than the bandwidth of the modulation distortion caused by the clipper.

Accordingly, look-ahead limiting as used in the 6200 allows the perceptual coders to work at their absolute best because they don't have to waste bits encoding clipper grunge.

***RW:** How quickly will the typical Internet user hear real CD-quality stereo audio in real time with a dial-up connection?*

Orban: CD quality has been really abused as a marketing term. Talking about FM quality is more interesting, because most people perceive FM quality as being high-quality audio.

As far as FM quality, anybody with a DSL connection can get it today. Anybody with a cable modem can get it today. In terms of dial-up, we believe that at least one encoder, Real G2 at 33 kilobits per second in mono, can provide basically FM mono quality. It certainly sounds extremely pleasant. Microsoft's new codec is quite effective as well.

In any event, the state of the art is advancing so rapidly that whatever I say today is going to be obsolete a week from now.

Real, for example, just introduced a new product for video, and the company claims that it is getting three times the efficiency on the basis of bandwidth that it did with its older technology.

However, we're probably going to have to struggle a lot harder in order to improve the audio compression efficiency by a factor of three starting with the current state of the art. But if you compare the old MPEG-1 Layer II codecs with AAC or with Real G2 or with the Microsoft NetShow codec, you can see that we have come a long way in the last seven years.

***RW:** Will a day come when Americans get most of their information via wireless Internet into the car?*

Orban: No one has seriously addressed the issue of where the RF bandwidth is going to come from to service everyone with wireless Internet in his or her car at the same time. That's a hard problem.

I don't think that FM radio is going to go away for some decades. As long as people do a lot of radio listening in the car, I think there's going to be room for the traditional services. There's going to be some wireless Internet in the car, but the cellphone people are not able to provide a *low* fidelity signal right now that doesn't drop out frequently and have other problems.

There are a lot of technical problems still to solve before you can get reliable wireless Internet in the car. Particularly if everybody is hooked up to it in drivetime and wants to hear a different stream. Where is the RF bandwidth going to come from to do that?

■ ■ ■

*For the full text of **RW**'s interview with Bob Orban, including a discussion of the founding of Orban, his views on new owner Jay Brentlinger and future product support, visit the **RW** Web site at* www.rwonline.com

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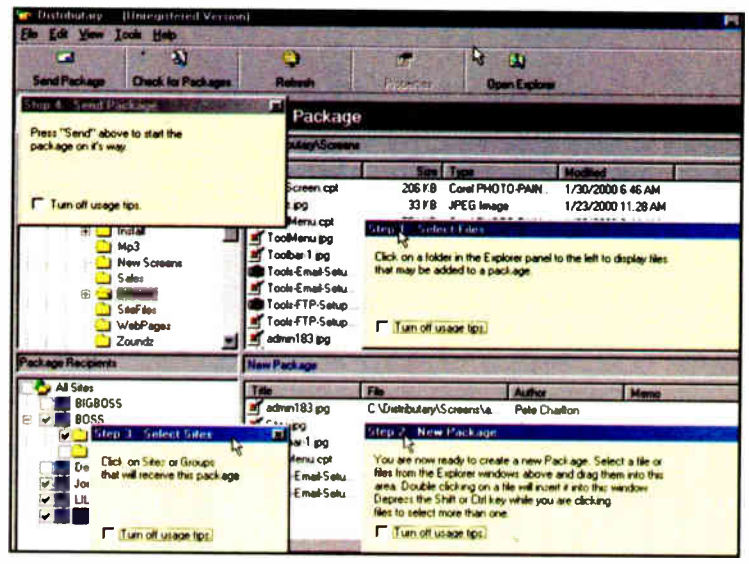
MARKET PLACE

Distributary Digital Courier Creates Virus-Free Delivery

New from Electric Works Corp. is Distributary Digital Courier, an application for one-to-many file posting and delivery that does not use files in e-mail and is free of viruses and attachments.

The company said any organization that performs audio or multimedia production needs to transfer station logs, reports, voice tracks, or that has a help desk or customer service can create a low-cost automated file delivery network using SR100 UpStream file senders and an unlimited number of R100 DownStream file receivers. Any site can send and receive packages simultaneously, or the site may be dedicated to receive-only.

Electric Works said the user can deliver new or updated files to unattended member sites or groups of sites. Distributary software uses standard PCs with an Internet connection (including 28k dial-up) and does not require dedicated hardware.



According to General Manager Adrian Charlton, "Anyone who has worked in broadcast production or traffic or with a customer or dealer support site knows the practical impossibility of trying to send large file updates via e-mail or helping a harried customer retrieve a file set from FTP using conventional methods."

A user can package, encrypt, compress and send a directory of large files for automatic delivery in less than a minute, he said.

"Any organization using Distributary would have found that its files were isolated from and immune to viruses like the 'I Love You' that destroyed so many e-mail transmitted packages," he said.

Distributary Digital Courier allows posting and notification of updates, voice tracks, bug fixes, manual additions, PDFs, graphic, multimedia, audio and original applications. It is available for free download as a 30-day demo.

There are options that allow bidirectional package interchange and cross-platform versions that deliver directly to any workstation. Extended file headers and memos that can accompany the files are delivered in industry-standard XML format.

For a limited time, the R100 DownStream receive-only version is being registered without charge.

For more information, pricing and a demo download, visit the Web site at www.distributary.com, *send e-mail to* info@distributary.com *or call the company in Texas at (817) 238-9628.*

World Radio History

Workbench

Radio World, July 19, 2000

Fried Pigeons and Other Lessons

John Bisset

Building a studio? Using sound-soak panels on the wall? Consider blocking out a wiring area that can hold punch-blocks and serve as access for cabling as shown in Figure 1. Affix some Velcro to the edge and the opening is quickly made invisible with a cover panel.

★ ★ ★

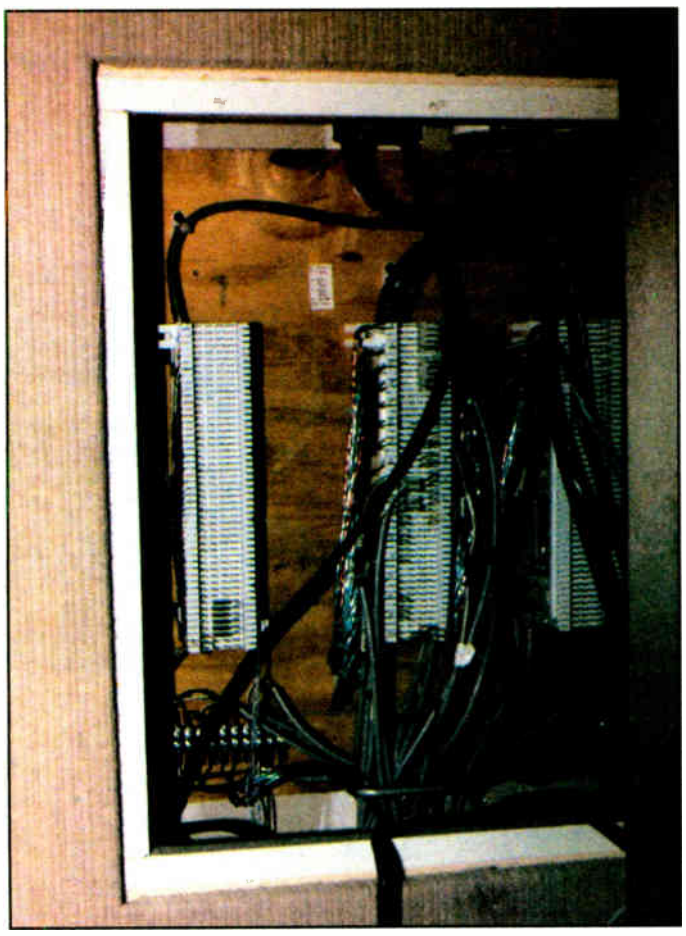


Fig. 1: This panel behind the wall hides wiring

If you are working in a studio by yourself, trying to mount some equipment, here's an old phone company trick from Lewis Moore with WJNV(FM), Jonesville, Va.

Before you begin, get a 1- to 2-inch 10-32 bolt (or whatever size rack screw your rack takes). Screw the bolt almost all the way through the rack rail and cut off the head using a hacksaw. Continue turning the bolt through the screw hole to even up the threads.

As you can see from Figure 2, place the bolts on either side of the upper rack screw hole. Use these protruded bolts to "hang" the rack-mount equipment, while you insert the lower rack bolt. The long bolts will hold the equipment in place, helping to align the lower rack screw holes with the equipment being mounted.

It only takes a moment to insert the aligning bolts, and saves your arm from supporting all that weight.

★ ★ ★

Are you working by yourself? If you're having difficulty finding qualified engineering assistance, Contract Engineer Van Clough suggests you check with your local armed services.

The training offered by the Army, Navy or other service branches is second to none; and many of these trained radio engineers love to moonlight.

There are benefits to hiring a serviceman or -woman.

Fig. 2: A modified bolt can support equipment in a rack

First is the training. You've got someone who knows electronic repairs and trouble-shooting to the component level. Second is the work ethic. It has been my experience (and Van's too) that these guys jump into problems, eagerly wanting to solve them.

They show up on time and are disciplined. They take pride in their work, and have been trained to keep things orderly and organized.

This is sounding pretty good, isn't it? Your GM will be pleased to know that they won't be demanding a hundred bucks an hour for their services — though they are probably worth it.

If you have a local base, drop by and see if there is a communications unit. Place an ad on the base's community bulletin board. You won't be disappointed. And tell us about your own experiences at *jbisset@harris.com*

★ ★ ★

Cut down on the amount of work cleaning your transmitter. If you have an "open" airflow system at your transmitter site, in which filtered air is brought in from the outside, make sure there's a good seal around the intake filters.

Figure 3 on page 20 shows how duct tape was used to seal the filter into its frame. Even a 1/8-inch gap can permit pollen to enter and contaminate the transmitter building.

★ ★ ★

This is the time of year when we're thankful for our surge protection devices. Clif Glasgow installed a few of those small surge arrestors that mount through a knockout on a breaker box. They're simple MOV suppressors designed for one-time use, with a clamping voltage of about 500 V.

For an AM site, these devices are commonly connected to 20 A breakers, and will handle both legs of a single-

See WORKBENCH, page 20 ▶

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World Radio History

MARKET PLACE

SystemsStore.com Expands Broadcast Product Offerings

SystemsStore.com has expanded its offering of new and pre-owned broadcast products.

The one-stop online store for broadcast engineers has added ADC patchbays, test equipment from Leader, Whirlwind, Ward-Beck and Neutrik, and video connectors from Kings, Amphenol and LRC.

President Rick Dearborn said, "We have been receiving requests from all corners of the United States and from around the world. Feedback from our customers has resulted in numerous enhancements to the site, including many of the new product offerings."

Drieselman studio furniture

The company said that SystemsStore.com has proved useful, particularly to contract engineers in rural areas without easy access to project supplies.

The company also added economical radio studio furniture from Drieselman Manufacturing.

The new line is aimed at radio stations in medium and small markets, and is available via online ordering.

Drieselman furniture is available in two-color combinations. Aluminum-edged corners add an extra element of durability.

SystemsStore.com is a division of RDA Systems, Inc.

For information visit the Web site at www.systemsstore.com *or call (888) 616-7980.*

The Great Pigeon Incident

▶ WORKBENCH, continued from page 19

phase 120/240 circuit that was the feed for a 1 kW transmitter.

The idea is that they will handle small spikes until the MOV is holed enough that it won't hold up to the 120 VAC. If a really big spike comes down the line, it is shunted to the neutral/ground through the breaker, and it destroys the arrestor in the process.

Fig. 3: Use duct tape to seal filter entries

Clif had all but forgotten about these suppressors until the day of the Great Pigeon Incident.

Clif's transmitter site is fed by a 12 kV line. About a mile away, the 12 kV line crosses under a main 30 kV feeder. Although the power company had properly spaced the lines, they neglected to consider the grainery across the street. The pigeons knew exactly where the grainery was, and on a pleasant winter day, they gathered by the thousands. They perched on the 12 kV feeder, right under the 30 kV line.

Suddenly, as these bird brains are wont to do, virtually the entire flock took to wing. Witnesses at the grainery viewed a spectacular sight as the birds filled the void between the two lines, wing-tip to wingtip. The power company found several inches of singed feathers on the ground, along with a few squabs slightly overdone. They speculate that the rest in the direct arc exploded or vaporized.

The 12 kV feeder went to between 30 and 40 kV for a brief period — just long enough to take out one leg of Clif's arrestor, along with a couple of cheap plug-ins. The cash machine and electronics at the local golf course, close to the transmitter site, were fried. The good news was not one piece of equipment was lost at the transmitter site — not even a fuse blew.

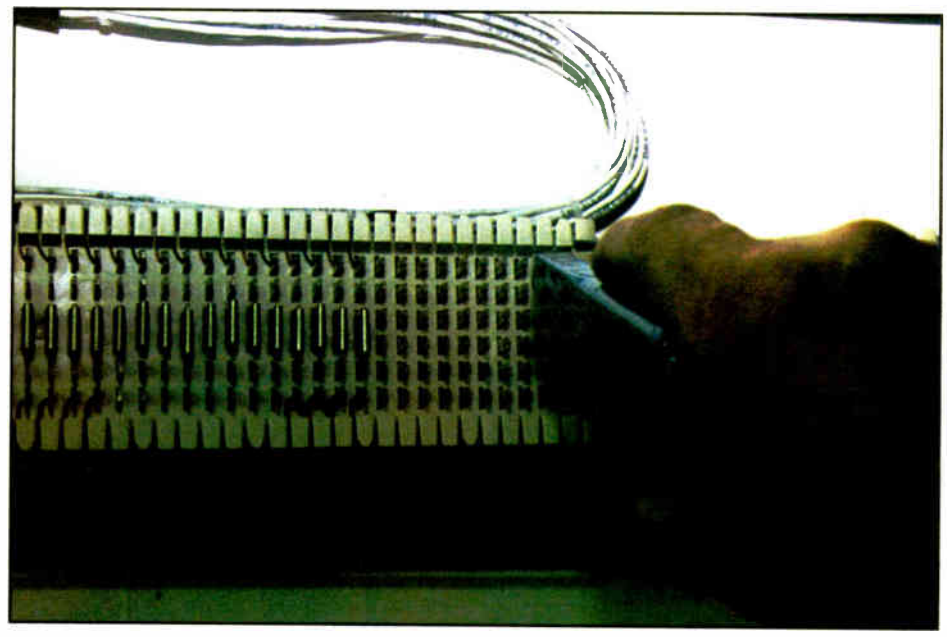


Fig. 4: When working with smaller-gauge wires on a punchblock, use the punch tool to squeeze the prongs together before punching the wire

Can't afford a thousand-dollar surge protector? Check with your local electrical supply house for these little wonders manufactured by Area Lighting Research of Hackettstown, N.J. The company's at (201) 852-2205.

Electrical suppliers sell them for under $20 each, so you can fill your breaker panels without breaking the bank.

Clif's $30 investment saved his station between $10,000 and $15,000 in equipment, plus the station's $1,000 insurance deductible.

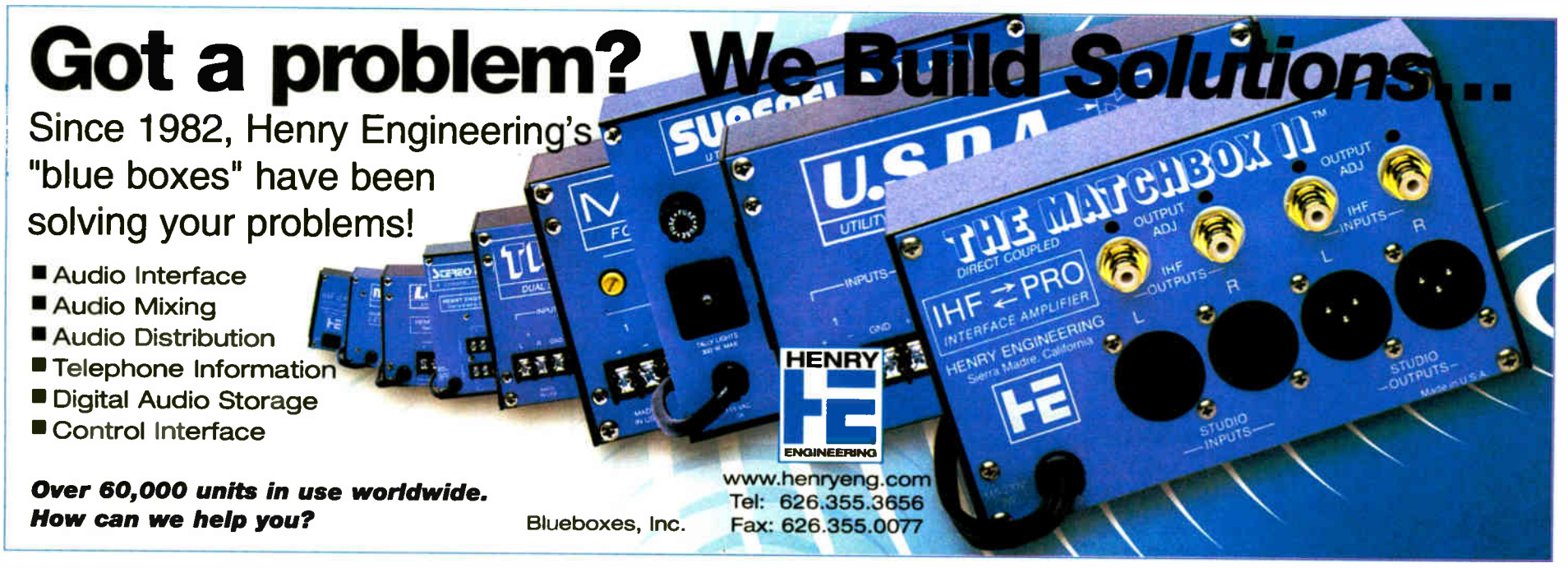
Clif's mention of insurance brings up another point. Whether you go with these small suppressors or spring for a complete building suppressor, check with your insurance company before you make the investment. It's been my experience that some insurance companies will pay for all or part of the cost of such suppression devices, because they reduce claims. At the very least, your premium should be adjusted when this protection is installed.

In either case, you'll look good in the eyes of your manager.

■ ■ ■

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



World Radio History

MARKET PLACE

BE Vault2 Provides 'Middleware'

Building on its familiar AudioVault brand, Broadcast Electronics now offers Vault2. It promises audio networking solutions that allow disperse digital audio systems to share resources efficiently. Vault2 is aimed at radio and Internet radio operations.

With its Vault2 infrastructure, BE said, program directors can manage, share and distribute program elements between AudioVault, VaultXpress, WebVault and other systems, and talent can remotely record, edit and distribute content through the Internet or an intranet to the digital studio system of their choice.

Also, radio operations will be able to plug new Internet business models such as Internet-based spot management and audio commerce services into their digital program creation and management systems.

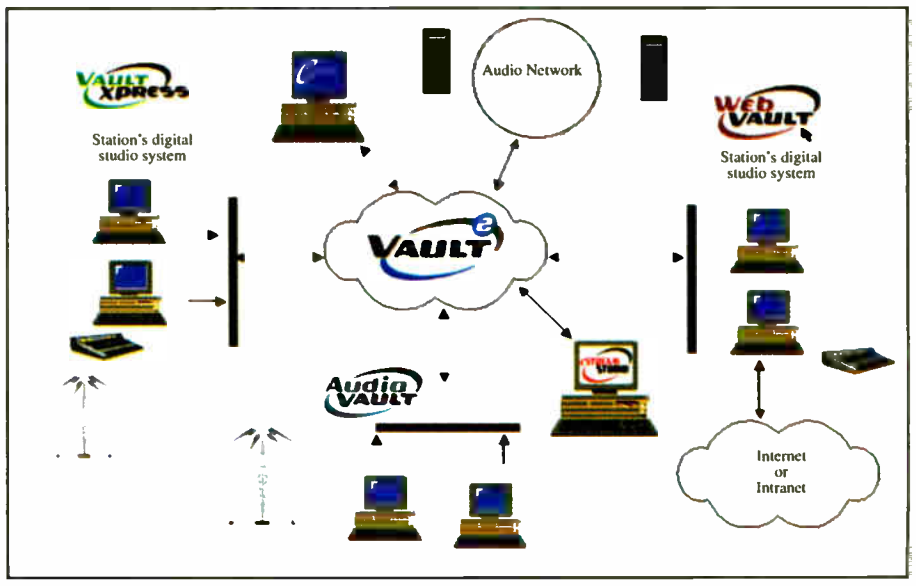
Ray Miklius, vice president of studio system software engineering, said the industry faces rapidly evolving standards and technologies.

"We are establishing a digital infrastructure in conjunction with our software industry partners to provide a 'cyber-glue' that will allow customers to benefit by uniting legacy systems with innovative technologies such as the Internet."

The first product in the Vault family is AudioNetwork.

BE said AudioNetwork lets the user move digital audio off the radio operation's network through a special, high-capacity infrastructure so not to consume bandwidth; share content between AudioVault, WebVault, VaultXpress and eStream systems; lower audio server hardware investments; and administer and trigger programming from select stations on the operation's LAN/WAN.

For information call (217) 224-9600 or visit www.bdcast.com



Spread-Spectrum Antennas From Gabriel

Gabriel offers the High Performance Spread-Spectrum antenna line in the 2.3 to 2.5 GHz and 5.2 to 5.85 GHz unlicensed frequency bands.

Designed around Gabriel's SSP Series, used in unlicensed applications, the HSSP series will operate in frequency-congested areas and where unshielded antennas do not meet the system operator's requirements.

The HSSP(*)-23 and HSSP(*)-52 Gabriel antennas are available in 2- to 8-foot diameters and feature plane-polarized feed assemblies with Type N connectors. They deliver high gain and aggressive front-to-back ratios.

The 2-foot model is supplied with a patented Quick Align Mount for easy installation using two hand-tools.

For information contact the company in Maine at (207) 883-5161 or visit www.gabrielnet.com

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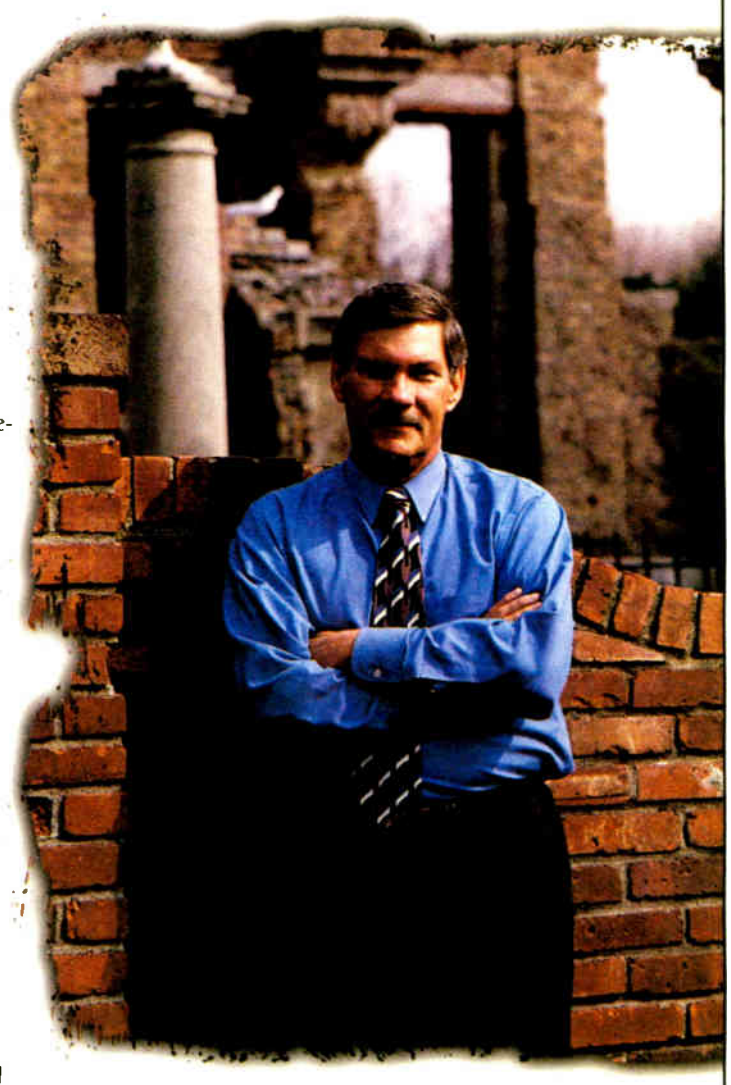

Here's a guy who makes the most of his opportunities. After ten years of on-air work at WFMS, Max wanted to better utilize his electronics skills. Susquehanna gave him the chance, with a promotion to Chief Engineer.

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."

Make a Sound Career Choice!

With operations in major markets across the USA, Susquehanna offers a number of employment options. For more information about radio career opportunities, call our Human Resources Department at (717) 852-2132.

Max Turner
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World Radio History

Bulb Selection Really Matters

▶ LIGHTING, continued from page 16

Deluxe versions of these lamps greatly improved the CRI, but sacrificed about 30 percent light output: Deluxe Warm White (77 CRI @ 3000 K); Deluxe Cool White (89 CRI @ 4100 K); and Daylight Deluxe (84 CRI @ 6500 K).

Today, new blends of "rare earth phosphors" allow high CRI and high LPW. Unlike the standard names of the past, different companies have their own trade names for the new "shades of white," but they all break down into two categories—good and very good.

Color temperature

Lamps in the "good" range have a CRI from 70-79, and the number 7 or 700 can usually be found in the code. Instead of having names like Cool White or Warm White, the lamp is simply labeled with the color temperature.

For example, the suffix -741 means it's a 4100 K lamp with a CRI in the 70s. The "very good" (and more expensive lamps) have a CRI between 80 and 89; such a lamp would be coded with an -841.

General Electric calls its 70 lamps SP (Specification) and 80 lamps SPX (Specification Deluxe).

The most natural type of fluorescent lights are full-spectrum lamps. These are designed to simulate natural noon sunlight (not to be confused with standard Daylight White).

They have a CRI of 90 or better and color temperature around 5600 K, and also emit a small amount of near-UV, which tends to excite whites. This makes for crispier text on white paper.

Full-spectrum lamps are not as bright as other lamps; but the extra light is not needed because the eye can see things better under full-spectrum light than conventional narrow-band fluorescent lamps.

By replacing eye-straining cool white fluorescent in the studios, we can significantly reduce mistakes made by talent.

Less eye strain

Here's the application to radio. Our ability to read copy depends on how well we can see. By replacing eye-straining cool white fluorescent in the studios, we can significantly reduce the stumbles and mistakes made by on-air talent.

The contrast between the words and the page is improved, eyestrain is reduced, and the brain thinks it is reading under natural sunlight, which is what the eye was designed to do.

In several radio stations and postproduction studios, I replaced all the cool white tubes with full-spectrum lamps and noticed changes right away.

Stumbles and reading errors dropped. People looked alive and felt better. There were fewer requests for aspirin and fewer reports of headaches.

Also, staff complained less of fatigue and eyestrain. Control panels became more visible, and we had fewer mistakes from punching the wrong button. The studios and the furnishings look so much better, colors punchy and natural. And since I replaced 4100 K lamps with a cooler 5600 K, the studios look more spacious.

Since the EPA mandated new energy guidelines, new energy efficient lamps have come on the market as a replacement option for the standard 40-watt T-12 tube. The T code refers to the diameter of the tube.

At 12/8 of an inch, the T-12 has been the standard until recently. These tubes are being replaced by thinner T-8 and even T-5 lamps, which by definition rate at least 70 CRI. They burn 32 instead of 40 watts, and boast energy savings.

However, an important word of caution for broadcasters before converting to T-8 or T-5 systems. The high-frequency electronic ballast used to power T-8 and T-5 fluorescent lamps can affect the performance of electronic equipment in near the proximity of the fixture, rendering many infrared remote controls inoperable.

Conversion

I found this to be true, after converting fixtures in one studio to the T-8 system, all wireless remotes ceased to work if the light was switched on.

One way to reap the benefits of higher efficiency lamps is to use full 40-watt T-10 tubes, which offer high color-rendering but operate using standard magnetic ballasts rated for both T-10 and T-12 lamps. Many T-10 lamps put out much more light than T-12. Frequently, two T-10 lamps can be used to replace four T-12 tubes.

T-10 lamps are considered to be high-output, high-color-rendering lamps, usually around 85 CRI.

We've just skimmed the surface of information on improvements in fluorescent lighting. If you have a specific question, feel free to send me an e-mail to *matt@mattlocker.com*

■■■

The author has been in broadcasting and lighting since 1983.

He lives and works in the New York City metro area as a free-lance consultant.

Smart Light Design

▶ NEC, continued from page 16

be visible in the darkness.

Let us mention again Commandment No. 1 for bulbs. The intercept point of optimal light output and bulb life is the rated operating voltage. For best overall light performance — and for most other appliances as well — run them at "book value," which in most circumstances is 120 volts at the fixture input.

Power quality (PQ) is fast becoming a critical concern, if not of critical importance. Every station installation should have some way to monitor, if not record, the vital parameters of incoming power.

Information

If you do not already have one, budget for a line voltage meter on the incoming service of the studio, and on the transmitter service if separate. Read and note these with the other meter readings. For remote sites, these should be part of the remote control telemetry.

Current metering on each phase is invaluable information. Not only does it ease the effort to maintain phase balance, but it helps you master "demand factor" and assure the efficiency of large systems such as the plant HVAC.

One of my stations had a remote reading ammeter on the transmitter HVAC distribution panel. This gave us a clear indication of how those systems were struggling with the elements, and gave us a heads-up when we had to get out there to fix any problems.

The remote control system gave us the ability to log times of alarms. Through careful programming, we were able to tally the run time on the peak shedding AC units (alarm on highest current demand). An ammeter on the red-light system gave us the tower light on/off times.

Digital metering

With the low cost of digital metering, even a frequency meter can be installed with such instrumentation. Although the voltage and ammeters should be across the incoming service, if you have only one frequency meter wire it to any standby panels that you have — supplied by generator, UPS, etc.

Switching supplies are in some ways resonant, and they do not like to operate much off of 60 cycles. Also if the freq meter is indeterminate or nervous, this is a strong indicator that you have high harmonic currents on the line.

Knowing that you have a PQ problem is one thing. Getting it fixed is another.

Once you detect the problem, get started

See NEC, page 23 ▶

World Radio History

MARKET PLACE

Mager Offers Prewiring

Mager Systems now offers a Turnkey Prewiring service for its studio cabinetry.

Based in Arizona, the company designs and fabricates custom furniture for broadcast applications, including radio studios. Solid-wood construction, custom tops and finishes and three-dimensional drawings are part of the Mager line.

Mager's solid-surface tops carry a 10-year warranty.

For information contact the company in Arizona at (623) 780-0045 or fax to (623) 780-9860.

Jampro Super Wide Sideband

Jampro Antennas Inc. unveiled the Model JSWB broadband sidemount FM antenna this spring.

According to Sonia Del Castillo, sales administrator for Jampro, "The Jampro Super Wide Band antenna can accommodate multiple frequencies up to 12 MHz apart. This is unique for a sidemount antenna and is due to the broadband technique employed in the design."

Also, Jampro announced the signing of an agreement with USA Digital Radio to design and construct DAB mask filters.

For more information contact Jampro in California at (916) 383-1177, fax (916) 383-1182, e-mail jampro@jampro.com *or visit the Web site at* www.jampro.com

▶ NEC, continued from page 22

on a fix quickly. Even if the problem clearly is theirs, utility personnel will not get excited about, or be quick to fix, any PQ without strong and detailed data.

Like Joe Friday, all they want is the facts, ma'am. Extensive loggings of PQ appearances (date, duration and parameters) constitute the facts in these instances.

PQ drastically affects lighting. High voltage notably shortens bulb and fixture life. Low voltage drastically reduces lighting output especially in incandescent bulbs.

Spikes and surges can destroy bulbs, not to mention other critical gear in your plant. Getting on top of PQ is a large part of the station engineer's job.

One other lighting tip: At the transmitter, use inductor-style ballasts on your fluorescents. Many of the new solid-state type are bothered by even normal levels of RF in the transmitter room.

RF invasion into some of these units causes light flaring, erratic starting, premature bulb failure and/or ballast burnout.

We've just scratched the surface of lighting in the most recent four articles. Hopefully this information will help you become more sensitive to its use and abuse.

If you do not feel comfortable making your own lighting choices, find someone with years of lighting experience to help, a designer who will visit your operation to get some background for what your staff will do under these lights. Otherwise, he or she will be working in an information vacuum or, do I dare say it, in the dark.

Although there is a great deal more to discuss concerning lighting, this is, after all, **Radio World**, not Lighting World. So we'll push on in our NEC odyssey and take up station standby generators next time.

■ ■ ■

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

Reach him via e-mail to FitchPE@home.com

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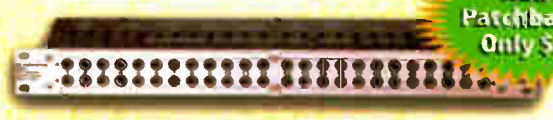
Check out these processors deals!



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World Radio History

LPFM Opponents Criticized

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**,

I have followed the Eddie Fritts NAB fat-cats' Low-Power FM negative remarks.

Since 1958 I have owned and operated five South Carolina facilities, 5 kWs to 100 kWs. I am now retired. I was formerly a member of the NAB. I wouldn't join now if they paid me, and I suspect many LPFM facilities in the future will form their own organization to bypass the NAB's greed.

There is no single station owner in the Charleston, S.C., market out of about 35 facilities. Most play satellite downloads (dumps) into a $250 computer automation program and use huge hard drives for canned music. They have very little local input.

St. George needs a radio station to serve the underserved and unserved here, just like hundreds of other small communities. One hundred watts would work nicely. There are four frequencies available. But under the third-adjacent NAB proposal, even 10 watts wouldn't work here.

NAB members do not serve communities — they serve themselves! The fat-cat group owners get fatter by serving up a steady diet to "rap thieves," rock-doped teenagers and "hillbilly hicks." None of that is public service to mature adults. It's deep-pocket radio.

Low-power stations will have the ability to once more speak directly to the small communities they serve, without any reference to or dependence on huge corporations and their endless greed for filling their insatiable pockets with shekels at the listeners' expense.

Most shareholders in these corporations live far away from the radio stations they have stock in, so the whole

Low-power stations will have the ability to once more speak directly to the small communities they serve.

— Ed Bolton

Let's allow the experts at the FCC to decide about the engineering standards, not some engineer hired by some NAB group owner to pump up something negative about LPFM.

NAB has no expertise and needs to get back to basics. NAB exists only as a tax deduction so members can have a tax-free vacation and play the slots and tables at Vegas. I've been there and done that NAB scene. NAB needs to get off the backs of the FCC and LPFM proponents.

And as far as NPR — who listens to government O&O radio anyway? Who even cares what NPR thinks?

Clarence Jones
St. George, S.C.

Dear **RW**,

The NAB should take a good look at itself in the mirror and stop kidding itself. It is not really the fear of potential interference that is the reason for its objection to LPFM; it is because of the possible loss of revenue.

My answer to NAB is this: If your programming was worthwhile, then you wouldn't have anything to worry about. Since the big, megalithic corporations have soaked up all the small radio stations around the country, there's only one voice to the radio listener and that's coming from Los Angeles, the land of fruits and nuts, as well as drug addicts.

Low-power stations will have the ability to once more speak directly to the small communities they serve, without any reference to or dependence on huge corporations and their endless greed for filling their insatiable pockets with shekels at the listeners' expense.

Most shareholders in these corporations live far away from the radio stations they have stock in, so the whole thing gets to be very impersonal and strictly commercial. This violates the basic, underlying reason for the very existence of broadcast stations, in the first place: the *public interest*.

Legal arguments about potential interference from LPFM stations don't have any strength at all; only *facts about what is* are admissible in court. Until such interference actually happens, the NAB has no case, whatsoever.

Ed Bolton
Harrisburg, Pa.

Dear **RW**,

I am a former public radio employee, and would like respond to the debate over the new LPFM service. I believe that the FCC is aware that public radio represents a small but vocal constituency, and that non-commercial broadcasting is underutilized by a majority of the public.

Public radio serves the fine arts, activist and prominent ethnic minority communities very well, but there are so many other groups that would also benefit from access to noncommercial broadcasting.

Avoiding the potential for audio interference during "zero-modulation" portions of public radio programming is not a valid excuse for placing unreasonable restrictions on LPFM, and I

See LPFM, page 26 ▶

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World Radio History

Reader Letters on Low-Power FM

▶ LPFM, continued from page 25

believe that the FCC feels the same.

The FCC needs to proceed as planned with the licensing of LPFM stations, and continue looking for ways to utilize our limited RF spectrum to the benefit of everyone.

Ron Cappiello
Vestal, N.Y.

Dear **RW**,

I worked hard to get my first-class radiotelephone license back in 1978, then watched as the government and FCC of the United States turned that into a general-class radiotelephone license. At that same time I studied and achieved 20-plus words per minute Morse code and passed up to the advanced-class amateur radio license.

Now it is the year 2000 and I say "*so what*?!" On the Internet I can find programs that will decode Morse code, rtty and other digital signals right from my PC. I can also "tune in" via the Net a myriad of stations that are streaming their audio and video worldwide if they so choose.

So I ask you now, radio broadcasters of America, how long do you think you have? You are dinosaurs chewing up energy and spectrum for an elusive piece of monetary gain. Your funeral is imminent, and your demise is certain! So when will you get it?

You have stood against LPFM, and yet you continue to suck up resources to run 50,000-watt stations and more. You have tried to consolidate and form nationwide consortiums of broadcast infiltrates. But your death is as sure as progress.

Sorry, you cannot keep up, especially with the LPFM gang, and the more efficient mediums that are now emerging. I predict, and I am 47 years old, that by my death, you also will be dead, and a more elite and nimble faction will have taken your place, digital broadcasters who maximize bandwidth on cable or fiber or DSL lines and who do not need to utilize the resources you so flippantly squander today burning ozone and frequency to put your signal on "the air."

Shame on you! Marconi *et al* would roll over in their graves if they had the connectivity that is emerging today. Especially when you continue to fight for your life on the "airwaves" of AM, FM and TV.

Gene Bigham
Independence, Mo.

NAB members do not serve communities — they serve themselves!

— Clarence Jones

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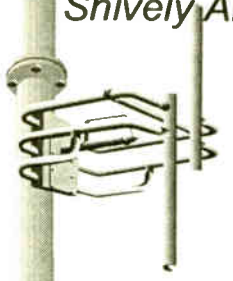

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- Hot-swappable Modules
- LED Illumination
- 3-Year Warranty

- S/N RATIO (+8dBu) 93dB line, 82dB mic
- THD+N (20Hz-20KHz)
  Line +4dBu .003%, +16dBu .006%
  Mic +16dBu .005%
- HEADROOM (+4dBu) 24dB

- **MSRP: $3044 (6 in) $4355 (10 in)**

R-5

- 30 Audio Inputs
- Electronic Switching
- Simple Phone
- Line Selector
- Tape Remote
- LED Illumination
- 3-Year Warranty

- S/N RATIO (+8dBu) 90dB line, 78dB mic
- THD+N (20Hz-20KHz)
  Line +4dBu .007%, +16dBu .007%
  Mic +16dBu .010%
- HEADROOM (+4dBu) 24dB

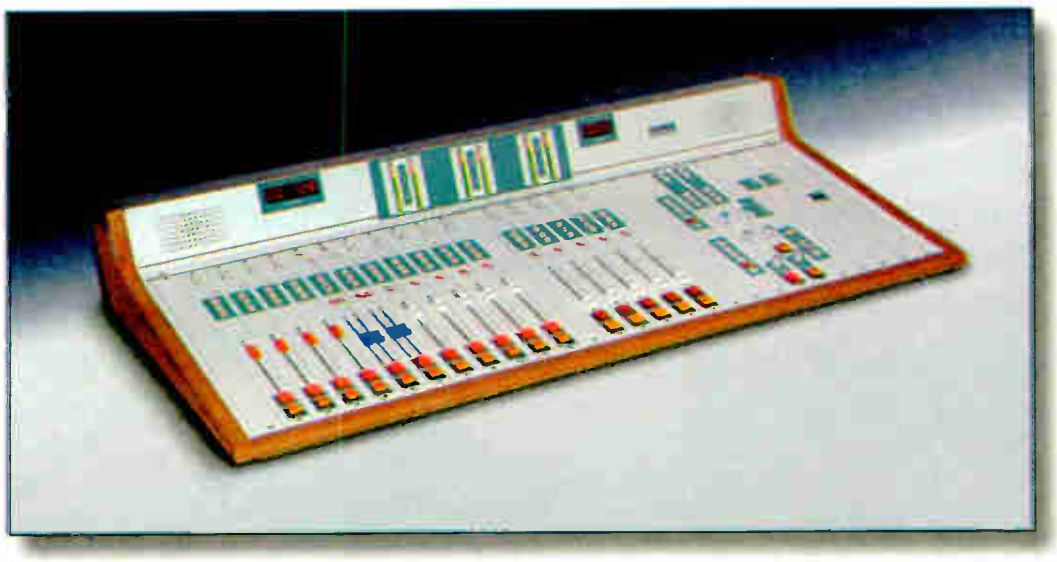
- **MSRP: $5095**

R-60

- 100% Modular Design
- Electronic Switching
- Studio Control Module
- Line Selector
- Any Combo of Mic/Line Inputs
- LED Illumination
- P&G Faders
- 3-Year Warranty

- S/N RATIO (+8dBu) 94dB line, 78dB mic
- THD+N (20Hz-20KHz)
  Line +4dBu .005%, +16dBu .005%
  Mic +16dBu .005%
- HEADROOM (+4dBu) 24dB

- **MSRP (12 input mainframe): $5535 (8 in) $7850 (12 in)**
- **MSRP (18 input mainframe): $7966 (12 in) $10,743 (18 in)**



RD-12/RD-20 DIGITAL

- 100% Modular Design
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- Digital and Analog Ins and Outs
- Electronic Switching
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- 12 or 20 Dual-Source Inputs
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- 2-Caller Superphone Module
- LED Illumination
- 3-Year Warranty

- **RD-12 MSRP: $10,520 (8 in) $12,700 (12 in)**
- **RD-20 MSRP: $16,200 (16 in) $18,380 (20 in)**

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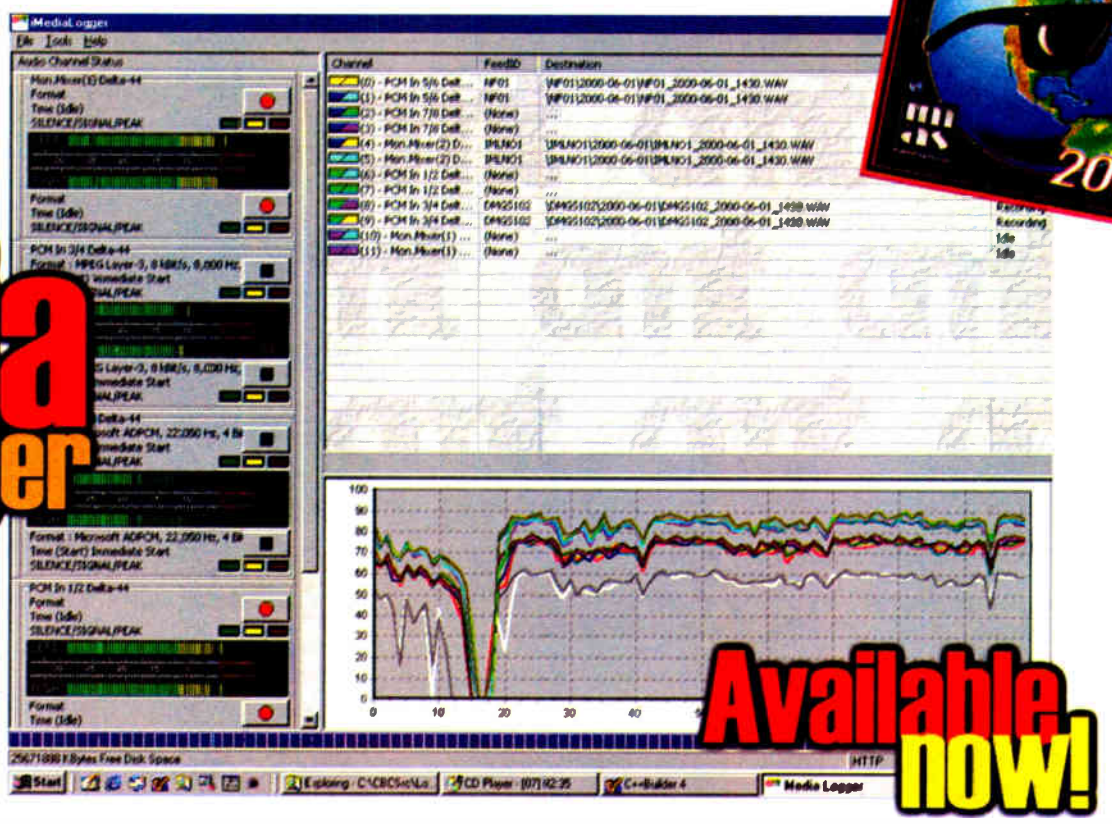
Radio World thinks we're cool.



We think you will too.

Old-style logging systems - even the ones with DAT tapes - get the job done, but they aren't very cool. They don't have the greatest audio quality, it's difficult to find the audio you want, and you're always changing tapes.

iMediaLogger, on the other hand, is very cool. For one thing, there aren't any hard-to-find tapes to pop in every week. iMediaLogger gives you full control over audio quality: use low bit rates for proof of performance logging, or high bit rates for program redistribution.

The possibilities are endless: log entire days incrementally, or log scheduled source feeds. Use it as an aircheck skimmer, to monitor "enemy" stations, Internet audio publishing, and more.

iMediaLogger utilitzes the MPEG II, MP3, and Windows Media software CODECs. The choice of sample rates, bit rates, and compression technologies is completely configurable and upgradable.

Unlike the old-style loggers of yesteryear, iMediaLogger is affordable: two mono or stereo channels for $3995, four mono or stereo channels for $4995 complete. That's a savings of $10,000 or more for a logging system that does more.

iMediaLogger is available now. Call us today at (888) 665-0501, and put something cool into your station.

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GM Journal

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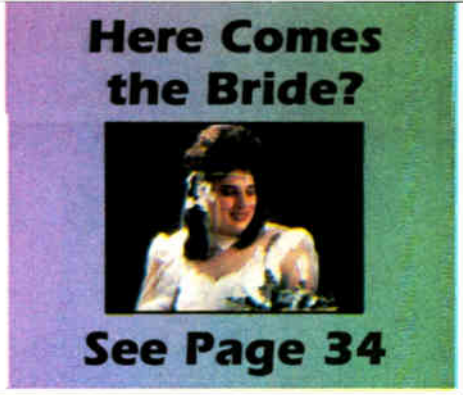
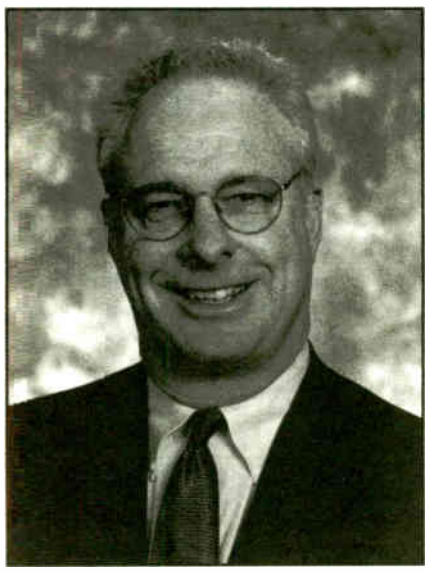


Hinrikus Keeps It Local

Carl Lindemann

The conventional wisdom of the "new economy" is that the conventional wisdom does not apply. But for all the hoopla and investment in online ventures, most have yet to turn a profit.



Jerry Hinrikus

Meanwhile, out in the Kansas cornfields, Jerry Hinrikus uses an Internet strategy based on one of radio's most time-honored concepts — he serves the local market.

KSAL(AM)'s Web site at *www.KSAL.com* and the *EBCLink.com* umbrella site it feeds have yet to turn Hinrikus and his six-station radio group partners into "dot-com" millionaires overnight. But the approach has caught the attention of the Radio Advertising Bureau because it is a practical way for most any radio station to grow its business online.

Innovation

For Roger Dodson, senior vice president of training for RAB, to see his old protégé come up with a profitable innovation is nothing new.

Dodson brought Hinrikus over from on-air staff into radio sales nearly 25 years ago. Hinrikus made a lasting impression when he applied for the new job at Stewart Broadcasting, a 14-station group based in the Midwest.

"Jerry handed me a card that said that millions of drill bits were sold each year. Why? Not because people wanted drill bits, but because people

See HENRIKUS, page 36 ▶

Your Site Can Do More for You

Harness These Helpful Ghosts in Your Web Machine to Build Non-Traditional Revenue

Tom Vernon

As the Internet becomes an essential part of most businesses' operations, broadcasters in increasing numbers stream media and sell goods on their Web sites.

While much has been written about streaming technology and the advantages of e-commerce, there is comparatively little information on some of the "back-end" software that operates behind the scenes to keep your site running smoothly.

For those trying to establish themselves in the e-commerce realm, traffic management software is a core infrastructure application with the same importance as payroll or scheduling applications.

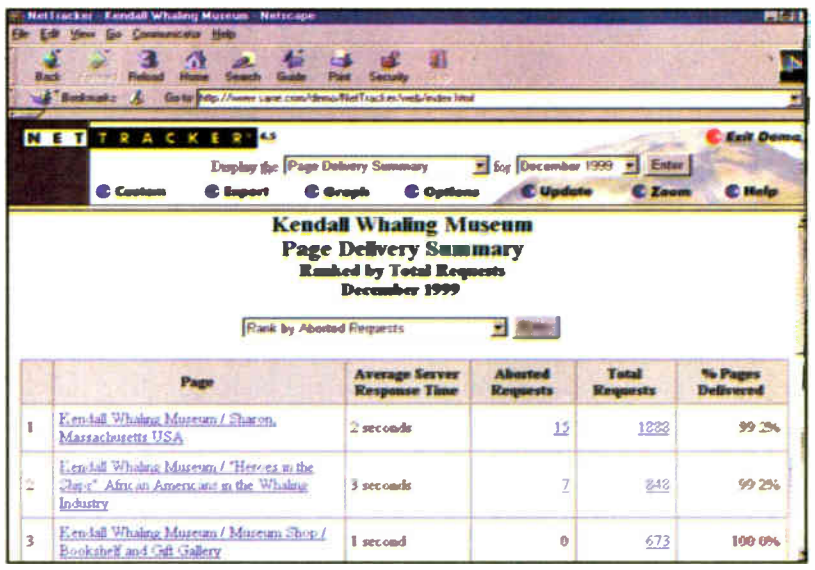
These are computer programs that compile the details about Web visits from different collection mechanisms into a single, coherent view that enables Webmasters to refine a site's effectiveness.

Apply your skills

Running a Web site is a lot like programming a station. In both instances you make content available, but it isn't always clear that anyone is coming to your site, or listening to your broadcasts.

If people visit your Web site or tune in, it is important to know how many they are, who they are, how often they visit or listen, where they come from and what pages or programs they prefer. With that information in hand, a station can tweak its content to satisfy visitors or listeners.

Knowing that a number of visitors come to your site from another is key to developing partnerships and alliances. For broadcasters, this information may suggest collaborations with other community pages or record label sites.



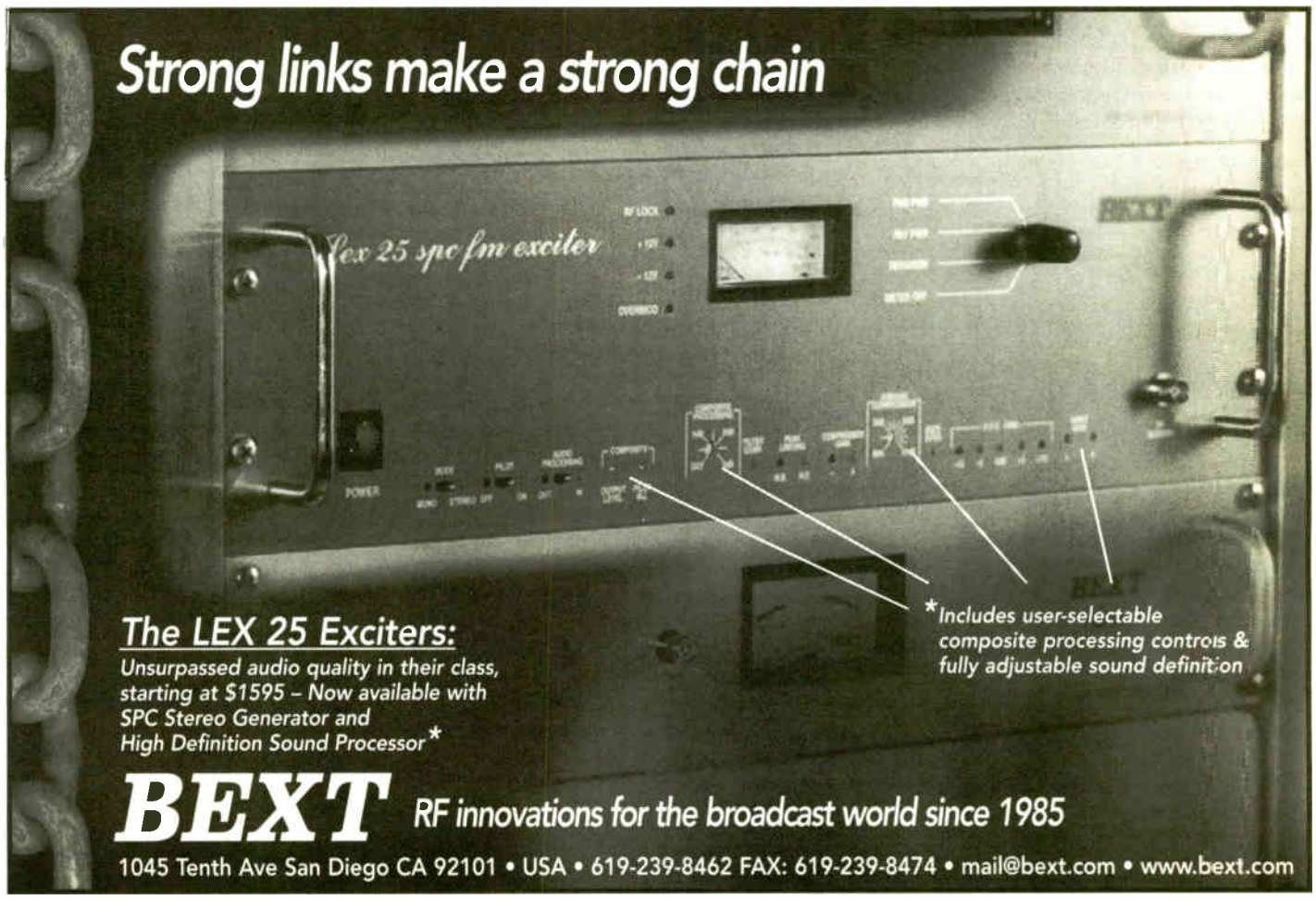
Sane Solutions' 'NetTracker' is one type of Web tracking software

At the most basic level, you can determine which company's site a visitor is from by looking at the host computer that they are using to surf the Web.

For example, *hp.com* would tag surfers from Hewlett-Packard. If visitors filled out a questionnaire during a previous visit to your site, you could link the form data with their Web site traffic data. This allows you to identify each visitor by name, address and any other information that your online forms gathered.

A surprising amount of information is available about who is visiting your site, and you don't even need tracking software

See TRACKING, page 38 ▶



World Radio History

The Love Bug: Lessons Learned

Carl Lindemann

The Y2K bug was a bust, but the "Love Bug" and copycat variants proved to be the most destructive computer virus attack since the "Melissa" virus struck in March last year.

The "Love Bug" started in the Philippines on Thursday, May 18. It grew exponentially as it replicated by sending a mutated version of itself to all listings contained in the infected computer's Microsoft Outlook e-mail address book.

Clogging and crashing

Mail servers in Asia and Europe quickly clogged and crashed as the day dawned on these continents. Despite opportunities for early warning in North America, many corporate systems only discovered the virus after it had wreaked havoc.

In addition to shutting down mail servers with the massive volume of e-mail traffic generated, the virus also destroyed JPEG image files and MP3 audio files on both local and networked drives.

As with most American industries, many broadcasters found themselves hit hard by the "Love Bug." Several major organizations had to operate without vital e-mail communications for several days. Information technology staff worked through the night and into the weekend to get systems back up-and-running.

The cost of the downtime is hard to estimate. But the organizations interviewed did get something worthwhile from the ordeal — invaluable experience on how to prepare and protect systems from future attacks.

How National Public Radio and ABC Radio Division coped are instructive case histories.

Rodney Armstrong, operations manager of information technology for NPR, knew that something was wrong when he arrived at work that Thursday morning.

"I saw a rapid increase in forwarded messages. It brought mail servers to a crawl. Based on experience with previous viruses, I had some idea what was going on.

"But the ones I'd seen before stopped at 50 names in an e-mail address book. This hit them all. We immediately pulled the network connection to disconnect all the clients," he said.

Despite the fast reaction, anyone with JPEGs or MP3s on a local hard drive or on a server they were mapped to were destroyed. Fortunately, other systems — including on-air automation and production — were not harmed even though they were interconnected.

According to Armstrong, cleanup efforts dragged on till about 4 a.m. the following morning. Warnings went out throughout the organization about the dangers of opening attached files. Despite awareness of "copycat" variants, a second attack hit at around 9:30 Friday morning.

Rodney Armstrong (left) and Ched Hudson of NPR

"One person touched it off again. After they sent it out, another three or four opened it. The second attack was at least as bad, if not worse," Armstrong said.

Once again, technicians worked to clear the contamination through the night. The NPR staffer who triggered the second attack produced a short feature about how this "mistake" made her an anathema in the organization.

NPR's IT department will never be as vulnerable again, according to Ched Hudson, director of information technology.

"One mail server became corrupted because it was shut down abruptly rather than just disconnected from the network," he said.

Aside from having better nuts-and-bolts procedures to react to an attack, new strategies for prevention will be put in place.

"We're taking a hard look at our e-mail policy. We're changing our open policy and will now restrict the kinds of attachments allowed. Human nature being what it is, education and awareness in our users is not enough. Protective systems have to be in place," Hudson said.

So far, implementing the new restrictions has helped by the acceptance of their importance throughout NPR.

"This heightened people's sensitivities to the dangers of having an open environment. The measures we've put in place have gotten support."

Some preventive measures, such as diversifying from using Microsoft-only products, could be counterproductive.

"It's a cost/benefit analysis of convenience vs. risk. It might cost more in long-term efficiency for us to diversify than to work through the loss from an attack," Hudson said.

What was the total cost to NPR? Aside from the cost of many hours of IT department overtime, the price in terms of being disconnected from online communications is difficult to gauge.

Mission critical

"E-mail is a mission-critical function. It's not just used for messages, but also for file transport. We have a lot of compressed audio files sent in via e-mail from around the world.

"Fortunately, no major audio was lost this time. But communications were slowed and stopped," said Hudson.

Is there any guarantee against future attacks?

"With the virus authors as clever as they are, there's really no way to be sure this won't happen again," he said.

At ABC Radio, events unfolded in the same time frame as at NPR. But the IT department, located in Dallas, responded with different strategies.

Sharon Castro, senior exchange administrator, had considerable experience having worked through the "Melissa" virus while at another company. Still, the scale of this attack was unprecedented.

"The 'Love Bug' is a 'worm' virus and so it generates mass quantities of affected mail. It could fill our mail cues past capacity and crash our servers," she said.

The amount of infected e-mail produced at ABC was nothing less than monumental. As part of Disney, individual address books contained the entire directory for the complete organization — some 67,000 entries.

"Say 1,000 people respond to the e-mail. The number of e-mails sent from it is 67,000 raised to the 1,000th power," Castro said.

The attack could not have come at a worse time for Castro. In fact, she was out on a sick day. Andy Miller, network operations manager, called her at home at 7:30 a.m. Central time.

"Andy explained that this was a virus situation like 'Melissa.' We discussed a plan of action on the phone so that things were put in motion during my half-hour commute into the office," said Castro.

The first step was to isolate the contamination.

"We shut down the Message Transfer Agent (MTA) cues between the various company sites. That stopped the transfer of mail and contained it within individual sites. Local file and print servers could still be hit, but only within an individual organization," she said.

In that ABC Radio is just one business unit inside a much larger organization, the disaster recovery strategy had to be coordinated across the entirety of Disney and in concert with anti-virus providers.

"Our approach from the beginning was global. We were immediately in conference with all of Disney's business units in multiple conference calls to pool resources."

Disney has a platinum, or top-tier, contract with Symantec. "Our technical account manager was on the phone with us letting us know what they had coming down."

Castro said that ABC Radio was also in contact with Microsoft product support.

"By 10 a.m., they (MS product support) gave us tools to help contain the virus, and an interim method for removing it."

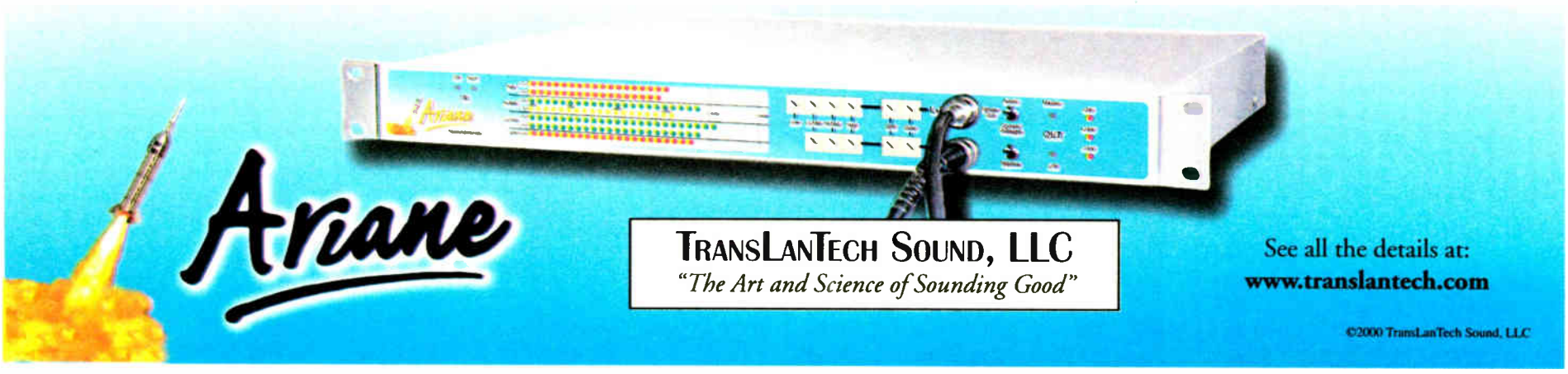
But that was before Symantec had anything ready.

"Their first fix didn't arrive till late in the day. In the meantime, we passed on what we learned from Microsoft with the rest of Disney," said Castro.

See LOVE BUG, page 31 ▶

Stealth Processor.

Introducing the new *Ariane* audio leveller. Right from the start, we had just one goal: Build a powerful level controller that cannot be heard. The *Ariane* can change gain up to 15 to 20 db or even more, *nearly imperceptibly.* You'll hear it soon (or maybe you won't!)



World Radio History

E-Mail Is Now Mission-Critical

▶ LOVE BUG, continued from page 30

Work continued till 3 a.m. the following morning. Even so, there was no outside e-mail for some time yet.

"All the Disney businesses funnel e-mail through a hub at Disney itself. ABC-TV has a direct connection to that, and we connect through them. First, by Saturday morning, we brought up our internal mail between radio sites. The connection through ABC-TV was restored late Saturday night," she said.

Ad-hoc solutions

E-mail was down for a full 96 hours. As Castro and colleagues worked around the clock, some ad-hoc solutions were put in place to keep operations afloat. People doing show prep were advised to set up external Web-based e-mail accounts.

However, this had the risk of further contamination. Everyone else had to rely on phone and fax for the interim. As at NPR, IT efforts were aided by widespread support from the end-user community.

In the final analysis, Miller points to the lack of any advance warning as a major contributor to the problem.

"There was a breakdown in communications that I'm confident will not happen again," he said. As bad as it was, it could have been worse given the importance of JPEGs and MPEGs for ABC Radio.

"The audio files are mission-critical. We were fortunate in the way we're designed. Audio is on the engineering side, apart from the file and print systems hit. One AudioVault was thought to be at risk, and was quickly isolated and protected," he said.

"The worst destruction was on files used by marketing and sales. Audio and image files embedded in PowerPoint presentations were harmed. Fortunately, we had tape backups for all of these. Restoration was the final step after deleting all the infected files and seeing to it that everyone had the proper anti-virus update," Miller said.

Sharon Castro of ABC Radio

As at NPR, the cost of the attack went well beyond the hours put in by ABC Radio's IT staff to get things right. Miller points to the sales department as the hardest hit because of the loss of potential revenues while communications were hampered.

Also, like NPR, certain file attachments will no longer make it through the gate.

Some organizations managed to come through the attack relatively unscathed. Jack Stokes, the director of employee communications at The Associated Press, did not report any major problems.

"We operate on multiple platforms and mail programs. We had security systems in place. Only a handful of machines were affected at all. No major systems went down," he said.

One major concern was AP's vast archive of JPEGs. Fortunately, it was not touched. How did AP manage to come through this so well? Stokes preferred to stay away from particulars.

"Everyone sets up their systems differently — we have security issues. We don't divulge any information about this because people read the trade publications and might use it to get into our systems," he said.

A major fear for stations dependent on computers for scheduling, billing and on-air automation is that a virus could knock out such mission-critical functions and possibly destroy music and commercial libraries.

Tom Zarecki, director of marketing at RCS, had no reports of any such problems from clients. "RCS software was immune to this particular attack. Audio played at any RCS client stations using our Selector scheduling software and our on-air software would not be touched by this or any 'standard' virus.

"Our file formats do not end with the extension 'dot-mpg' when scheduled, manipulated or played on the air. Thus any outside virus would not even know they were audio files, skipping over them and thus leaving them uncorrupted."

Even though idiosyncratic radio systems may be safe from viruses directed at mass-market software, ABC's Castro warns against a false sense of security.

"Companies are going to have to recognize that the possibility of a direct attack from a disgruntled employee is a real threat. This increases the need for solid disaster recovery plans including off-site storage and close relationships with vendors. Also, Castro wishes that the authors of destructive viruses would think about the real impact of their actions.

"The people who write these viruses see themselves as going after large corporations. But the brunt of it is shouldered by hard-working grunts whose lives are ruined for days and weeks."

■■■

How is your radio operation preparing for the next virus? Tell us at radioworld@imaspub.com

Radio News Operations Honored

The New York Festivals gold medal

At The New York Festivals Radio Competition, an annual international contest that recognizes the best in radio news, two American broadcasters won the top prizes.

Hearst-Argyle station WBAL(AM) in Baltimore won a "best of show" grand award for its investigative report on pharmacists' prescription mistakes. Reporter John Patti accepted the award at ceremonies held at the Hilton in New York City in June.

Washington, D.C.,-based Voice of America also won a "best of show" grand award for its sound documentary, "The Century In Sound: An American's Perspective." Producer Adam Phillips accepted the award for his documentary that chronicles the 20th century in sound without narration.

The British Broadcasting Corp. and the Canadian Broadcasting Corp. each won four gold medals.

Winners were chosen from 1,317 entries from 37 countries.

— Laura Dely

(Left to right), Bilha Goldberg, TNYF; John Patti, WBAL(AM); Adam Phillips and Gary Spizler, Voice of America; Merrilee Cox, ABC Radio Network programming general manager and TNYF Radio Competition chairperson

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The NEW DL4 System II comes complete w 105 hours of audio storage, 7 input play sw software for On Air, and DL4-SCHED for P studio system requires only 2 customer sup

12,000 Console

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- VCAs remove audio from faders
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- Monitor for control room & 2 studios

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Standard Configurations

12K8 - 6	6 channels	$4,350
12K18 - 12	12 channels	$7,075
12K18 - 18	18 channels	$8,755

(call factory for options)

DL4 System III

- NEW - dual On Air & Production System
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The NEW DL4 System III comes complete 210 hours of audio storage, two 7 input pla DL4-AUTO software packages for On Air, an This powerful 3 studio system requires onl

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- 3 Program & 2 Telephone Mix (-) outputs
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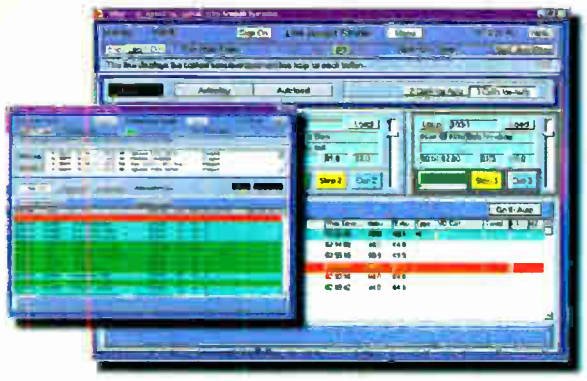

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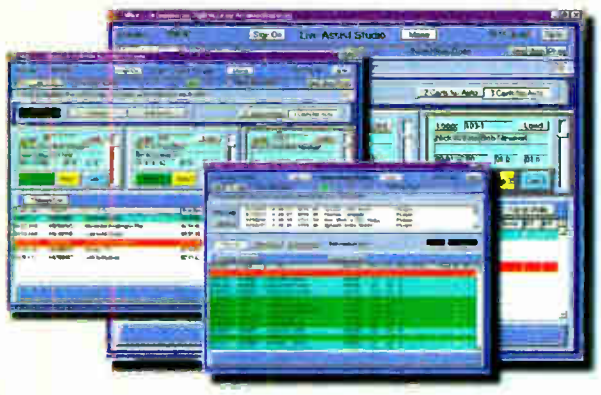
Just connect 1, 2, or 3 PCs running our INSTANT 3-PLAY software to our rack mounted digital workstation and you are ready to go. The workstation has 3 simultaneous plays with record. Software setup assigns play control to the PCs. 3 times the power of other Jingle Boxes, the Instant 3-Play provides access to the SAME jingle from 3 places.



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switchers, two 7 input record switchers, (2)
DL4-SCHED for Production and Scheduling.
3 customer supplied PCs and installation.

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World Radio History

BROADCAST LAW REVIEW

Contests, Lotteries and Gambling

A Guide to the New Legal Landscape in Casino Gambling, Contests and Lottery Advertising

Barry D. Umansky

A broadcaster's contests, drawings and other game promotions and spots can be a key part of a station's operation and relationship with the audience. And with the growth of the casino gambling industry, the number of broadcast ads for these establishments is growing.

Here is an update on recent developments regarding casino gambling operations advertising on radio and television. We also address the FCC's "licensee-conducted contest rule" and a brief review of the interplay of federal and state lottery laws.

Supreme involvement

In a much-anticipated decision, the United States Supreme Court ruled last year on the constitutionality of the federal criminal code ban on full-fledged casino gambling broadcast advertising.

The ruling, "Greater New Orleans Broadcasting Association Inc. vs. United States," issued June 14, 1999, was intended to resolve a conflict among the rulings of different lower courts on the same issue. Though the decision does recognize and give greater protection to "commercial speech," its *does not* give all broadcasters *carte blanche* to air all ads for casinos.

However, the case has persuaded the federal government to cease enforcing the ad ban statute where there is "truthful" advertising of casino gambling.

For some time, broadcasters have been able to advertise only the non-gambling aspects of hotels, riverboats and certain other establishments that operate casino gambling on their premises.

For example, a broadcast spot for a Las Vegas hotel/casino could mention the name of the establishment — even if the word "casino" was part of its formal name. But, not even an indirect reference could have been made in the copy, sound effects, visuals, etc., to the actual gambling activity.

Stations have been allowed to advertise casino gambling activities conducted on Indian lands, as provided by a federal statute enacted more than a decade ago. But the federal ban on advertising the casino gambling operations of non-Indian establishments had remained.

Now is the time for action by broadcasters facing state law restrictions on casino advertising.

There also are many state lottery laws that address the subject of casino gambling — most banning the activity and some also banning the advertising of the activity.

Over the past several years, however, various lower courts have ruled on the constitutionality of the federal ad ban. Both the U.S. Court of Appeals for the 9th Circuit (encompassing several western states) and the U.S. District Court for the District of New Jersey had declared the federal casino ad ban unconstitutional, as applied to the facts before each court.

These were, respectively, the "Valley Broadcasting" and "Players International Inc." decisions. (For stations licensed to cities in New Jersey and in 9th Circuit states, the FCC suspended its enforcement of its own rules prohibiting full-fledged casino ads, as the result of these two earlier cases.)

But the U.S. Court of Appeals for the 5th Circuit ruled against the Greater New Orleans Broadcasters Association on much the same facts. And the federal government took an appeal of the "Players International" ruling to the U.S. Court of Appeals for the 3rd Circuit.

The ruling surely stands for the proposition that, where casino gambling is legal in a particular state, the federal casino ad ban cannot be applied against a station, licensed to a city in that state, which may wish to advertise casino gambling taking place in its own state or in any other state where casino activity is legal.

Thus, stations in the states where some form of commercial casino gambling is legal were given a green light by the Supreme Court to advertise those casino operations.

But the decision does not invalidate any *state-imposed* restrictions on either casino gambling activity or the advertising of casino gambling. Indeed, the Supreme Court emphasized that its "Greater New Orleans" decision in no way disturbs its 1993 ruling in the "Edge Broadcasting" case.

There the Supreme Court held that a station along the Virginia border, but licensed to a city in North Carolina (a state which does not have a state-operated lottery), could not advertise the Virginia state-operated lottery.

This recognition of "states' rights" thus has not been disturbed by the "Greater New Orleans" decision.

So if a state law restricts casino gambling and/or advertising of casinos, parties violating that state law are subject to enforcement by state authorities.

Ripple effect

A positive consequence of this Supreme Court ruling came in an Aug. 6, 1999, brief submitted by the United States DOJ and the FCC in the appeal of the "Players International" decision.

Here, the federal government announced a new and significant change of policy.

The FCC and DOJ brief states that the federal ban on casino gambling advertising "as currently written, may not constitutionally be applied to broadcasters who transmit truthful advertisements for lawful casino gambling, whether the broadcasters are located in a state that permits casino gambling or a state that does not."

So, barring a change in the FCC/DOJ position, this means that no broadcast station — regardless of where the station's facility is located — should fear an FCC fine if the casino ad copy they air is "truthful." To make sure your spot is "truthful," watch out for, as an example, ad copy that creates an unrealistically optimistic impression of your chances of winning at the casino.

However, as may be detected from the "as currently written" language in their statement, the FCC and DOJ have thrown it to Congress to decide whether it should try to enact a revised form of statutory restriction on the advertising of casino gambling.

Broadcasters should carefully check on whether there is a future legislative

See UMANSKY, page 43 ▶

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Station Prank Turns Sour

Here's a case of a station's gag that failed to amuse some and ended in litigation. On Saturday, April 1, 1994, WBDR(FM)/WBDI(FM) morning man Johnny Spezzano appeared in the local paper that serves Watertown, N.Y., and Kingston, Ontario, Canada.

The problem was where Spezzano appeared in the paper: in the bridal announcements, with Spezzano dressed as a blushing bride.

The write-up included all the traditional information — the parents, education, jobs — including that the "bride" was employed at a splatball company.

The newspaper, the Watertown Daily Times, was so upset that the paper banned the prank's photographer from its pages for one year. And it retained the law firm Bond Schoeneck & King LLP to commence civil litigation against WBDR and the station's secretary, Kim Bisig. Bisig had pretended to be the photo's bride when the paper called to confirm the bridal submission.

The newspaper sued WBDR and Bisig for "fraud, conspiracy, criminal impersonation, theft of services, unfair competition and violation of the Latham act and general business law," according to a letter the firm sent to WBDR President and General Manager David Mance.

This photo of Spezzano appeared in the bridal announcements of the Watertown, N.Y., Daily Times

Mance said that the station "received great support from the public and its listeners." He also said the newspaper received several letters that "told the paper to lighten up."

The case was settled when the station agreed to never repeat the stunt and to buy a quarter-page ad in the newspaper to make an apology for the prank. The ad cost $250.

Spezzano has continued to mount elaborate pranks, including a letter allegedly from the U.S. Treasury Department that claimed $20 bills would be no good the day after Spezzano and his wife read the "letter" on his show last year. Customers stormed local banks. The Secret Service called Mance. Mance promised that the station would not repeat the prank.

— Laura Dely

World Radio History

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

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

NEW **Display Improvements:** Characters scroll to the left at a rate of ten characters per second–two times faster than standard–for quicker recognition of disc or track titles. Two other rescroll improvements have also been incorporated to further improve the DN-M991RM's versatility.

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World Radio History

Making Net Money in Salinas, Kan.

▶ HENRIKUS, continued from page 29

wanted holes.

"He pitched himself and his philosophy for radio: 'People aren't buying advertising; they're buying our ability to sell their products. I can do that for you and I'd like to work for you.'

"That was an innovative approach. I've been sold on him ever since," said Dodson.

A star is found

Hinrikus got his start in radio as a morning announcer at KICS(AM), a small station in Hastings, Neb.

Hinrikus said his success, progressing from talent to sales and then station and group management, is the result of mentoring he received from Dodson and Dick Chapin, an NAB distinguished service award winner.

He sees the challenge of taking radio online as repeating the risks and opportunities that defined the industry when he was new to the business.

"I got started in the early '70s. Then, the old mentality was that FM would never make it. The Internet is the same story all over again. Everybody who says audio streaming isn't going to make it is in for a huge surprise," Hinrikus said.

Hinrikus wasn't always such a true believer. As the part owner of the six-station ERB Inc. group based in Salinas, Kan., (population 50,000), his conversion came after seeing the practical possibilities for his local listeners.

"I was one of the naysayers 2 years ago. Then a local businessperson said to me, 'I wish you would put local news on the Net. I travel all over the world, and it'd sure be nice to get my hometown news.'"

He started to thinking about that.

'Jerry's decided he won't let the Internet be his competitor. Instead, he's made it his partner.'

"We started brainstorming. Wouldn't it be great if we could have some of our news on-demand and interview clips, too?"

Hinrikus estimates that as much as 15 percent of his organization's efforts have been redirected to create *EBCLink.com*

"That's not much (of a commitment) for a whole brand-new opportunity revenue source, a new medium. Our goal for the next 18 months is to have our Web site generate 10 to 15 percent of our entire radio group's income."

So far, Hinrikus and his partners have invested around $35,000. And already, they've realized more than a return on that investment.

"Our goal is to have it generating revenue just the same as if we added another radio station," he said.

The big difference, said Hinrikus, is that it would take at least $500,000 to add another terrestrial station to their group.

"For a tenth of that, we've got a very impressive revenue opportunity with our Web site."

Repurposing content — especially news — is a hallmark of the consolidation era. Creating Web site versions requires more effort than simply putting different "tags" on news and weather reports. But the payoff is greater, too.

Roger Dodson

additional staff."

In fact, the only addition to staff for the entire operation is a Webmaster.

Of course, "repurposing" assumes that there is something to repurpose. KSAL(AM) has long been established as a news and information resource for the community. The online opportunity would not exist without the investment in a five-person news and sports staff.

On top of that, the station has a full-time public service director working with local nonprofits.

"We're making money and we're not afraid to invest money back in our community," Hinrikus said.

"When we purchased KSAL, our news/talk station 3 years ago, a lot of companies were dropping news. We saw that as our future. With satellite radio coming and with all the Internet radio, our direction is local, local, local. Without that, my station would be no different from anybody else's.

"As long as I do a good job of taking care of my local market area, I'll be okay. This is what radio was designed to do — take care of the local community," he said.

Web-intensive

Much of the investment is in staff time. The site must be updated constantly to give visitors a reason to return time and again throughout the day. This also gives the site a major advantage over the local newspaper.

"We update our news page two or three times every day. That's our selling point. The local newspaper only updates theirs once daily. And when it does get updated, the 'news' is at best a day old."

Today Hinrikus employs five full-time news people.

Industry model

For the RAB, the real excitement is how Hinrikus' approach can be adopted across the industry. According to Dodson, the principles at play are what the RAB has long-promoted.

'The old mentality was that FM would never make it. The Internet is the same story all over again.'

There are material costs. All reporters now carry digital cameras (see sidebar, page 37.) Half of the fees for hosting the site are covered by barter with the local Internet Service Provider. The ISP has also developed tools to help staff use downtime effectively.

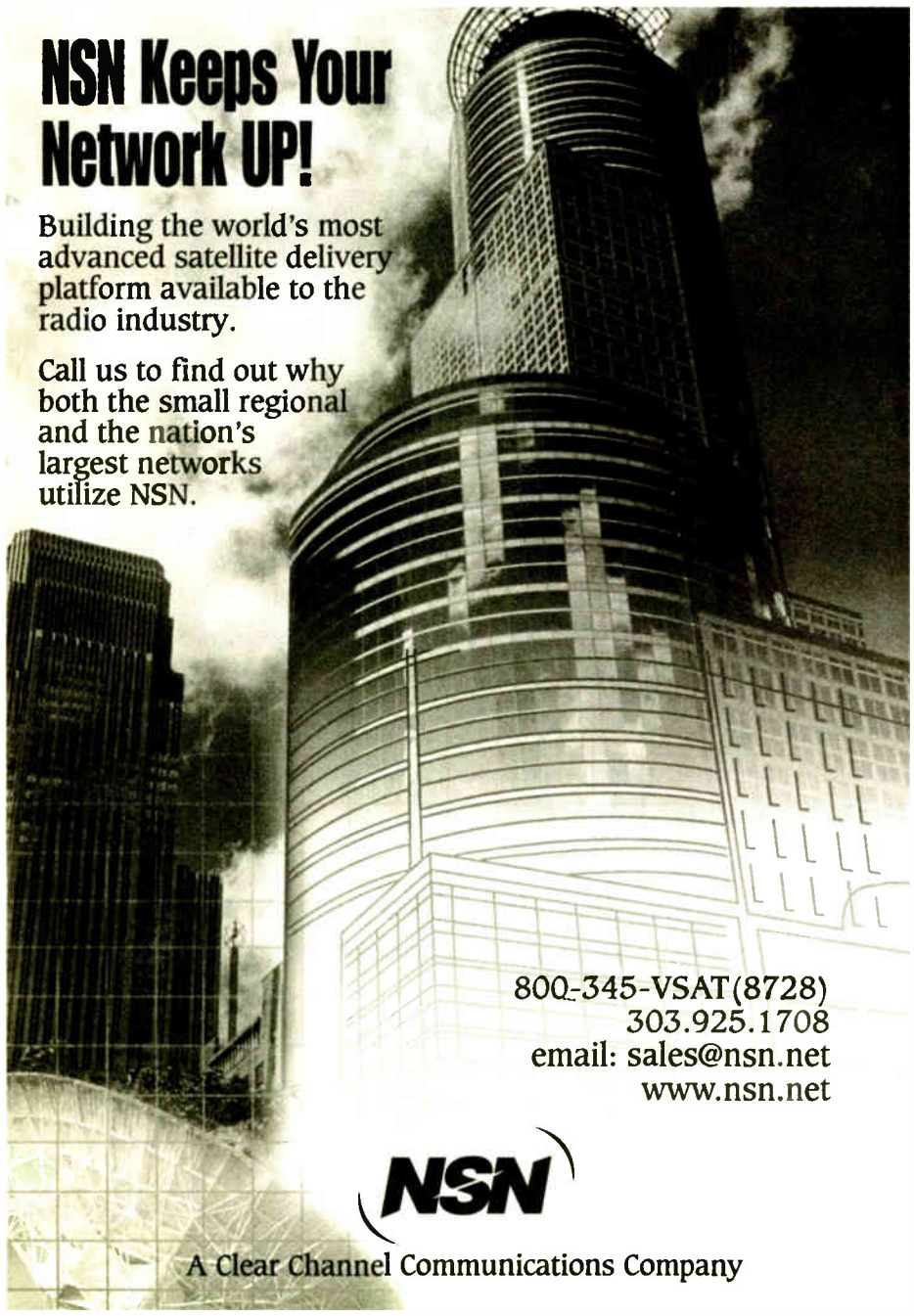
"They've created software so our board operators can be putting Rush Limbaugh or Dr. Laura on the air and be downloading the obituary information at the same time. Eighty to 90 percent of what's on our Web site comes from our staff or our customers. We have a lost and found page, garage sales and classified ads. It's been designed so we don't need a lot of

"Jerry's decided he won't let the Internet be his competitor. Instead, he's made it his partner.

"That's the essence of what the whole radio industry must do. If we look at it as a competitor, it'll beat us," he said.

What's particularly striking is that this is working is Salina, Kan.

"So many people think you've got to be in New York City or Los Angeles or Chicago to be worth a damn. What's fun here is that we're talking about turning a profit in a town of 50,000 people, *not* New York," said Dodson.



World Radio History

Getting the News Out on the Net

Randy Pickering, news director of KSAL(AM), the station described in the story on the facing page, was skeptical at first about having to siphon energies into creating an online version of the news for the 68-year-old legacy station.

Fish or cut bait

"I really didn't think it was going to work. I told Jerry we had to fish or cut bait. Are we doing radio or not?," Pickering said.

The change in direction followed another major change in the way the station produced news.

"We went to a totally digital newsroom 3 years ago. Management understands learning curves. But they keep pressing us to move forward. It takes extra time to learn new methods, but it's change or die. I can change, but you'll see my heels dragged along the floor," he said.

In addition to tape recorders, reporters now also carry Olympus digital cameras.

After all, the Web is visual, too.

The first model, the 220L, was too basic for the job.

"It had no zoom lens. I was covering a murder case, and took a picture of the scene of the crime. It was roped off, so I was about a block away. In the picture, it looked like a mile away," said Pickering.

Now, reporters use the Olympus 340L (recently discontinued for the 360L) with 2x magnification. Sticking with the brand is part of a larger philosophy of the organization.

Consistency

"We started with Olympus cameras and their software. We like to keep consistency. We have four news studios and they're all matched. Jerry doesn't think you should have to relearn and rethink each board when you go from studio to studio."

The key production tool for adding images and audio to the Web site is Microsoft's Frontpage 2000. Syntrillium Cool Edit software converts audio files into the RealAudio format.

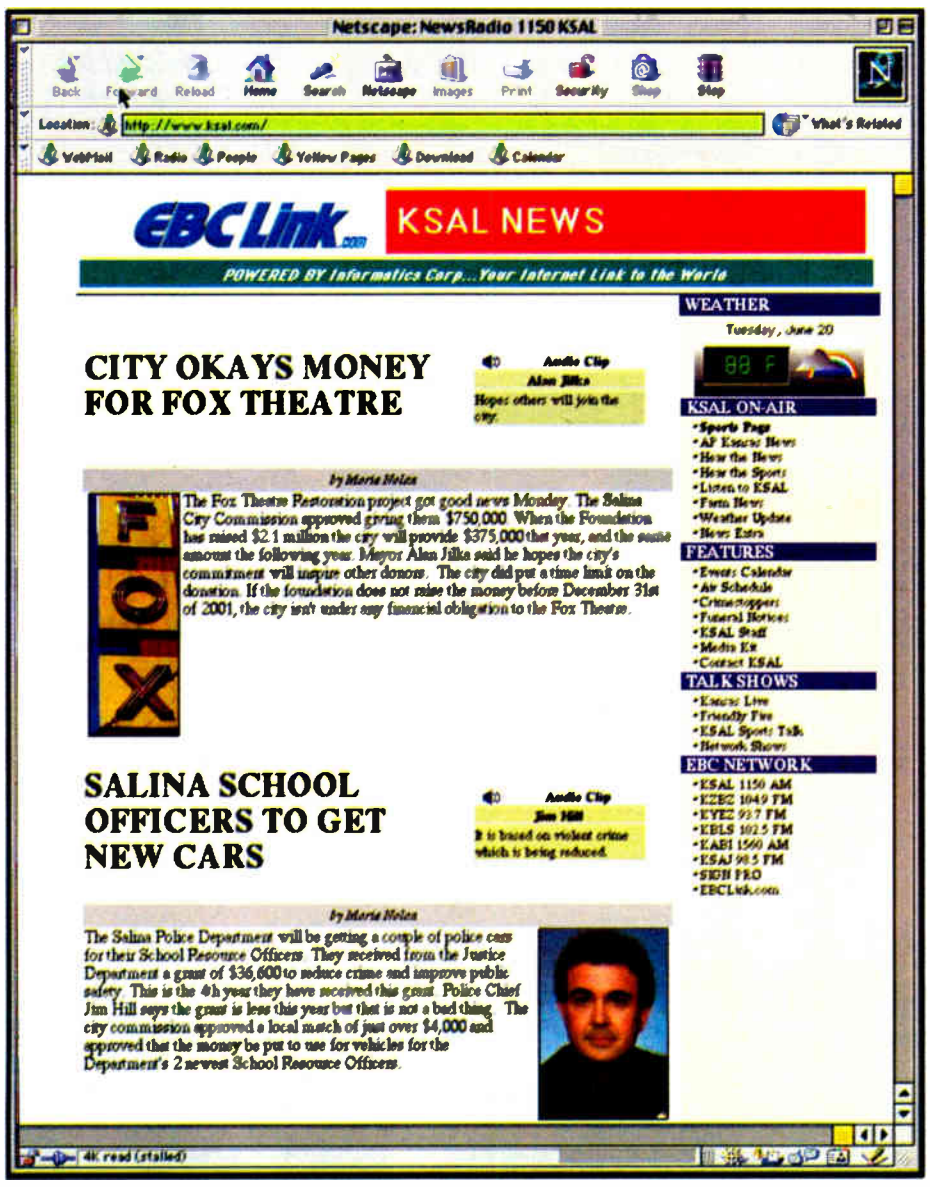
Randy Pickering

"Each Web page update used to take me up to 2 hours. That's dropped down to 30 minutes now that I've gotten to know Frontpage. The younger members of the staff picked it up faster," he said.

Has it been worth the effort?

"With all the zillions of Web sites out there, you've got to give the audience what they can't get anywhere else — local news. We give them news on-demand — three newscasts a day," said Pickering.

— Carl Lindemann



The KSAL(AM) Web site news link

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World Radio History

Advanced Web Site Manipulation

▶ TRACKING, continued from page 29

to get started. Dave Casper, senior VP for Internet services at the Radio Advertising Bureau, noted that many stations aren't asking enough questions of their Internet Service Providers.

"Stations need to understand that most ISPs offer some sort of tracking mechanism as part of their hosting service. Typically this takes the form of log files containing raw data and summary statistics. It may be difficult to interpret, but has the advantage of being free."

Much of the data used by traffic management software is gleaned from a Web server's log files. In its raw form, this data is cumbersome and difficult to interpret. Tracking software converts this wall of numbers on log pages into useful information, typically in the form of charts, graphs and summaries.

While analyzing log files can give you a lot of information about the files being transferred from server to client, it doesn't tell you much about the people visiting your site.

For this reason, many log analyzers develop their own methods to make educated guesses about visitors based on their IP address, time between visits and the type of browser they are using.

For many Webmasters, these guesses are good enough. For those seeking more accurate and detailed information about users, cookies are an option.

Cookies are small chunks of code generated by the Web server that are then transferred to and stored on the client machine. Cookies allow traffic analysis software to count and analyze unique visitors. By separating users without cookies from those who have them, the software can differentiate new users from repeat visitors.

A third way to analyze Web surfers is through a technique called packet sniffing, roughly the equivalent of telephone tapping.

Messages sent between the Web server and browser use the HTTP protocol, and are sent across the Internet as a series of small TCP/IP packets. Some traffic analysis software can "sniff" these packets to gather additional Web site traffic data.

Some unique data can be gathered by sniffing that is simply not available in log files. For example, sniffing tells when the user canceled or repeated a page request by using the browser's stop or reload buttons. This may be an indication of pages that are downloading slowly or have other problems.

Packet sniffing has advantages and disadvantages. On the plus side, all the data can be gathered and analyzed in real time. This is different than analysis of log files, which take place after the fact at regularly scheduled intervals.

On the minus side, if the packet sniffer fails, all the data it would have gathered is

See TRACKING, page 39 ▶

Third-Party Verification Sources

For information on auditing bureaus that can help you obtain independent verification of your Web site traffic figures, contact:

I/PRO
575 Market Street, 5th Floor
San Francisco, CA 94105
Phone: (415) 644-1000
Web site: *www.ipro.com*

Audit Bureau of Verification Services Inc.
900 N. Meacham Road
Schaumberg, IL 60173-4968
Phone: (847) 605-0909
Web site: *www.abcinteractive audits.com*

Hot Dogs Win Big at Radio-Mercury Awards

DDB Chicago won the $100,000 grand prize Radio-Mercury Award for best radio commercial June 15. A total of 12 cash prizes and 13 Radio-Mercury trophies were awarded for the top radio commercials of 1999 in the general, Hispanic and station-produced categories.

The invitation-only prize ceremony was held at the Waldorf Astoria Hotel in New York.

Since the award's inception in 1992, more than 8,000 commercials have competed for a total of $1.75 million in prizes. The Radio-Mercury Awards are governed by the Radio Creative Fund, a nonprofit corporation funded by the radio industry.

— Laura Dely

The $100,000 Radio-Mercury grand prize was awarded to DDB Chicago for its 'Heroes/Foot-Long Hot Dog Inventor Bud Light spot created for client Anheuser Busch. Pictured (left to right) with their winnings are Jim Thompson, Radio-Mercury Awards co-chair; DDB's Bill Cimino, creative director; Bob Winter, producer; John Immesoete, writer, creative director and RAB President Gary Fries

The Best Hispanic Radio Commercial prize, a $5,000 award, was presented to the winners: Casanova Pendrill Publicidad. Its 'Cae Bien' spot, created for client Coors Brewing Co., was written by Ken Muench (left), presented by RAB National Marketing VP Mary Bennett and shared by its Creative Director, Roberto Alcazar

Scott Herman (left), vice president and general manager of WINS(AM), New York, presents the $5,000 Radio-Mercury award for best station-produced radio commercial to the staff of KIEV(AM), Los Angeles. Blaine Parker (center), writer and creative director, and Bob Holiday, producer (right), worked on the award-winning 'Say Ahhh' spot, created for client Brazos Country Foods

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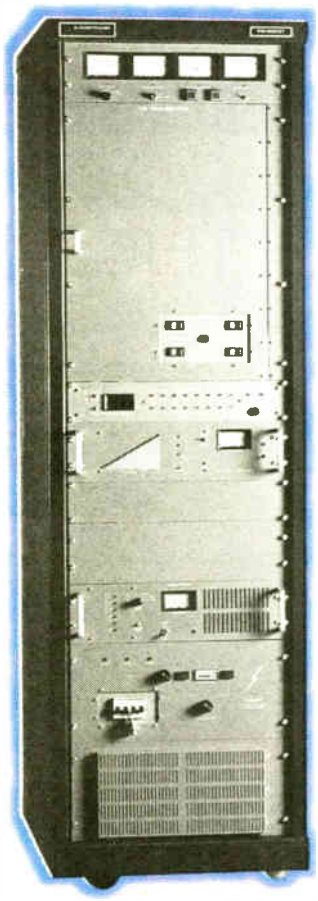

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World Radio History

▶ TRACKING, continued from page 38

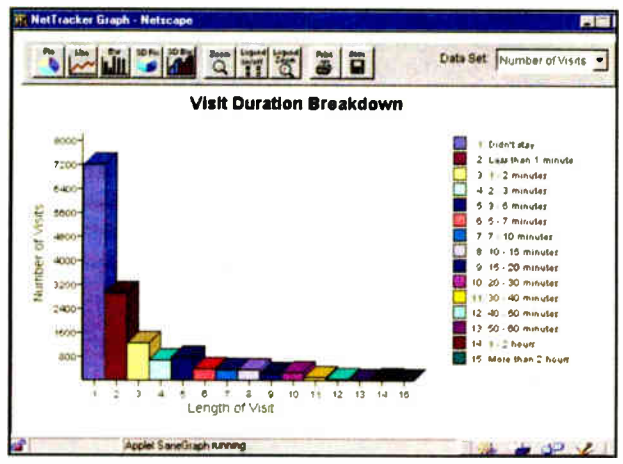
lost and cannot be retrieved. Also, packet sniffing is not applicable to secure e-commerce sites, because all the packets to and from such a site will be encrypted and therefore unreadable by the sniffer.

Performance enhancement

Decker Marquis, marketing manager for Sane Solutions, a Rhode Island-based software developer, said tracking software can do many things to enhance the performance of a radio station's Web site.

"It can provide detailed information, including clickstream details in what each user is doing on your site."

Information about which search engines are referring the most customers who actually make purchases, and which keywords are most popular in drawing users to a site, is also readily available.



Tracking software can tell you how long visitors looked at a page

Marquis said the same software can also tell which online ad campaigns, including banner ads, are the most successful.

While today's tracking software is focused largely on static HTML pages, the Internet and related analysis software will do much more in the future.

In the future, the output of analysis software will look more like traditional business reports.

— Roger Murff

Roger Murff, director of product management at Macromedia, speculates that the Internet will look very different within a few years.

"The type of content displayed in the browser is getting more complicated. Dynamic pages are joining static HTML pages where the content is generated in real time. Streaming audio and video media as well as Flash content will also become more commonplace."

Analysis software

Murff said, "In the future, the output of analysis software will look more like traditional business reports. It will help marketers answer e-business questions about the use of streaming and Flash media."

Murff said these questions are likely to include: How long did a visitor listen to a piece of streaming content? Did the visitor use the fast forward, pause or rewind buttons? What icons did he or she click?

While traffic analysis software can provide a wealth of information about the visitors to your site, there are times when it may not be the best option. Under certain circumstances you may need independent third-party verification of your site's Web traffic.

This is especially true if you're trying to sell banner advertisements. There are several auditing bureaus that specialize in this type of activity, and they may be contracted to assess your site's performance.

STATION SERVICES

Bob & Sherri Add Markets

The "Bob & Sherri Show," a morning talk program produced by Jefferson-Pilot Radio Network in Charlotte, N.C., has added four markets, including the gambling meccas Reno, Nev., and Atlantic City, N.J.

Sherri Lynch and Bob Lacey

Stations in Cape May, N.J., and Fort Myers, Fla., also recently picked up the show.

In 1997, Bob and Sherri were nominated for the NAB Marconi Award. In 1998, the team won the New York State Broadcasters' Association Award for "Best Morning Team."

For information contact Tony Garcia at (704) 374-3689.

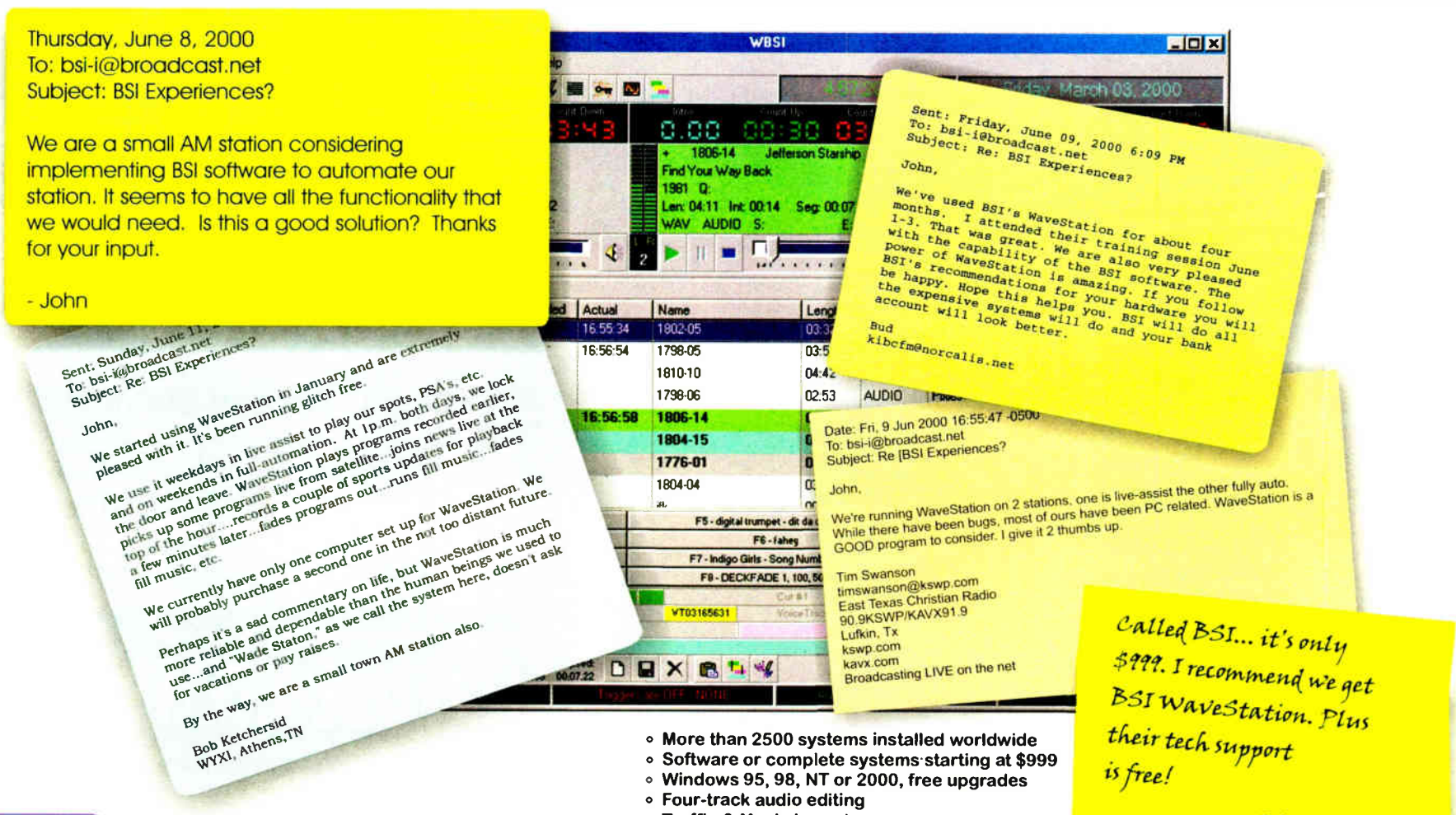
One Question, Three Answers

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

Protect Your Staff and Assets

Ken R.

Sunday, 6:20 a.m. — a disk jockey at a small radio station looks out the large window from the studio into the parking lot. The beam of a car's headlights swings and bisects the hazy early morning air. Gravel crunches as a blue sedan pulls into the lot and stops. The headlights click off and an elderly man gets out.

The man walks to the back of the car and removes a large shotgun. He slams the trunk, takes the weapon in hand and heads up the driveway to the station.

Crash! The man uses the butt of the rifle to smash the glass entrance portico into a hundred jagged shards. Stepping over the mess, he makes his way into the station, yelling incoherently as he charges down the hall past the empty reception desk, brandishing the gun.

This nightmare actually occurred and the intruder was a mental patient who had not taken his medication. He believed that the station was sending coded messages to his wife.

A quick-thinking newsman called the police who were there in minutes to apprehend the unwanted visitor before he could harm anyone.

This scenario could happen anywhere, at any time. What security steps has your station taken to protect itself from this or other possible disasters?

Talk radio

Douglas Silver, president of Silver Broadcast Consultants in Orlando, Fla., works exclusively with talk stations.

"You don't get a lot of threats at the easy-listening operations," said Silver. "Talk formats are more likely to have these problems because our air talents play on emotions. We really try to get reactions, and unfortunately, some of the reactions come from unbalanced people who may react violently."

Silver advises his clients not to give out their street address.

"Use a post office box," he said.

Other tips include the use of closed-circuit cameras and electronically opened doors.

"One of our clients' morning man was stalked by a woman who wanted to stab him, but fortunately she was grabbed by security before she got near him," said Silver.

"In another instance a guy robbed a convenience store and then headed for one of our stations with a gun to shoot our talk host. The intruder was stopped at the back door before he could do any harm."

Caller ID

Silver advises his stations to use caller ID, but not to announce it over the air.

"It's only useful in case of a threat. We don't really screen out annoying calls ... that's up to the host."

Scott Childers

In his earlier days Silver and his talk hosts had gun-carry permits, but he does not advise that in today's climate.

"We don't get that many threats," said Silver, "but if we see a pattern we get the police involved."

Mike Neff, a 25-year radio veteran recalls that at KDKA(AM) in Pittsburgh, the receptionist was seated behind a bullet-proof plate glass window similar to what one would find at a bank's drive-through.

When Neff moved to Raleigh several years later he was surprised to find absolutely no security.

"Anyone could just stumble in off the street," said Neff.

WIND(AM), Chicago, during Neff's tenure had a password/intercom system. No matter how plausible the story given by the would-be entrant, no one got in without saying the magic words.

Neff now works as morning man at WQFM-AM-FM in Scranton, Pa., on the 5th floor of a building housing a jointly owned newspaper. There are security personnel on the first floor and no one gets to the elevator without official station business.

Scott Childers, midday personality at Chicago's WNND(FM), worked at both extremes on the station safety scale. His current employer, Bonneville International, houses WNND(FM) and WTMX(FM) in a downtown high-rise with tight security.

In order to get into the studio, one must first swipe a picture ID card through a sensor in the lobby that allows passage to the elevator.

Once in the elevator, an encoded clearance gets the visitor only to certain predetermined floors. Then another keypad code is needed to get into the station.

And yet another checkpoint must be cleared to get into the studio, to which only certain employees are granted access.

"Programming and traffic people are okay, but salespeople aren't usually allowed in the air studio," said Childers.

"Because each member of the staff has an individual PIN, it's easy for an engineer to check back and see who was in a studio when a piece of equipment turns up missing, for example."

Douglas Silver

Even when two employees are walking together within the station, they enter each area separately, punching in their codes.

"On at least one occasion," said Childers "a stalker was halted in the lobby."

Childers recalls a previous radio job in a small suburban Chicago market that required employees to use a key to get into the station and the same key again to get out of the station.

"Jocks were always getting trapped in there on weekends." Another former place of employment for Childers used an even lower-tech security system.

"A golden retriever lived right in the station and sometimes we heard him barking, which I assume kept most people away," said Childers. "However, cleaning up dog poop in the sales office was not a lot of fun." The dog's name by the way: DJ.

Dennis Weidler, GM of KICY-AM-FM in Nome, Ala., has an entirely different set of problems. In his town of only 4,000 people, freezing is more of a threat than break-ins.

"Until recently," said Weidler, we didn't lock our doors. In fact, we didn't even lock our station vehicles in case someone was trapped outside and needed to get warm."

■ ■ ■

Ken R. is a former jock, talk show host and station operations manager who now writes full time.

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World Radio History

Legal Radio 'Fun and Games' Ads

▶ UMANSKY, continued from page 34

response to the Supreme Court decision and/or to the position taken by the DOJ and FCC in the "Players International" case.

Also, neither the Supreme Court decision nor the DOJ/FCC statement prevents a state or local official from enforcing a state lottery or state anti-casino gambling law. But, in light of the Supreme Court's "Greater New Orleans" ruling, along with the recent decision of the FCC and DOJ not to enforce the casino gambling advertising provisions in the federal law, now is the time for action by broadcasters facing state law restrictions on casino advertising.

If, for example, a state statute bans casino ads, broadcasters and their state broadcaster associations should attempt to obtain a ruling from the state attorney general's office along the lines of the recent statement of the FCC and DOJ. Efforts also may be needed in the state legislature to amend the state law.

Charity Gaming Act

Ever since the passage of the Charity Gaming Act more than a decade ago, broadcasters generally are allowed to advertise forms of "lotteries" that previously were off-limits to stations.

Where there is no impediment created by state law, stations may mention, promote and run spots for lotteries conducted by non-profit groups, by governmental entities and also by commercial organizations — even the station itself. Again, if state law provides no barrier, all forms of ads, station promotions and co-promotions may involve a "lottery."

One determines whether a contest or promotion involves a lottery by looking for the three elements of a lottery. Only where all three elements exist do you have a lottery. And where you have all these elements, the careful removal of one generally will take the contest/promotion out of the definition of a lottery.

The three elements are:

- *Prize.* This element is anything of value, no matter how small or in what form, which the promoter of the contest offers to the contestant.
- *Chance.* This element is present when the winner or the value of the prize is determined wholly or partly by chance, not totally by skill. Also, watch out for chance being involved in any "tie-breaker" provisions of your contest where, for example, a drawing is made among the finalists who have reached the "finals" totally through skill.
- *Consideration.* This element exists when something of value, such as payment of money, is needed to enter the contest, or where there is substantial expenditure of the contestant's time/energy in order to participate. Also, check to see whether the consideration "flows" to the promoter. If it does not, then the element of consideration likely does not exist in this particular contest or promotion.

Where your state's law does not prohibit the advertising or mentioning of the kind of lottery that is part of an ad, station promotion or co-promotion with your advertiser(s), there is no need to conduct this three-part analysis.

But, where state lottery laws and restrictions do exist, you must engage in this test to make sure you do not have a lottery and to ensure your compliance with the law.

Whenever a broadcaster "conducts" an on-air contest, either by itself or with advertiser co-promoters, the FCC's "licensee-conducted contest rule" applies.

This rule holds the station to a much higher standard than if the broadcaster simply were to air contest ad copy of an advertiser.

Among the duties of a local broadcaster conducting a contest are to:

Disclose all "material terms" — *e.g.* how and when to enter, who is eligible to enter, the precise nature of the prizes, method(s) of deciding the winner(s) and tie-breaker procedure(s) — at least once per day part.

Make sure the contest operates in the same fashion as you have described it to your audience. If not, you have misled your audience — a big concern of the FCC and often of local authorities.

Ensure that the contest is not somehow "rigged," such that winners are predetermined or some contestants are given an advantage.

If you have to change the rules of the contest while it is ongoing, be sure to announce the changes clearly and frequently to your audience. Be sure you award the prizes that you have described to your audience. The FCC can impose heavy fines — up to $25,000 per day — for violating this or any other commission rule.

Even if you clearly abide by the licensee-conducted contest rule, you're not necessarily out of the woods. Make sure, as discussed above, that your contest doesn't run afoul of state or federal lottery laws or state deceptive practices laws. And be sure that your contest will not require contestants to place themselves, other people or private property in danger.

This is particularly the case where you conduct a "treasure hunt-type" contest. You also should attempt to reduce your liability by carrying sufficient insurance for the contest and by obtaining releases from contestants.

■■■

Barry D. Umansky, the former deputy general counsel of the NAB, is with the communications practice group at Vorys, Sater, Seymour and Pease LLP in Washington. Reach him at (202) 467-8822 or via e-mail at bdumansky@vssp.com

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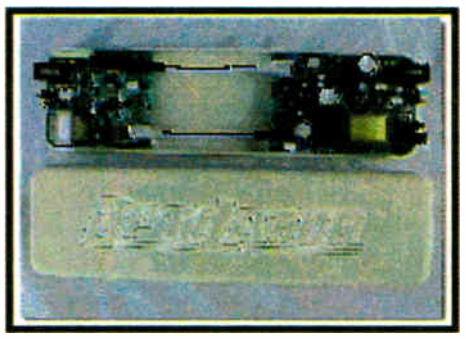

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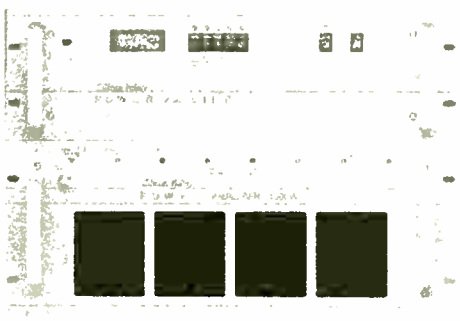

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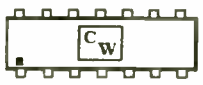

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World Radio History

Studio Sessions

Radio World — Resource for Radio Production and Recording — July 19, 2000

Innkeeper Invites Us Inside

See Page 50

The Mixer's Changing Face

Ken R.

Say "mixer," and many radio people think of their air console or field audio mixer.

But the production room remains a big consumer of mixing hardware, too. And although much of that work is now done on computer screens, you still have plenty of choices when it comes to traditional radio production mixers.

RW talked to the suppliers that make them, to find out what customers are asking for and to learn the latest offerings.

What to look for

"People want ease of use," said Eric Brough of Soundcraft. "Many of the digital consoles rely on a screen and some people like to get around without a screen."

Aaron Kunz, regional sales manager of Allen & Heath, mentioned direct outs and good-quality faders as important features.

"Clients are also asking for built-in reverb and effects," said Kunz.

Rich Redmond, radio systems sales manager for Harris broadcast systems division, said his customers want the installation made easier.

The Roland VS 1880 is among the many choices in production mixers

"The production director wants to upgrade, but the engineers are stretched pretty thin these days," said Redmond.

Art Reed, general manager of Bradley Broadcast and Pro Audio based in Maryland, cut right to the chase.

"Most customers want the lowest price and they want it yesterday," said Reed. "The biggest mistake people make is buying too little, not leaving room to expand or consider future needs."

Reed said the typical equipment return is accompanied with a complaint, "I need a bigger one" or "I need more features."

"Don't buy a Yugo if you're going to eventually need to pull a trailer," said Reed. Bradley Broadcast is a retailer carrying many products and brands.

"We are constantly asked to keep our boards small," said John Devecka of LPB Communications. "Those control rooms aren't getting any larger."

Devecka also said most production directors don't need giant boards with 72 channels.

"Most of these guys just want to pull out a music bed, throw a voiceover in there and fire a few phaser effects," said Devecka.

Whether it is the chief engineer, the general manager or the production director who actually orders new equipment, many don't know which questions to ask in planning the purchase of a new console.

"They should want to know if the board will have a value above and beyond production," said Devecka. "What if your air board fails? Could the production board be easily put into service?"

Devecka suggested the purchaser ask potential suppliers the size of the board.

See MIXERS, page 53 ▶

PRODUCT EVALUATION

Digi System Is Ideal Digital Box for Radio

Ty Ford

There sure are a lot of digital audio workstation systems available. It gets a bit difficult to choose.

I have been a satisfied Orban Audicy user since 1990 when AKG debuted the system as the DSE7000.

Digi 001 control head

Lately, my clients have been asking for MP3, AVI files and stomped-down versions of files for a variety of applications. I needed a software and hardware solution and I wanted to be able to record more than two tracks at a time.

I just installed a 500 MHz G4 with 256 MB RAM, but a question arose as to which PCI card, software and interface to use.

After seeing the Digi 001 video and cruising some newsgroups, I bought the system. This review is the result of my buying the gear, not having it sent to me for review.

For a list price of $995, you get a lot compared to a few years ago, but that's progress.

With the Digi 001, the host computer does all the processing. The bigger, faster and more RAM the beast has, the better. The company also recommends a color monitor set at minimum resolution (832 by 624).

The 409-page manual (there are additional smaller ones) suggests you use a Digidesign-qualified, PCI-based Power Mac running System 8.6 or 9.0 with at least 128 MB RAM, but 192 MB is recommended. Quicktime 4.0 and OMS 2.3.8 are included.

Installation of the PCI card was a breeze. The PCI card has an optical port that is switchable between ADAT and S/PDIF. A multi-pin cable connects the PCI card to the one-rack space Digi 001 control head.

I also bought a 40 GB Maxtor EIDE 66 MHz drive with a 2 MB buffer for audio storage. I had to remove the main drive and bracket so that I could install the second drive.

See DIGIDESIGN, page 46 ▶

Cool Edit PRO

Perhaps you've heard the buzz around *Cool Edit Pro*, the complete software multitrack recording studio. Why is it so popular?

It's so easy to use!

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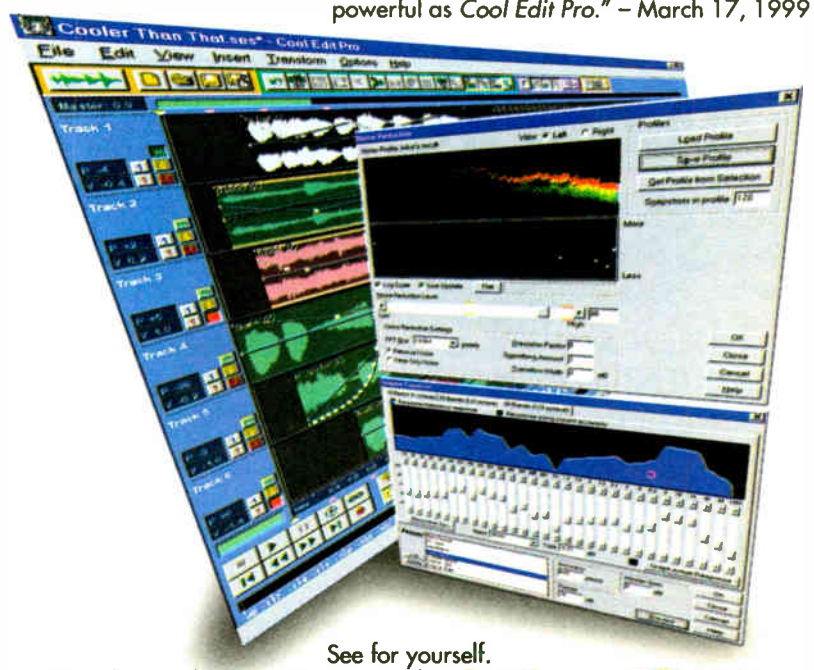

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World Radio History

Digi 001: Pro Tools for Everybody

▶ DIGIDESIGN, continued from page 45

Although the new secondary drive is in, I am using only the 10 GB main drive on projects so far. In 16-bit mode, I have had no problems with running the system and applications on the same drive as the audio files.

In fact, I was able to play back the Digi 001 demo song "Be There" from the primary drive. It is a 24-channel mix with automation and a total of 27 faders with effects returns and master fader. At the same time I was running WriteNow, the word processing software used to write this article.

I was also running the 15-inch flat panel monitor in "millions of colors" mode rather than the "256-color" mode suggested by the manual. I am guessing that the ATI 128 Rage Pro monitor card is taking some of the load of the CPU.

While running the demo, I used the "about this computer" selection on the Apple Menu and found that Pro Tools LE was using 31.1 MB, DAE was using 29.4 MB, Mac OS 9.0.4 was using 73.9 MB, and WriteNow was using 1 MB. That totals about 135 MB and I was not using OMS for MIDI.

The OMS folder holds about another MB of files, not all of which will be in use at the same time. This confirmed that 128 MB of RAM was a very minimum recommendation.

The outboard box

The single rack space Digi 001 control head gets its power from a cable that attaches to the PCI card mounted in the Mac.

The control head has eight analog inputs, two with XLR and quarter-inch mic preamps and switchable phantom supplies. The preamps are up to the task.

Other analog TRS line inputs are on the back of the control head. There are also eight analog outputs and a set of stereo monitor outputs that are +4. Analog outputs Nos. 1 and 2 are balanced +4, but analog outputs Nos. 3 through 8 are unbalanced -10.

An optical I/O on the PCI card supports either two-channel S/PDIF or eight-channel ADAT. I got rid of my ADAT a few years ago, so I couldn't experiment with the optical interface.

Simultaneous recording

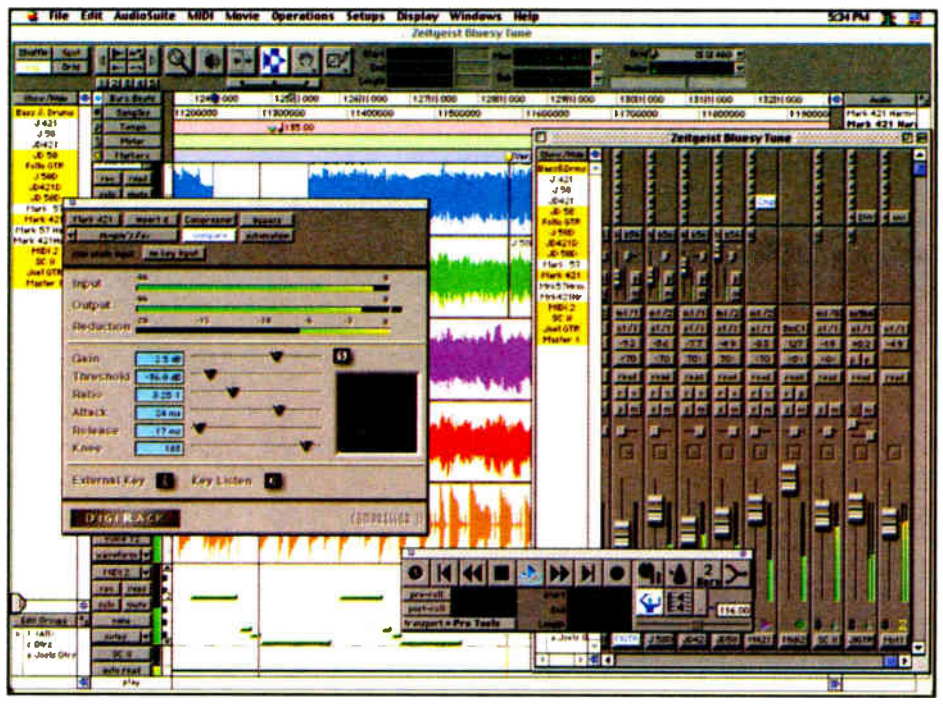
The Digi 001 can record at 16 or 24 bits from all 18 combined analog and digital inputs simultaneously.

The Pro Tools LE software has 16 internal busses and up to five sends and inserts per track.

If mixes or individual tracks are sent within the facility, the S/PDIF Mirroring mode sends audio to both the S/PDIF output and analog outputs one and two. If the user does not mirror, the S/PDIF outputs can be used as digital sends. The S/PDIF coax or optical digital ports can also be used as inputs to the system.

The Digi 001 control head also sports MIDI I/O jacks and a footswitch jack for record In/Out punches. There is no word-clock spigot.

There are separate volume controls for the stereo monitors and headphone outputs. Because these controls will probably be used during operation of the system, it is a good idea to have the control head within reach. This may cause a noise problem when running a combo operation with mics and CPU in the same space.



On screen with Pro Tools LE

With only a primary drive running, the 500 MHz G4 is surprisingly quiet. Adding the extra 40 GB drive increased the noise. The system comes with Pro Tools 5.0 LE. This is not a complete version of Pro Tools, but does include a full-featured MIDI sequencing program.

Because there are no DSP farms, there also no TDM plug-ins. In addition, there are other features such as Voice Selector, Mute Frees Voice, Scrub Trimmer, full SMPTE locking and other things I read about in the manual that are missing from 5.0 LE.

The big manual is mildly depressing because there are a number of pages that are marked for TDM users only. The upside is that a user can learn on a Digi 001 system and move up. I am sure Digidesign planned it this way.

Instead of TDM plug-ins, it comes with Real-Time AudioSuite (RTAS) and AudioSuite plug-ins.

The RTAS plug-ins are realtime and include reverbs, compressors, limiters, expanders, gates, one-band and four-band EQ, invert, duplicate, short delay, slap delay, medium delay and long delay.

There are also non-real-time AudioSuite plug-ins including normalize, gain, DC offset, reverse, signal generator, simple time compression/expansion. The waveform repair pencil tool is included.

The manual says the EQ II four-band EQ is not a real-time plug-in, but I found it to be very real-time.

The DigiRack manual suggests allocating more RAM to the DAE program that runs with Pro Tools LE as the number of effects used increases. DAE was set at 30 MB and I never changed it.The Digidesign hardware buffer was set to 1024 (23.2 ms @ 44.1 kHz) samples and CPU usage to 75 percent. I set the hardware buffer to 128 samples because setting larger buffers created too much delay in my headphones, which threw my timing off.

While 128 (2.9 ms @ 44.1 kHz) samples did create some delay, it was about the same amount I was used to with the Audicy. I found out that Digidesign recently added low-latency monitoring included with Pro Tools LE v5.0.1, which should be shipping by the time you read this.

Theoretically, version 5.0.1 now available for Windows 98 second edition harnesses some of the Altivec engine in the Mac G4. So I went to the Digidesign site but was unable to find the 5.0.1 upgrade in time to make the deadline.

The Digi 001 cannot directly import CD audio into a session. A cut can be brought in from the "import audio from movie" pull-down from the "movie" menu, but auditioning a cut on a CD takes at least four keystrokes.

Robert Campbell, Digi 001 product manager, said, "The AppleAudio CD Apple menu item could be used to audition cuts from the CD while Pro Tools is running and then import the files, but it requires having both apps up."

A file folder has to be chosen to save the audio into, which causes the user to negotiate the "finder." I recommend saving the audio into the "audio folder" that is created in each session. "Finder" does not automatically take the user there.

A 3:33 stereo cut took 1:36 to import counting from the time I hit "import audio from other movie" and including all the keystrokes until I could see it on the edit screen.

About a third of that time was spent negotiating menus. A second try on a 1:06 cut came in at 40 seconds.

The latest Symantec software I loaded in with the new G4 did not have the helpful "directory assistance" feature that would have saved me a lot of busy work and kept me from accidentally putting a file in the wrong place.

Spot production

After importing a stereo music bed, I grabbed a Sennheiser MD 421, plugged it in and went to work.

Pointing the back end of the 421 at the

Hardware for the latest Digidesign system

CPU and working the mic closely gave a surprisingly quiet voice track.

After I cut the voice track, I used the Gain plug-in to select and reduce the breath sounds. The effects have a preview feature that lets a user hear how each effect changes the sound.

To the voice track, I added a significant amount of compression, followed by a touch of four-band parametric EQ and a slight haze of stereo reverb.

I added a few tracks from the Promusic "Whoosh" CD to spice things up.

See DIGIDESIGN, page 47 ▶

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World Radio History

▶ DIGIDESIGN, continued from page 46

While editing the music track, I got a glitch when I took out a section of the music with a simple edit. Although this happened infrequently, I later learned that this is because Pro Tools 5.0 LE is missing the real-time auto-crossfade feature that is on the full-version of the software. Crossfades exist in LE but require the user to create them.

Edit-a-la-mode

There are four edit modes — Shuffle, Slip, Spot and Grid.

Shuffle places edited sections end to end. Spot allows for entering a precise start, end or length by number. Slip allows regions to be moved around and even overlapped on the same track. Grid allows drawing grids based on timed sections and moving the selections grid by grid.

It took a while before I instinctively learned which mode to use.

Many years ago, I used Digitrax software on my Mac to combine six tracks of audio with Quicktime video.

The client brought the visual in on a SyQuest drive as a Quicktime movie. It was fun to spot music and effects on my Mac Quadra 840AV.

Pro Tools LE also has that Quicktime import feature and it works well. I was able to pull in my Quicktime on-camera demo and the audio and have it run while I had six or seven other tracks of audio running. I probably could have had more.

Very few radio people use SMPTE, but those who do may be saddened to learn that Pro Tools LE is only capable of SMPTE triggering.

Control head I/O

I learned there are some work-arounds in the Digi 001 users group on the Digidesign Web site, but have not had the time to check them out.

The Digi 001 does not have software capabilities for burning CDs. However, MasterList CD is available as an add-on product, which can burn Red Book standard CD-Rs for mass-production.

While it comes with a G2 audio encoder and MP3 conversion utility, the MP3 program expires in 30 days. The company only wants another $20 to extend the use, but I opted for the more expensive Media Cleaner Pro 4.0 because it comes with some other features.

A somewhat hidden feature lets the user select a section of mono or stereo audio and export it as a WAV, AIFF or RealAudio G2 file with different sample and bit rates. The "bounce to disk" feature is too cumbersome.

When doing a bounce-mix on the Audicy, I choose two destination tracks, hit record and mix. The problem I ran into is the track assignment procedure in Pro Tools is a lot more complicated, and I was never able to get it to work right.

I called Digidesign for tech support twice. Part of their answer message indicated longer-than-average wait times for Digi 001 questions. The last time I called, in the middle of a weekday morning, I waited 20 minutes before my call was answered.

The person on the other end was calm and cool, and answered my questions quickly.

You have to think about who will be using the system and how much experience they may have with Macs and with Pro Tools, because both have a learning curve.

Because I have a long history with Macs and the Digi 001 interface is intuitive; I was able to figure it out fairly quickly.

The Digi 001 is not as easy to use as the Orban Audicy for simple recording and editing. There are numerous opportunities for an inexperienced or semi-experienced operator to wander off on menu choices that can take that operator you somewhere they don't want to be.

Unless the operator is paying attention, files can be saved in the wrong place, which makes it easy to lose track of them and in the worst case, screw up the system.

Campbell responded to this. He said, "If you are worried about wayward audio files all over your drives, you can use the 'Save Session Copy In' command that allows you to save all audio files used in the session, no matter where they are located, to a single destination directory then erase the rest."

Given those caveats, I am not sorry I put down my money for the Digi 001. We are still getting to know each other and, so far, that is good.

Did I mention I really like the 500 MHz G4, but wish Apple would get the DVD RAM system software straightened out? But that, too, is another story.

■ ■ ■

Technique Inc. Copyright 2000. Ty Ford does narration, production and location audio. Reach him via www.jagunet.com/~tford *where you will also find his equipment reviews and V/O files.*

Product Capsule:
Digidesign Digi 001
Digital Editing System

Thumbs Up
✓ Low cost
✓ Rackmount I/O box

Thumbs Down
✓ Not full-blown Pro Tools
✓ Cannot directly import CD audio into session

For information contact the company in California at (800) 333-2137 or visit the Web site at www.Digi001.com

Introducing AXS 3: Scott Studios' Affordable New Digital System

With AXS (pronounced **ax**'-cess) 3, the 3 tells you this is the *third generation* of one of the most popular digital studio systems in radio! AXS is in its *second decade* as radio's *premier* satellite automation and digital cart replacement deck.

Triple Overlap: The 3 also indicates that AXS 3 is the first affordable digital system that plays *three* stereo audio recordings out to *three separate console faders* for music on hard drive. AXS 3 gives your announcers the ultimate in level control and mixing ability.

Air Studio Production Bonus: AXS 3 also has *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 SCSI LVD 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 SCSI LVD 18GB hard drives* from quality manufacturers (like IBM, Seagate, and others you trust) to keep your precious commercials, jingles and other recordings *always* at your fingertips. Some other systems cut corners with slower and less reliable IDE hard drives that sometimes choke and sputter with triple overlap and music on hard drive. They also jeopardize your cash flow with less reliable drives more likely to crash.

Awesome Sound Quality: With AXS 3, your station will sound superb. AXS 3 uses only the best *non*-proprietary +4 balanced *4 output* 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.

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.

Flexibility: AXS 3 seamlessly mixes uncompressed (linear) audio and all popular MPEG II compression ratios. AXS 3 can also play MP3 songs and spots you get from other sources, but if you do this you must stay with one bit rate for all. (It's a limitation of MP3, not AXS 3.)

The Music's Easy: AXS 3 is delivered with *your* music library already pre-recorded for you either in MPEG II or uncompressed at no extra charge.

Jocks love AXS 3! Scott Studios' 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 instantly at a touch.

AXS 3 comes with Scott's time-saving TLC (Trim, Label & Convert) CD Ripper software for your Program Director's computer. TLC uses a CD ROM drive to transfer 5 minute songs to hard drive digitally in 15-30 seconds.

The Best Air Studio Recording: AXS 3's built-in recorder has a *graphic waveform editor* for easy recording and editing of phone calls, spots, news or announcer lines. AXS 3's log editor lets you add new items to your schedule.

The Best Voice Tracking: AXS 3 works with Scott's optional *Voice Trax*, which you can add to your production room or air studio. Announcers will be able to hear surrounding music and spots in their headphones to match their voice to the moods and tempos of the music. During Scott Voice Trax, the level of your music is automatically lowered by AXS 3.

Quality Hardware: AXS 3 uses an industrial quality Pentium III rack mount Windows computer. Jocks can use a keyboard or mouse, or optional button box or touch screen for fast control.

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 snap with a plug-in connector. Your first two satellite audio connections for music format and news network, as well as another for your production console, are all built into AXS 3. For most music formats, there are no satellite interface cards or external switchers required. Basic connections are built into AXS 3.

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 Pro, Cool Edit Pro, Fast Edit and others. Simply add our time-saving $500 no-dub instant LAN spot upload option.

AXS 3 is Affordable: Satellite AXS 2 systems start at $7,995 with computer, double overlap audio card, satellite inputs, switcher and production recorder-player. Triple overlap AXS 3 adds 18GB of music on hard drive for only $9,995 delivered. For details, check scottstudios.com, axs3.com or call 800 SCOTT-77.

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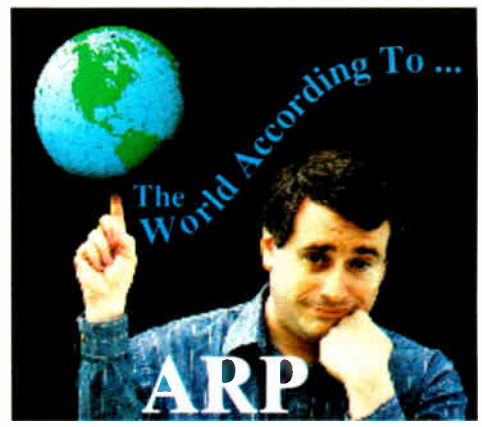
(800) SCOTT-77

Scott Studios Inc.
13375 Stemmons Freeway, Suite 400
Dallas, Texas 75234 USA

World Radio History

The Secret Revenge of Radio Boy



Alan R. Peterson

Only a couple of issues ago, I wrote a product review on the LPB AM-2000 — a little license-free 100 mW AM transmitter for limited-range use (**RW**, June 21 "LPB Transmitter: AM for LPFMers"). I hope you read it.

As part of the article, I mentioned the formation of "Annandale Terrace Radio," a frivolous name I stuck on my little project to help identify it. Should someone in the neighborhood tune across 1170 AM, they would have wondered what they were hearing. After all, there wasn't a station there yesterday. So the project was tagged "ATR — 1170 AM."

I think I'll keep it

When it came time to return the transmitter to the manufacturer, I stopped and gave the matter some thought. There hadn't been a new station on the air in the suburban Washington, D.C., market for years.

In fact, a viable AM station, WOHN(AM), went dark many years before. Too bad, as the market it served some 25 years ago is now a booming, thriving suburb. If only it had hung on longer ... .

So why *not* put up a permanent AM operation here? Even one with limited range that perhaps would garner no listeners whatsoever?

I looked around my basement audio workshop and noticed I already had all the studio components I needed. So I called the transmitter factory and said, "You're not getting this back."

What began as a product evaluation suddenly became my latest time-waster. Meet the owner-operator of the soon-to-be established ATR — 1170 AM.

Let me declare upfront that I have never wanted to get into station ownership, especially after the Big Buyout of the '90s. Those kinds of headaches were best left up to people that could handle them. All I have ever wanted to be was a radio entertainer.

In fact, in this instance I can't even call myself a station *owner*. The little quarter-miler I am putting up is not even in the same league as a 1 kW daytimer. I have not taken the lumps or the risks that legit owners have. I'm not mortgaged to death, nor have I wrestled with construction permits, local zoning variances and engineering reports.

You are never really an "owner" until you have taken it in the gut and bounced back from it. I respect real station owners.

Likewise, I did not do this as a response to my inability to obtain part-time air work in my market, painfully groused upon in another recent article. I'm not the kind of guy that does the old *"I'll show you!"* routine, then goes bankrupt to prove my point. The fact is, I roll over and give up way too easily.

I don't even anticipate this being a moneymaker. Years ago at my first pro job, the radio station owner realized I could not even sell my way out of an unlocked bathroom. He swiftly took me off sales and put me on the air. So I know I'll not be making much on this one.

And for sure I am not doing this to set the world on fire with any wild new innovative formats or programming strategies. I own maybe 85 CDs and it's an even bet that no record reps will be beating my door down anytime soon.

So what on earth do I think I'm doing? I wonder myself.

Man in the white hat

Maybe I just wanted a little vanity station. Someplace where I could *play* radio again, to make it something not so serious for just a little while.

A place where I can air a song that doesn't test worth a darn and click on the mic to yell "boo" anytime of the day. I can go on the air whenever I want to, then come back after dinner and do an hour of summer tunes or an artist block if the mood strikes me.

I can go on the air whenever I want, come back after dinner and do an hour of summer tunes or an artist block if the mood strikes me.

But more than that, I took my neighbors' comments to heart when they told me what good my little hobby might do for our corner of town.

I live within walking distance of two schools in our district. Schools that need a boost for the fine arts and sports curricula. Schools that could use a greater voice than mail-out newsletters. Schools where maybe students can get involved in producing some segments or a full program for air.

Neighborhood Watch

Our community has an active Neighborhood Watch program with minivans that patrol the streets each evening — talk about a thankless task. If anybody in our town needs support, it is these people.

I may never raise a truckload of food for the shelter or sleep on a billboard until my team wins. But I can do good where it counts and still fulfill my personal obsession to be the wiseguy on the radio.

When you run a commercial operation, you have to appeal to a broad audience that could cover a 50-mile radius or more. When you have an ATR 1170 AM, your audience is out mowing the lawn every weekend, so they are not hard to reach or even research.

Friends are trying to convince me even now to put ATR up on the Web, even though it is barely ready to go on the air. They look at me cross-eyed when I tell them I am not interested. "But duuuuude," they tell me, "You'll be heard around the world."

That is my point — I don't *want* to be heard around the world.

The music I will be programming will likely be the same you can hear on almost any Net station now, so I would just be adding to the congestion. Whatever material I air that is pertinent to my service area will be unimportant to anyone more than a mile away anyway. And it still takes less time and effort for a casual listener to turn on a radio than to dial up an ISP and fire up a browser.

Besides, I wonder if the herd of Web-only radio stations is thinning itself out. In mid-June, I saw a newsgroup posting that announced *classicstarsradioonline.com* was for sale. For $5,000, one could pick up the whole station and presumably its listeners.

I may feel different about it in 6 months, but for right now, I would rather just focus on my little corner of town.

Bright lights ...

This may sound Norman Rockwellish to most — referring to "my corner of town" as if it were so many 1930s-era soda shoppes and village greens, and I had no ambition to see the lights of the big city.

Of course I know better than that, but I have to be realistic enough to know that my little rig is going to go four blocks then fizzle out. So the most logical thing to do is program the thing so perhaps *somebody* here will tune in and like it.

Naturally, the next question becomes, "Am I priming myself to go LPFM in the future?" And the answer would be no. As they stand now, the rules and regulations governing LPFM are too restrictive for someone like me. I cannot afford the expense of the coming gear nor the studies and analyses that would have to go into constructing an LPFM operation. Just because something is on AM does not mean it is bad or unlistenable.

Again, I may want nothing to do with this in 6 months. But for now, it sounds like fun. Check back next time to read about some of my program ideas and what the neighbors *really* think of ATR — 1170 AM once it officially launches.

■ ■ ■

*Al Peterson is a technical adviser and columnist for **RW**, as well as program director/radio coordinator for cable/Internet radio station WEBR, Fairfax, Va.*

He has no room for outside jocks at ATR, as that would mean he would have to clean his house.

RDS/RBDS "Mini-Encoder"

With this simple, "dirt cheap" encoder, your station can begin transmitting the more important radio-data IDs, service flags and text messages.

Use any PC to quickly and easily enter your station's call letters or "street name," format identifier, translator frequencies and scrolling ads or promos. Menu-driven software transfers this information to the encoder's own non-volatile memory.

This nifty little encoder installs in minutes, locks to any stereo generator and works in to any FM transmitter.

Don't let your station be skipped-over by the new generation of "smart" radios! At just $390 there's no excuse for waiting to put RDS to work for you right now.

MODEL 701 — $390

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TALK DIGITAL TO ME

The advantages of ISDN are clear: Faster set-up, intelligent call handling and the superior performance of digital audio. And now Telos Systems brings the benefits of ISDN to the talk show environment.

The TWOx12 digital talk show system plugs right into ISDN BRI phone lines. Your callers sound louder and cleaner with the isolation performance that only a true four-wire system can deliver. And if you don't have ISDN in your studio yet, the TWOx12 lets you start with POTS and upgrade to ISDN whenever you're ready.

As easy as picking up the phone. Call management is fast and easy with our new Desktop Director, a fully integrated telephone and switch console. Intuitive operation is enhanced by the exclusive Status Symbols,™ graphical icons that convey line and caller status at a glance.

Finally, a breakthrough in telephone technology. Up to 12 callers can be routed to the two all-digital hybrids. Self-contained, easy-to-install and maintain, the TWOx12 simplifies even the most complex talk shows.

Ready to talk digital? For more information or to get in touch with your Telos Systems dealer, contact us or visit our web site.

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World Radio History

PRODUCT EVALUATION

Innkeeper Gives Guests the Best

Carl Lindemann

Despite the power of high-speed digital connections to send audio from the field, stations still need to bring callers on-air through standard phone lines.

The JK Audio Innkeeper 1 Digital Hybrid uses advances in digital signal processing to get the most out of plain old telephone service, or POTS.

Front view of the JK Audio Innkeeper 1 Digital Hybrid

Combined with the "Guest Module," a handy dial pad accessory, this telephone hybrid is a convenient way to gather sound over conventional dial-ups. The digital hybrid is a step above older technologies and is likely to remain useful until POTS become a vestigial remnant of the analog age.

Guest module

The Innkeeper 1 is an auto-answer hybrid to serve the needs of broadcasters for talk shows as well as newsgathering.

It operates on standard phone lines as well as "dry" lines in a PBX. The core function is to separate transmit and receive audio.

As with all digital technology, performance is tied to the quality and sophistication of the algorithms used to process signals. Given the rapid development of algorithms, what was state-of-the-art a few years back is now dated.

Typically, "classic" digital hybrids have algorithms that use a mix of half duplex switching and automatic gain control to achieve acceptable separation.

Some new designs send a tone or noise-burst down the line at the beginning of the call and observe the echo return to determine the characteristics of the network.

Using actual audio

According to Joe Klinger, president of JK Audio, the Innkeeper 1 was designed after assessing the shortcomings of these approaches. The result is what he describes as an echo canceller using a dual-convergence algorithm and an adaptive digital filter.

The algorithm uses the actual transmit signal to identify network conditions. Within the first second of speech, it tunes and corrects to remove the transmit signal from the caller outputs. Line conditions are monitored constantly, the unit tweaking the signal as necessary.

A 16-bit Texas Instruments DSP, capable of 16 million instructions per second, powers the signal processing.

The firmware that contains the algorithm is socketed, not soldered, to the circuit board. This allows for upgrades to the system as advances in algorithm design continue.

The layout of the unit is intuitive.

On the back, three XLR connectors cover the caller, send and mix out. Standard phone jacks and an RJ-45 jack for the dial pad are found there. A screw terminal allows for connecting an external speaker and controls.

From the front, two buttons control it all. One picks up a call, the other drops it. Trimmer adjustments for send, caller and mixed signal levels are placed wisely behind a screw-on door.

Unit shown with security panel in place

Two switches add presence EQ to the signal and activate or defeat the auto-answer capabilities. These switches are also found on the front.

Once these levels and settings are selected and adjusted, it is a good idea to close the screw-on door to prevent unauthorized "improvements."

Color-coded LEDs monitor the connection and levels. A quarter-inch headphone jack and volume control allow for monitoring directly from the unit.

The test

I tested the Innkeeper 1 for some segments I produced for the show "Beyond Computers" for Public Radio International.

Connecting the Innkeeper to my Mackie 1202 in my home studio was fast and easy. Interviews conducted over the phone came out level and consistent.

I found the presence option added a welcome depth and warmth to correct the typical character of POTS audio (200 Hz to 3.6 kHz).

The back is packed with connectors

I tested separation between send/receive by recording only the incoming audio. The send sections were not dead silent, but reduced to a negligible, low mumble.

The unit does not get the amazing 110 dB specs that I have seen quoted with some all-digital audio cards. But, the 50+ dB separation pushes the envelope as far as dealing with the inevitable limits of POTS.

In other tests, the Innkeeper 1 sounded great when isolating the send feed. Having hassled with a few phone and hybrid setups, I found that the Guest Module keypad is a welcome convenience for an extra $185.

Since putting this model through its paces, JK Audio has released an additional deluxe version — the Innkeeper 1x.

This adds enhancements including a receive AGC, caller ducking and a 1 kHz tone generator.

The new model is based on a different motherboard, so there is no upgrade path from the standard version. The standard desktop version lists for $750, while the 1x desktop goes for $875. Opting for the rack-mount box on both the 1r and 1rx adds an additional $75.

The Innkeeper 1 is a major contender for establishing the next, and perhaps last, generation of hybrids designed to work with POTS.

The relatively low price for such high performance makes this worth a listen and a pleasure to listen to.

■ ■ ■

Carl Lindemann is a frequent contributor to RW.

Product Capsule:
JK Audio Innkeeper 1 Digital Hybrid

Thumbs Up
- ✓ Simple hookup and operation
- ✓ Excellent audio quality
- ✓ Upgradeable Firmware
- ✓ Inexpensive

Thumbs Down
- ✓ None

For more information contact the company in Illinois at (800) 552-8346 or visit the Web site at www.jkaudio.com

PRODUCT GUIDE

E-V Automatically Clears the Air

Electro-Voice's N/DYM series of UHF wireless microphones uses a feature the company calls ClearScan auto-channel select technology.

This feature automates system setup by finding the clearest channel to operate on from one of 10 user-selected frequencies.

The N/DYM wireless series features six models — two handheld and four belt-pack units.

For information call (800) 667-3968 or visit www.electrovoice.com

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Sine Systems

World Radio History

If time is money, what could you get for an extra radio commercial every ten minutes?

If you're in the radio business to make money (and who isn't) you need

"Cash"

Through an exclusive time-shifting process, Cash creates additional broadcast time to sell. It does it in real time, right on the air. It does it without reducing program content. It does it without affecting pitch or creating a "chipmunk effect," It does it in stereo or mono. It does it in variable amounts, adding from zero to five minutes, within two minutes to two hours.

Cash, from Prime Image - you don't need one unless you want to make some.

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World Radio History

INTRODUCING THE POWER OF ORVILLE

It's the dawn of a new era in audio effects.

There's never been a product like Orville™, the new Eventide Harmonizer® brand effects processor.

MORE POWER With up to eight times the power of our legendary DSP4500 processor, Orville has the power to do more and do it better than anything you've ever heard. Because it's not just Orville's amazing raw power, it's how we use it. Orville makes possible incredible new programs such as UltraShifter™ pitch shifting, and FourSidedVerb, and so many more.

MORE CHANNELS Orville gives you up to eight simultaneous channels (four digital + four analog). It's the one effects processor that's ready to handle all your multichannel audio requirements, including DVD production, digital television, and motion picture post-production as well as music recording and live sound.

MORE QUALITY FEATURES
Orville's 96kHz/24bit hardware capability promises the cleanest sound ever. Orville's anything-to-anything routing capability gives you flexibility you never had before. Orville's dual machine functionality lets you simultaneously process two completely independent multichannel effects. And Orville's built in sampler gives you up to 174 seconds of pitch- and time-changeable audio on playback.

MORE IS VERY GOOD We've packed so much goodness into Orville, this ad barely scratches the surface. You need to see and hear Orville for yourself, at selected Eventide dealers. For dealer locations or for more dealer info, see our website, www.eventide.com or call Eventide at 201-641-1200.

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World Radio History

Mixers: Analog, Digital or Both

▶ MIXERS, continued from page 45

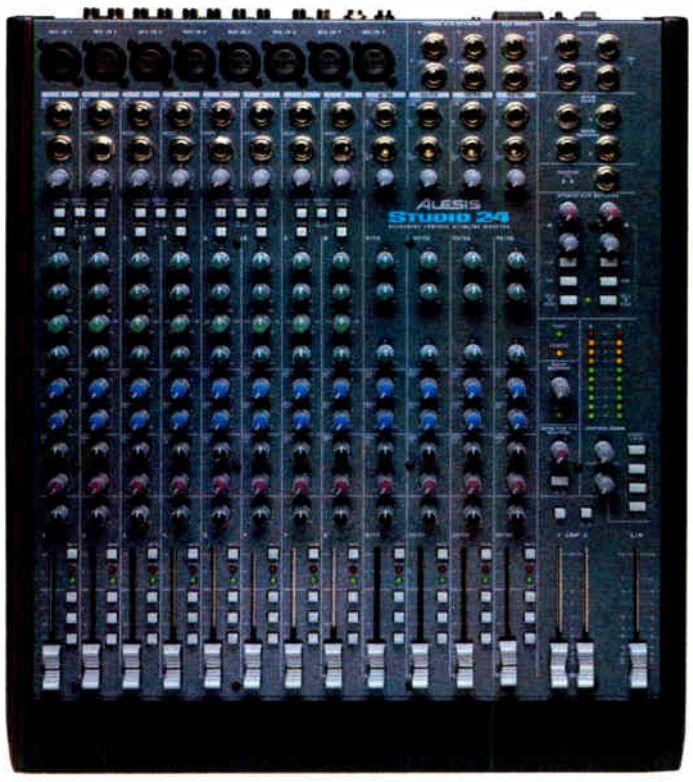
He said one broom closet could be the newsroom, one broom closet could be the air studio.

Zach Boyle of Mackie tech support feels it is important to ask about RF rejection and noise floor. He felt that more sensitive broadcast equipment would show any flaws in the audio.

Tascam TM-D4000

"The quality of the sound in most boards today is better than what you're going to transmit, so it's a matter of ergonomics and how easy it will be to train someone," said John Schauer, product manager of the pro audio division of Yamaha. "Also, how much extra stuff am I going to have to buy to make this work right?"

Brough suggested that the first question should be, "What do I need this board to do? Radio production isn't as intense as studio recording, but the equipment must be reliable."



Alesis Studio 24

"I think you should ask about direct outs," said Kunz. "The board really should be laid out intelligently, intuitively."

Reed provided dozens of questions he would ask. Some of the most important: "What inputs do you need? Do you need phantom power? What about an interface with a digital workstation? Because you will have some analog and some digital sources, how will they be routed?"

Reed said that so-called "stand-alone" workstations really don't stand alone.

"Look at the studios people are building today. There is still usually a console of some type, so make sure and leave room for it."

"People need more flexibility today," said Redmond. "You may not need great EQ on your board because you already have it in a workstation. But now that some people are doing shows from their homes or from another city, you have to have talkback and mix minus capabilities.

"Consoles are now basically a selector to go into your editor and hard-disk system, and to ISDN, too."

Redmond also described a scenario that is increasingly common.

"Often you have a morning show in a particular studio in the morning, and then after 10 a.m. that studio will need to be magically transformed into a production room. Can your board handle that?" asked Redmond.

Optical outputs

"Many components such as MiniDisc, DVD and CD players have optical outputs," said Redmond. "Can your board take S/PDIF and AES?"

Redmond also expressed the opinion that even stations on small budgets will soon find every piece of equipment in their production room to be digital.

Another feature Redmond mentioned is speaker muting. "That's the difference between a recording studio board and a radio station production console," said Redmond.

"How much of a hassle is it to hook the thing up?" asked Dustin Plumb of the Behringer tech support division. "If you have to use a bunch of a auxiliary cables, it really complicates things."

Bob Groome, systems engineer at Arrakis Systems, had a list of questions that he would ask before buying an analog console.

"Are the meters really VU or just indicators?" he asked. "Does it work balance or unbalanced or both? What about crosstalk?"

Groome also felt it was important to ask about the history of the seller if the company is unfamiliar: "How long have these guys been in business?"

So what's out there?

Offerings

The offerings range from utility mixers that could work equally well in sound reinforcement situations, to stereo air consoles that migrated over, to multitrack recording boards.

While most of the buzz lately is about digital, many stations still use analog equipment or digital/analog hybrids for production.

Devecka of LPB Communications said, "As soon as there's a real standard adapted for digital, I would consider it. There are various sampling rates so unless you have something powerful enough to convert everything, chances are you'll still be using some analog equipment."

"A lot of times, on-air boards end up getting used for production," said Devecka. "But we have a new board called Blue 5c which won a 'Cool Stuff' award. It's a five-channel, 10-input console designed for small studios and remote use as well as Internet streaming."

LPB Communications won a Radio World 'Cool Stuff' award at NAB2000 for the Blue 5c console

Arrakis 12,000 Series

Devecka said some stations opt to use that board as an analog front-end for digital workstations. An RJ45 cabling system is available so users can save money, space and configuration time.

Wheatstone Corp. has several consoles appropriate for production. The MR-40 is a 12-input console with three-band EQ on each input, two aux sends, four sub groups, machine control and muting. It lists for less than $10,000.

Wheatstone also offers the SP-8, in the $40,000 to $70,000 range, available in various frame sizes. It has four aux sends, three-band sweepable EQ on the mono inputs with switchable EQ on the stereo ins, eight sub group outputs and dedicated mix-minus busses.

It is available with an overbridge configuration that houses 8x1 input selectors for each module. It has master mute groups for turning groups of mics on and off, and a talkback communication system that is electronically switched.

Phil Owens, sales engineer at Wheatstone, said, "We've found with the increasing use of digital audio workstations that the multi-bus subgroup format in a production console has become less important, as most of the input/output consists of stereo tracks to the DAW. The items that are important are digital I/Os, redundancy with the on-air board, available EQ and processing."

Groome at Arrakis Systems said, "The only reason people buy an analog board is that they are not ready to move into the digital world. For my money, I would go for a digital board, though."

Arrakis builds its 12,000 series analog mixing consoles in eight-, 18- and 28-channel mainframes. DC control design extends the life of faders and switches.

The 1200 series is a similar group of analog boards for the production room and air studio, available in five, 10- and 15-channel models. The board has a telephone mix-minus bus and is trimmed in oak.

The Harris line has been beefed up by its recent purchase of Pacific Research & Engineering. Redmond said, "We've seen a reduction in the quantity of analog mixers on the market because of the movement towards digital equipment. But we have something simply called Productionmixer, which is a very popular analog board."

Redmond also pointed to a new product that offers elements of both digital and analog technology.

"It's the AirWave Digital console and comes with 12 or 20 inputs and can accept AES/EBU, S/PDIF or analog inputs," said Redmond. "You can buy it with the analog inputs and convert to all digital at a later time with an $80 SIMM card."

Active in pro audio, Yamaha has several offerings.

"I would have to point you in the direction of the MX12/4 analog mixer for radio stations," said Schauer of the pro audio division. "Whether you're using the mic or line input, Yamaha's input amplifiers give you a really clean and quiet signal to start with."

The MX 12/4 sports 12 inputs in a four-bus configuration.

"RF signals aren't just generated by transmitters, either," Schauer said. "Motors, video monitors and digital equipment can be other sources, and this board has great RF rejection."

One trend is the "all-in-one" board/recorder. Yamaha is on that with the new AW4416, a 16-track digital recording system with mixing, automation, sampling and mastering capabilities.

Yamaha help start the digital trend with its 01 series, including the 01V. The company touts its small footprint and large feature set. The 01V has 24 inputs with the ability to chain two. It has snapshot automation and moving faders and built-in effects including reverb, compression

See MIXERS, page 55 ▶

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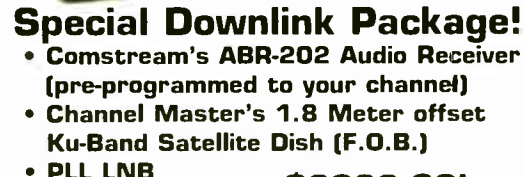

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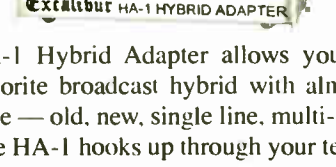

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Production Mixers

▶ MIXERS, continued from page 53

and gating. The engineer has to get used to using one master control panel for EQ.

The 02RV2 has 40 inputs in an eight-bus configuration. Its 100 mm motorized faders are a bonus.

Yamaha's 03D has 26 inputs and 18 outputs with a flexible I/O options. It uses coax and AES/EBU stereo digital I/O connectors for linkup with DAT recorders and other digital devices.

Yet another Yamaha digital production console is the PROMIX01. The interface is easy to learn, and "snapshots" allow one-touch recall of settings. It has on-board dynamics and two internal effect channels. Because it is digital, EQ settings can be stored and named for later use.

Affordable digital

By looking at the Tascam TM-D4000 or its little brother the TM-D1000, one realizes how far digital mixers have come. Both surpass analog boards of just a few years ago in terms of a feature set, ease of operation, flexibility and price.

The TM-D4000 is a 36-channel mixer; the TM-D1000 has 16 channels. Both have automation for recallable settings, moving faders, built in EQ and effects. The 4000 retails for under $4,000 and the 1000 are about to be discontinued but lists for around $1,300. This third generation of digital consoles proves how affordable it can be to upgrade a production room.

Another name on the market is Behringer, an international company with a range of analog production boards. While the Eurodesk line is more suited to recording studios, the Eurorack group of products is aimed at radio stations and smaller home set-ups.

Yamaha 03D Digital Mixer

As the name implies, the Euroracks are rack-mountable and run the gamut from the MX3242X, a 32-channel version, down to the MX602A, which has six channels and a two-bus configuration.

Plumb said Behringer has no digital mixers at this time. The company prefers to concentrate on perfecting low-cost, high-quality analog consoles.

The Harman Group owns, among other companies, Allen & Heath and dbx.

Kunz, regional sales manager of Allen & Heath said, "We've had success with analog equipment because lots of people still prefer the sound and the ease of it."

Kunz said that if a user loses an analog channel on a board, it can be patched around easily, it can be muted or that card can be pulled out without taking down the whole board.

"We built our business on analog products," said Kunz.

Harris Impulse digital console by PR&E

"People even use our consoles as a front end to other analog or digital products."

The MixWizard series from Allen & Heath has 100 mm faders and built-in reverb, which is unusual in an analog mixer. These consoles are desk or rack-mountable and offer 10 or 16 mic/line inputs.

Soundcraft's analog B400 and B800 production consoles are made to order. The user selects the metering scheme, the mono and stereo inputs needed, the channel strips desired and then Soundcraft custom-builds it.

The B400 has four aux sends and the B800 has eight. These boards both have balanced ins and outs and stereo ISDN capability.

Soundcraft's entry into the digital production console is the RM1D, which can be configured with either six or 12 faders. Each input has trim, dynamic processors, 3-band EQ, aux send and pan control. The RM1D is designed as an on-air board but can also double in the production room.

In the mix

Mackie has made strides with its line of digital workstation interfaces and low-cost mixers.

For radio production, Boyle of Mackie suggested the VLZ Pro series of analog consoles. The models 1202, 1402, 1604 and 1642-VLZ Pro differ in the number of inputs, channels and sub groups.

"They have a 130 dB dynamic range and very high RF rejection," said Boyle. "There is still a huge market for analog boards out there."

Mackie keeps up with the times with the Digital 8-Bus (d8b), a 24-channel digital board.

"While this console will work for radio, it was designed more for higher-end project studios and bigger recording facilities which are involved with movie soundtracks," said Boyle.

Roland Corp. does not make analog mixers. According to Erik Hanson, creative services manager, there are quite a few new digital products that the company is excited about.

"If someone already owns the recording medium, we have the 7000 V mixing system which is user-configurable," said Hanson.

The V-mixing system allows the addition of as many ins and outs that are needed, and automated flying faders are a part of the package.

The Roland VM-C7100 is small, but it can be linked with other 7100s for up to 48 inputs.

"This board has built in effects and you can even add some boards for up to 16 stereo effects in all," said Hanson.

"There are also dynamics on every channel, reverb, chorus and delays and even a few vintage effects."

The VM-C7200 is larger, but no audio actually passes through the board except talkback.

"The audio resides in the processors which are outboard," said Hanson. "The console is just the controller so all you need are two AES/EBU cables."

Flexible routing

Alesis has expanded its product line to include production consoles. The Studio 24 and Studio 32 are lightweight analog boards with inline monitor recording and full EQ on each channel.

Even on the smaller Studio 24, one can send eight audio signals to a recorder and monitor eight channels coming back without repatching.

For Internet stations and other low-budget applications, Peter Chaikin, director of product marketing for Alesis, recommends the Studio 12R, which sells for under $500.

"Customers want more inputs for the price, and these are high density mixers," said Chaikin.

When asked to compare digital and analog consoles, Chaikin said, "While digital provides reset capability, typically digital mixers lack the front-panel controls of analog mixers. This means you do not have full-time instant access to all functions. And currently, digital costs about twice as much per channel."

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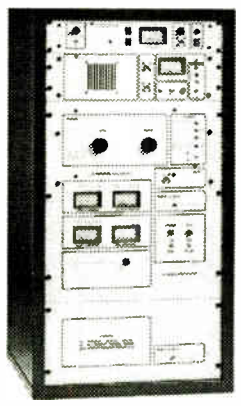

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Powergold 2000

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The software can be upgraded from other music scheduling systems using import wizards. It can run on any 32-bit Windows platform including Windows 95/98/2000 and NT 4.

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Rohn SSV Series 100' self supporting tower N-1 through N-5, on ground, $5500. Ms Sharp, Saturn Comm, 11419 SE Prairie Rd, Galena KS 66739. 316-856-3794.

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Otari MX 5050 pro r-r deck, may need minor repairs, selling as-is, $110 +shpg. Dave Sheehan, Mr. Video, 1601 2nd Ave N., #403, Great Falls MT 59401. 406-761-6346.

Yamaha GC2020B II stereo compressors (2), $100 ea. Mike Jones, Lifeword Bdct Ministries, 535 Enterprise Ave, Conway AR 72032. 501-329-6891.

Urei 565 Little Dipper EQ, $700; ADC Propatch 1/4" punchblock patchbays, new, $600 (many); 1.4" TRS patch cords like new, $15; ADC TT 144 point patch bays, recond, $149-229. W Gunn, 760-320-0728.

AUTOMATION EQUIPMENT

Want to Sell

Scott Studios 1996 version, over 1000 songs, AC, production & studio computers, monitors & software, now in service, $4500. John Salov, Coltrace Comm, 1092 Jackson Crossing, Jackson MI 49202. 800-995-9850.

Want to Buy

Arrakis DL-3 digital audio workstation. Wilmer Borneman, WBYN, 280 Mill St, Boyertown PA 19512. 610-369-7777.

CART MACHINES

Want to Sell

ITC cards for SP, WP, RP, 30, etc, audio cue bus control cards, some work, some need rebuilt, call for info, BO; ITC RP mono record PB cart deck for parts, not working, BO; ITC WP (2) mono PB cart decks for parts, not working, call for details, BO. J Vilkie, Great Circle Bdctg, Box 397, Meadville PA 16335. 814-724-1111 ext 238.

Telex 36 NAB cart deck, rack mount, no electr, includes blank carts & new tape, will trade for tube audio equip or BO. Ed Davison, CPBE, 217-793-0400.

BE triple deck, gd cond, record made need work, 200 free carts, $1000/BO. Curt Marker, WHWL, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

ITC Delta 3 deck stereo PB, $350. Tom Toenjes, KJTY, 6120 Riley Creek, St Marys KS 66536. 785-437-6549.

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CONSOLES

Want to Sell

Ramko CD8MS, touchematic, 8 chnl stereo bdct w/pwr amp & accessories, $500. Robert Curtis, Accutech, HC82-190-C, Violet Hill AR 72584. 870-322-7261.

Rockwell-Autogram IC10A stereo 10 pot console in gd cond, but needs cue module, $1400. Howard Espravnik, Magnum Comm, 915 North Water, Gallatin TN 37066. 615-452-3983 (h); 615-230-3618 (w).

Russco 505 mono 5 chnl mixing console, rack mount or tabletop cabinet, works, BO. J Vilkie, Great Circle Bdctg, Box 397, Meadville PA 16335. 814-724-1111 ext 238.

Shure AMS4000 auto mic mixer, 4 inputs w/3 AMS 22 low profile mics, $500/BO. Ed Davison, CPBE, 217-793-0400.

Harris Executive, 10 chnl stereo, $950. Tom Toenjes, KJTY, 6120 Riley Creek, St Marys KS 66536. 785-437-6549.

Peavey MD12 12 chnl mixer, $100. Mike Jones, Lifeword Bdct Ministries, 535 Enterprise Ave, Conway AR 72032. 501-329-6891.

Auditronics 210 24 mixer broadcast console. Continental Communications. 800-664-4497. Email: contcomm@fiastl.net.

Soundcraft 600, 24x8, $3900; JL Cooper 16 trk automation, $1200. W Gunn, 760-320-0728.

Want to Buy

WE 25B console, will pay $5000-$6000, parts also wanted. Sumner McDaniel, 1-800-251-5454.

DISCO-PRO SOUND EQUIP

Want to Sell

EMU Proteus Pro/cussion drum module w/pads, $300. Mike Jones, Lifeword Bdct Ministries, 535 Enterprise Ave, Conway AR 72032. 501-329-6891.

Want to Buy

University T50 horn driver or complete horn wanted. Ed Davison, CPBE, 217-793-0400.

LIMITERS/ AUDIO PROCESSING

Want to Sell

Altec 1612B mono limiter, works, BO. J Vilkie, Great Circle Bdctg, Box 397, Meadville PA 16335. 814-724-1111 ext 238.

CBS 444 Volumax-Audimax combo (2pr) w/manuals, $200/pr. Herman Gibbs, WKVX/WQKT, 186 S Hillcrest, Wooster OH 44691. 330-263-2212.

Orban Optimod 8000, $800; CRL Amigo AM stereo audio processor, $1800. David Hood, WTLC, 40 Monument Circle #500, Indianapolis IN 46234. 317-684-8128.

CBS Volumax, $400/ea; mint Urei 1176LNs, black, $2300; 1176LN silver, $1800; 1176 original blue/silver transformer I/o, $2300. W Gunn, 760-320-0728.

Want to Buy

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.

MICROPHONES

Want to Sell

EV 635L mics, $95; Altec salt shaker mics, $295/ea. W Gunn, 760-320-0728.

Want to Buy

RCA 77-DX, 44-BX, KU-3A's, WE-639's, On-Air & recording lights wanted, top dollar paid! 615-352-3456, FAX: 615-352-1922.

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

RCA ribbon mics. W Gunn, 760-320-0728.

MISCELLANEOUS

Want to Sell

UTC LS34 30W line transformers, new in orig boxes, $50 ea. Ed Davison, CPBE, 217-793-0400.

TFT 753 & 755 AM mod monitor w/preselector, $1000; Delta ASM-1 AM stereo mod monitor, $3000. David Hood, WTLC, 40 Monument Circle #500, Indianapolis IN 46234. 317-684-8128.

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NAB Broadcasting Yearbook for 1999. Ed Davison, CPBE, 217-793-0400.

Jazz record collections, 10" LP/12" LP be-bop, swing, dixie, highest prices paid. B Rose, Program Reodgs, 228 East 10th, NYNY 10003. 212-674-3060.

MONITORS

Want to Sell

JBL 4411 studio monitors (1 pr), $300; Urei 809A studio monitors (1 pr), $500. Mike Jones, Lifeword Bdct Ministries, 535 Enterprise Ave, Conway AR 72032.

RECEIVERS/ TRANSCEIVERS

Want to Sell

Erko T-4A SCA-FM tuner, new, 67KC & 92KC, $75. Ed Davison, CPBE, 217-793-0400.

TELOS ZEPHYR: excellent condition, $2800. 817-481-4453.

Zephyrs, four cards, excel cond, BO. Curt Marker, WHWL, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

Want to Buy

Automatic antenna tuner to use w/Kenwood 440 amatuer transceiver for a blind ham. Ed Davison, CPBE, 217-793-0400.

RECORDERS

Want to Sell

Ampex AG-440C (2), gd cond, one needs brake adjustment, $1000/BO. Curt Marker, WHWL, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

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Want to Buy

Ampex ATR100 taperecorders for parts. Circuit cards, heads, motors, machine parts, or electronic parts. Call 818-907-5161.

REMOTE & MICROWAVE

Want to Sell

DSTL DP 5501 studio & xmtr STL, excel cond w/manuals, freq agile microwave both ends, transmit & receive, in service, $1500; Scoop Reporter, version one (2) w/manuals & cases, working & in service, excel cond, $400 ea. John Salov, Coltrace Comm, 1092 Jackson Crossing, Jackson MI 49202. 800-995-9850.

Marti MR3D tube type remote pick up receiver, call for details on condition, 161.64 MHz, BO; Marti M30BT tube type RPU xmtr, call for details on condition, complete, BO; Henry Engineering Mix Minus Plus, in like new condition, BO. J Viklie, Great Circle Bdctg, Box 397, Meadville PA 16335. 814-724-1111 ext 238.

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Melco MAX-24, 8 trunk, 24 ext PBX system, uses standard telco wire & touch-tone extensions, removed from service 5/2000. Controlier, pwr supply & PBX console, $200 +shpg. Bob Savage, WYSL, 5620 South Lima Rd, Avon NY 14414. 716-346-3000.

Motron SX1-100 remote control, touch tone w/security feature, short use, $100/BO. Ed Davison, CPBE, 217-793-0400.

Marti RMC-15 16 chnl remote control, $250. Tom Toenjes, KJTY, 6120 Riley Creek, St Marys KS 66536. 785-437-6549.

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10.5" music reels, Drake Chenault, Radio Arts, contemporary, basic library reels, '70s or '80s. Chuck, 570-434-2609.

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Want to Sell

Racal Dana 9303 power meter, 0-2GHz, new in original box, $475. Nigel Macrae, Megastar Inc, 701 Desert Ln #4, Las Vegas NV 89106. 702-386-2844.

TRANSMITTERS

Want to Sell

BE 5-A 5KW FM xmtr, in mint cond, 13 yrs old now in storage, w/manuals, extremely well maintained; BE FX-30 FM exciter also in mint cond; Approx 435' of 1-5/8" Andrews pressurized coax cable, under pressure now, in very gd cond; Jampro 2-bay medium power antenna tuned to 94.3; ERI Isocouplers (2), will sell all as package for $25,000 or separately, you pay S&H or BO. Jerome Hughey, POB 548, Bay Springs MS 39422. 601-764-2499.

BE FM5A, very clean, well maintained w/FX-30 exciter, can deliver, $14,000. Kent Smith, WMJZ, POB 1766, Gaylord MI 49734. 517-732-2341.

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Nautel Ampfet ND1, 4 yrs old in perfect cond, factory tuned to 1570 kHz, avail now, $8000/BO. Richard Miller, Latitude 21 Broadcasting, 590 Ulumalu Rd, Haiku, Maui, HI 96708. 808-572-5534.

1976 CSI FM 3000E single phase xmtr upgraded to 5000 kW in 1993, w/manual, $5500. Ms Sharp, Saturn Comm, 11419 SE Prairie Rd, Galena KS 66739. 316-856-3794.

Continental 831-D-2, 2.5 KW FM w/exciter, excel cond, $5000/BO. Tom Toenjes, KJTY, 6120 Riley Creek, St Marys KS 66536. 785-437-6549.

Gates 1 kW FM xmtr, BO; QEI 695T 3.5 kW solid state w/one tube final FM xmtr, BO. Max Latham, KMRL, POB 1307, Buras LA 70041. 504-657-7003.

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Gates BC1-H 1000W AM xmtr, very gd cond, must pick up, $4500. David Hood, WTLC, 40 Monument Circle #500, Indianapolis IN 46234. 317-684-8128.

Harris TE-3, great spare, on 100.1, crystals still avail, $550. Kinnon Thomas, The Thomas Sound Group, 619 S Main St, Gainesville FL 32601. 352-376-8742.

RCA BTA5R in gd cond, no PCB's, great back up or for parts, was in working cond when removed from service, includes spare parts, $2000/BO +U-pick up. Doug Hawkes, WKAM, 930 E Lincoln Ave, Goshen IN 46528. 219-533-1460.

RCA BTA-5U 5 kW AM, excel cond on 810 kHz, BO. Tom Toenjes, KJTY, 6120 Riley Creek. St Marys KS 66536. 785-437-6549.

Tepco J-340, 2 yrs old, like new, 3 avail, $2000 ea. Curt Marker, WHWL, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

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World Radio History

◆READER'S FORUM◆

Relays and phasor control

Dear **RW**,

I have enjoyed the series on antenna systems by Cris Alexander.

Having been involved in broadcast engineering since Marconi and I invented the medium (he got the credit; I was out buying the beer), I'm one of the few that doesn't know it all. It's always refreshing to read another's take on an engineering subject.

In his concluding article, Cris writes about the folly of using TTL and CMOS ICs for phasor control. His points are well taken.

One of my main reasons for not employing solid-state logic is the extra time it takes to troubleshoot a problem. Enclosed relays in clear cases make lots of sense. When the pattern doesn't change, it's a lot easier to look at a line of relays and notice that K34 should be pulled in but instead is relaxed.

In the IC system you need dig out your logic probe, probably your soldering iron and an intricate plot of gates, buffers, drivers, et al., and try and remember what the exclusive "or" gate is supposed to do.

Also, it's just past 9 p.m. and Radio Shack is closed.

In the early 1970s, I designed and built a phasor controller — with relays — for a station in the central San Joaquin valley of California. Just a year or so ago, the chief of the station e-mailed me, asking if I was the one who built the thing.

Imagining the worst, I was pleased when he said that after nearly 25 years, he had to "fix" the thing. The single capacitor used in a timing circuit had finally dried out and bought the proverbial farm I informed him the warranty had expired the week before!

By the way, with just normal pattern changes, over 25 years, the relays had switched nearly 20,000 times.

Richard Haskey, CPBE
Mesa, Ariz.

Cool Stuff Award disputed

Dear **RW**,

I enjoy reading **Radio World** and the editor's section. One of the most enjoyable ones was in the March 29 issue headlined "Confessions of an E-Mail Pig." I, too, you might consider an e-mail "junkie."

However, in the May 24 issue, I was somewhat shocked and disappointed when I saw a Cool Stuff Award being awarded to Comrex for the Matrix.

I have the utmost respect and admiration for Comrex and Lynn Distler. I have no direct problem with any company winning awards. However, I found the award to the Matrix unjust and puzzling.

1. To my knowledge, the unit on display was not a "working" unit. The features were shown in the design, but one could not call another codec and actually listen to a POTS, ISDN or wireless call.

2. The unit is not available till September, if that. This product is already being labeled for its "cost efficiency and performance in serving radio users" before anyone has made a call. Furthermore, one has to wait at least five months before they could test the unit to see if the features are all what they are.

I would like **RW** to reconsider the Cool Stuff guidelines. One suggestion is winners be "working" products, and available to the industry in a reasonable amount of time. Five months, as in the case of the Matrix, is way too long to be even considered for an award by a prestigious magazine like **RW**.

Our company Aeta Audio was the first to come out with a POTS and ISDN codec with battery backup. The Scoop Reporter II was on display in Vegas and at the NAB Radio Show in Orlando. We were also shipping working units as early as May of 1999.

Furthermore, there is no need for an ISDN module (upgrade); what you see is what you get. The Scoop Reporter is truly the "all-in-one telco box."

Alvin Sookoo
General Manager
Aeta Audio
Rockaway, N.J.

Don't forget the cable

Dear **RW**,

In your May 10 issue, you have a "Partial Gear List" for the Clear Channel Denver installation. You list manufacturer model number and quantity for every piece of gear. But when you get to the "62 miles of audio, control, data, CAT-5, coax, AES and fiber cable," not a mention of a manufacturer.

Now, to be honest, you have done more for the wire and cable industry by allowing me to write my column *Wired for Sound*, for which I am eternally grateful. Wire and cable is the forgotten step-child of all installations. But how can your readers learn anything when the manufacturer (much less model numbers) are not mentioned?

Don't get me wrong, I would be happy even if it wasn't Belden. *All* wire manufacturers suffer from this "forgotten" status. We're like bread and milk at the supermarket. Nobody ever thinks about it, but, boy, if there wasn't any, would you hear about it!

And just imagine what would happen if all the wire and cable working in the world today suddenly disappeared. We would be plunged into the dark ages! Aren't we worth a mention like any other component?

Thanks for letting me vent.

Steve Lampen
Technology Specialist,
Multimedia Products
Belden Electronics Division
San Francisco

We checked with Jeff Gulick, director of engineering for Clear Channel - Denver. He replies: "We used mostly Gepco Gepflex digital audio cable #552608GFC and dual-channel 110-ohm AES3 cable #05524EZ, along with gobs of 25-pair telephone wire."

Trading from the great beyond

Dear **RW**,

I enjoyed the article on GM horror stories (**RW**, June 21, "The GM From Hell").

I worked at a place where the GM traded *everything*! Clothing, groceries, haircuts, cars, fish for their aquarium — you name it, and they traded it. When their daughter got married, the whole affair was traded.

Years later, after I was no longer working there, the former GM passed on. I remarked to my wife that they probably traded his funeral. My wife said that was a tacky thing to say. However, several months later, while doing a project for the new owner, I discovered that indeed I was correct. They had traded the whole thing, casket and all.

Larry Fuss
President, General Manager
Delta Radio Inc.
Cleveland, Miss.
Pago Pago, American Samoa

NAB Makes Attendance Push

We're glad NAB convention planners are turning up the volume on promotion for the Radio Show in San Francisco. Far smaller than its spring cousin, this convention has suffered in recent years from an identity problem, first as part of the failed World Media Expo "umbrella show" concept, then as an apparent result of consolidation.

Last year, the Radio Show attracted about 5,600 people. (Of that, approximately 1,650 were full paid registrants, according to a top NAB official at the time; the rest were exhibitor guests, board members, media and other participants.)

Not bad, considering that NAB has about 5,500 NAB radio members. But the record attendance was 7,246 in 1997, and the show drew almost as many in Seattle the next year. So 1999's attendance was 22 percent off from two years earlier.

Last year's show was victimized by bad timing: August, in Orlando, right before Labor Day. An NAB spokesman said he believes the attendance drop was an aberration.

But the association is leaving nothing to chance. It has sent mailings and created a spiffy marketing look for the show. It is offering a free registration for each paid sign-up from a member station.

The keynote speaker is Colin Powell. The show features a one-on-one with Clear Channel CEO Lowry Mays, interviewed by Lou Dobbs.

New this year is a timely "show within a show" called "Internet@The NAB Radio Show." Also, a project sponsored by Arbitron will produce a study on households with broadband access, comparing their behaviors and attitudes with those of "normal" radio listeners.

Technical folks get an expanded engineering program that includes digital facilities certification. Certain hours are dedicated to exhibits, and you can sign up for just the technical session track, if you like.

An NAB spokesman said show registration is tracking well ahead of Orlando.

Apparently less successful have been efforts to encourage radio groups to hold their management meetings during the fall show, to help boost attendance. Executive Vice President of Operations Jack Knebel told **RW** on the floor in Orlando last year that the association would make such an effort. There have been no follow-up announcements; but the show is still two months off, and we can hope.

We support a healthy convention for radio. Our industry deserves it.

We commend NAB on these efforts and hope to see more of the same.

— **RW**

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