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Radio World®

The Newspaper for Radio Managers and Engineers

July 5, 2000

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SPECIAL REPORT

Pubcasters Reveal Studios

by Fred Krock

ORLANDO, Fla. Three major-market public radio stations have moved into new studios within the past 12 months.

PRC 2000

Engineering managers from radio stations WHYY-FM, Philadelphia; KOUW(FM), Seattle; and WETA(FM), Washington reported on the design and construction of their new studios at the Public Radio Conference in Orlando.

NPR Senior Engineer Jan Andrews moderated a panel discussion at the conference called, "Case Studies in Public Radio Facilities Design."

These stations have different program formats and they used different design philosophies for their studios. Yet in spite of their differences, similarities appear.

WHYY-FM is a community licensee with a joint radio and television operation, which contributed to the complexity of the project.

The old home of WHYY-FM was torn down and replaced with a new building on the same site.

See PRC, page 3 ▶

NEWS ANALYSIS

Cyber Safety Worries Radio

by Randy J. Stine

With names like "polymorphous virus" and "visual basic script worm," computer viruses pose a major threat to broadcasters.

As more radio groups consolidate, and more radio stations become part of a network, the greater the risk for a virus to spread throughout an entire radio group, experts say.

Cyber terrorism

"Cyber terrorism is the most serious threat right now to broadcast companies and all businesses around the world," said Carey Nachenberg, chief researcher at the Symantec AntiVirus Research Center. Symantec manufactures Norton anti-virus software.

"What you must do is build a firewall around your PCs and networks," said Nachenberg.

Since the spread of the so-called "Melissa" e-mail computer virus in early 1999, radio stations across the United States have increased efforts to thwart cyber virus attacks. Anti-virus software is now commonplace at radio stations.

Most broadcasters were better prepared for the "ILOVEYOU" virus in May.

The "love bug" caused billions of dollars in computer damage and cost lost productivity around the world, experts theorize.

"Computer viruses have been around a long time — almost since the advent of the computer," said Eddie Hsia, director of engineering for computer anti-virus

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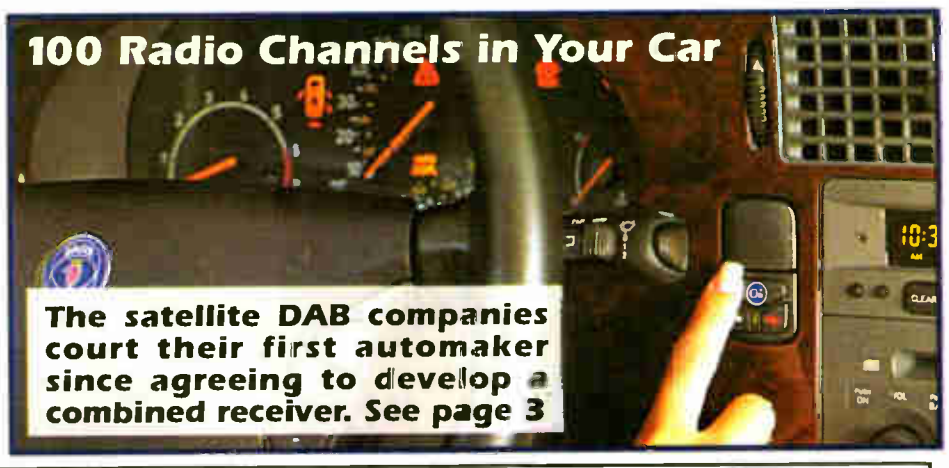

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World Radio History

◆ NEWSWATCH ◆

Station Owner Changes Pending

WASHINGTON The FCC is considering relaxing several station ownership rules, including the ban that prohibits one company from owning a newspaper and a station in the same market. The commissioners believe that even though many more media exist now than 25 years ago when it crafted the ban, "the changes have been insufficient" to justify repealing the rule.

Chairman Bill Kennard said, in some instances in certain markets, there would be "sufficient diversity and competition" even if a newspaper and a single station were co-owned.

"For example, a combination between a single radio station in a large market and a small, suburban newspaper might raise fewer concerns than other potential combinations," said Kennard.

The commission plans to review how it defines radio markets and how it counts the number of radio stations owned in a market. It plans to issue a Notice of Proposed Rule Making soon that will ask whether the FCC should use Arbitron market definitions, rather than its current overlapping signal contours standard.

Local radio ownership rules, revised with passage of the Telecommunications Act of 1996, should be retained, said the commission.

The proposed modifications stem from the FCC's biennial review of its broadcast ownership rules, delivered to Congress May 30.

Hispanic Broadcasting Shifts to NYSE

DALLAS Hispanic Broadcasting Corp. is now trading its Class-A common stock on the New York Stock Exchange.

Effective May 25, the largest Spanish-language radio broadcaster in the U.S. began trading on the NYSE with the symbol "HSP." Previously, HBC traded on the Nasdaq under the symbol "HBCCA."

Soon after the move, HBC announced a two-for-one stock split.

"We believe our move to the NYSE could increase liquidity and reduce trading volatility of Hispanic Broadcasting stock," said HBC CEO McHenry T. Tichenor, Jr.

HBC owns or operates 45 radio stations

See NEWSWATCH, page 11 ▶

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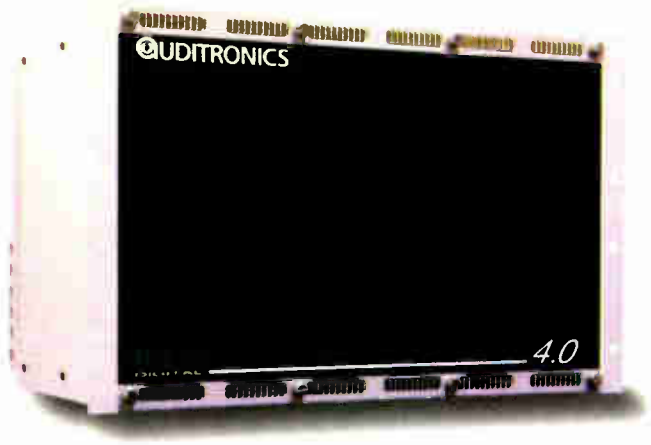

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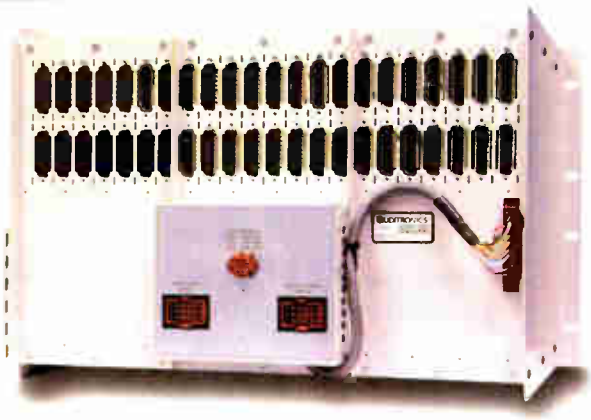

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DIGITAL NEWS

Honda Courted by Sirius, XM

by Leslie Stimson

Both companies developing satellite-delivered digital audio broadcasting are talking to Honda Motor Co. Ltd. about incorporating their radios into 2002 Honda and Acura models, beginning with the Acura RL luxury sedan.

If finalized, a deal with Honda would be the first with a carmaker since Sirius and XM worked out a so-called interoperability agreement, in which they pledged to work with the other to develop a receiver capable of receiving signals from both companies (**RW**, April 26).

Deals with automakers prior to this agreement remain exclusive.

The companies are targeting 2004 for interoperable receivers to be available as OEM and aftermarket units.

In late June, XM Satellite Radio expected an agreement to be finalized soon.

Deals

Honda and Acura, Honda's luxury brand, had a combined total of about 7 percent of auto sales in the United States in 1999, representing about 1.77 million vehicles sold.

As part of the interoperability agreement, XM and Sirius would provide service to the other's customers in an emergency. Details have not been worked out, but the theory, according to Ira Bahr, Sirius senior vice president of marketing, is that if XM's system were to go down, customers could get Sirius service and vice versa.

Sirius planned to launch the first of three satellites by July 3, with service beginning by the end of the year.

Although both Sirius and XM are negotiating with Honda, XM has a separate agreement with Honda and General Motors Corp. subsidiary OnStar, to develop telematics and data applications. GM is an XM investor.

Along with XM radios, OnStar mobile communications services will be available in the 2002 Acura RL.

"What we think XM brings to our subscribers is news and entertainment," said OnStar spokesman Todd Carstensen.

OnStar claims about 210,000 subscribers and predicts that figure will rise to 1 million by the end of the year. OnStar is offered for a base price of $199 factory-installed; it is not offered as an aftermarket item.

OnStar is available in 30 GM vehicles, representing about 25 percent of GM's volume, said Carstensen. Using a combination Global Positioning System satellite network and wireless telephone technology, OnStar links drivers and vehicles to a 24-hour emergency services center. The service also provides for automatic notification of airbag deployment, stolen vehicle tracking, roadside assistance and remote door unlocking.

OnStar buttons can be integrated into the dash, rear-view mirror or ceiling (shown) — the car radio mutes when the OnStar buttons are used

Pubcasters Install Digital Broadcast Gear

▶ PRC, continued from page 1

The construction cost was $25 million, plus an additional $4.3 million for television equipment and $1.2 million for radio equipment, said Engineering Manager Joyce Lieberman.

The design process began two years before WHYY-FM received access to the new building in October 1999.

"Classical 24," a satellite-distributed classical music service, on the television second audio program, or SAP, channel.

Possibly the most unusual thing about this project is that radio and television facilities have been integrated. A Technical Resource Center is the operational hub for both.

Photo by Fred Krock

The panelists from left to right: NPR Senior Engineer Jan Andrews, WETA(FM) Chief Engineer Eric Hoehn, KUOW(FM) Chief Engineer Terry Denbrook and WHYY-FM Engineering Manager Joyce Lieberman

Lieberman said, "WHYY-FM is striving to become the community technology center for the Delaware Valley. It will manage lots of content stored and re-purposed through multimedia, broadcast, Internet, and broadband services. WHYY-FM would like to develop content and provide training for other non-profit organizations in the Delaware Valley."

A Technical Monitoring Center controls radio and television programs. Engineers are responsible for controlling radio automation, future TV automation and for operating both transmitters. Lieberman said that television engineers needed additional training in radio operation.

The TV switching still is done manually so it receives the majority of operator attention in the Technical Monitoring Center. Radio programs are played at low volume level. Control equipment for the radio station is concentrated in one end of the room. Silence sensors alert technicians to program failures. In addition, most

See PRC, page 6 ▶

The design process began two years before WHYY-FM received access to the new building.

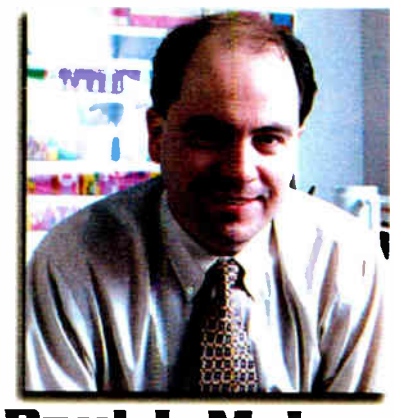
WHYY-FM now streams all radio programs to an Internet server. Video streaming is just beginning, Lieberman said.

WHYY-FM has a news and public affairs format. "Fresh Air," WHYY-FM's nationally distributed program, requires extensive music production capability. The station broadcasts

World Radio History

'How Dare You? How Dare You?'

From the Editor



Paul J. McLane

In my time as editor and managing editor of **Radio World**, I've received my share of complaints. But this is the first time someone accused us of having a "homosexual agenda."

The background:

We received a few letters from readers who objected to our article about Lyle Henry and the National Association of Gay & Lesbian Broadcasters in the May 24 issue. The number of letters was very small, but the stridency was unusual.

One writer questioned our purpose in publishing the article. Another asked if **RW** has started promoting homosexual causes. A third stated bluntly that we should drop our homosexual agenda.

Now, let me say that my job requires a thick skin.

I've heard occasionally that **RW** publishes too many articles about engineering, and I've heard that we offer too few.

I've heard that we cover public radio too much, and that we don't cover it enough. Too many articles about AM station maintenance, too much or too little about the SBE or ham radio.

More than one reader has complained that we have a bias in favor of IBOC digital radio; and some have said we provide too many stories about Eureka developments abroad.

A couple of readers objected to one advertisement that showed a woman in a bikini.

A supplier complained that we covered his competitor's product news. Another objected that we wrote a story about his bankruptcy ("Why would readers want to know about that?" he asked. Hmmm. Do the words "product support" mean anything to you?)

One reader objected to our coverage of the Crossed Field Antenna debate, another to a story about Christian radio formats.

"How dare you cover a new association of broadcast equipment manufacturers," I've been asked. "How dare you report on the cost of exhibiting at trade shows? Why do you give such extensive coverage to low-power FM? Provide so much space to the NAB show?"

More than once, companies have even pressured us not to report facts that were available *in their public documents*. Apparently, what's important to shareholders and the Securities and Exchange Commission isn't worth the attention of **RW** readers.

"How dare you give those people" — whoever *those people* might be — "a platform? It's not good for the industry."

Every one of these examples is real.

Some folks think they know what's good for the readers of **RW**. Perhaps as editor, I should feel that way, too, but I prefer to let *you* decide.

★ ★ ★

Don't get the wrong idea. We have more than 30,000 readers reading 15,000 copies of the paper, and a bunch more visiting our Web site. Most of them love **RW**. Complaints are few. But an editor tends to remember them.

Some people would rather limit your information than simply turn the page on something that offends them.

As a journalist, I know how to deal with such pressures and gripes. If the editorial staff creates clear guidelines in how we select and cover stories, and adheres to them — if we err on the side of openness and debate — we've done our job.

But when someone suggests that a story does not even belong in **RW**, that we should not report on something happening in our community, they're getting on the fightin' side of me.

This small minority believes that coverage equals endorsement, and they want to limit what you see in the pages of your newspaper. They want us to apply a filter to the news, eliminating anything that I consider — that *they* consider — offensive.

It's not enough for them to disagree with the opinions expressed in these pages. They think you can't handle it. They'd rather limit your information than simply turn the page past something that offends them.

★ ★ ★

You may have noticed some changes I've implemented in the past two years at **RW**. Among them: it is our goal to report not only on the hardware and software of radio, but to report on the people of our business. Radio is about people as much as it is about ICs, DAs and XLRs.

Your comments make it clear that you want **Radio World** to take this role.

Another goal is to provide a marketplace of ideas, a forum where you and others can exchange opinions. We include our opinions, too, clearly identified.

I'm proud to say that we offer space to those who disagree with us. We go out of our way to provide that space. That's why we have provided so much room for viewpoints on the very hot LPFM controversy. Few publications make such an effort to provide balance and perspective.

Of course the topic of homosexuality is sensitive to some. I'm not surprised that a few readers were upset. But we didn't create the gay organization, we simply reported that it exists. And we will report your reactions to it.

Not covering a gay group won't make it go away. And even most people who disagree with its goals say they want to know about it.

A corporate engineer, someone I respect very much, told me, "I'm straight, and I work in a conservative industry. I don't believe in the gay lifestyle. But it's out there, and a lot of gay people have done a lot of good in this business. It's a fact of life."

He'll read a story about the gay association — or about ethnic formats or controversial antennas or DAB — and make up his own mind from the diversity of facts we present.

And who is to say what is offensive?

Are we to decide not to report on a church prayer group meeting at an NAB show, as we have done in the past? Should we not tell about a group that gets together to play basketball, or to promote minority hiring in radio, or that meets to discuss job concerns?

No, not all stories have the same weight; certainly a story about a gay group reaching out to radio engineers and managers is not equivalent to a story about a group playing basketball. But which of those stories is more important to our community?

Some stories may upset you, too. You might disagree with what people have to say. But I know you're grown up enough to handle it, and to reply with your own opinions. That's what the marketplace of ideas is all about.

By the way, I estimate that we have published 4,000 stories, letters and columns since I joined this newspaper. I can find exactly two that had anything to do with gays in radio — 0.0005 percent of our ink over four years.

If that's an agenda, well, I'm Ellen DeGeneres.

★ ★ ★

There are a few things I *won't* put in the pages of **RW**. We won't publish an article or letter that slanders a person. We won't provide space for reviews that bash a product without facts to back it up.

But my default mode is openness. This is *your* newspaper. If it's happening in radio, engineering and station management, then it's news, and we intend to tell you about it.

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World Radio History

GUEST COMMENTARY

Interference Is a Fact of Life

by Jeremy Lansman

Regarding LPFM, maybe I have an "attitude." In the '70s, I encouraged many groups to start "community" FM stations, some as 10 W Class D. However, I have also built and owned commercial and non-commercial full-power radio and TV outlets, and acted as a consultant to broadcasters of all kinds.

The NAB asserts that low-power FM "will create additional interference to hundreds of thousands of FM radio listeners." Yup. It's true. Allowing LPFM equals more interference. Same for new regular FM stations, AM stations, TV stations, cell phones or remote-controlled car-key locks.

Peek back to 1894. Marconi is testing the first spark-gap transmitter. In spite of splattering garbage throughout the spectrum, he causes no interference. With one transmitter and receiver on planet Earth, mutual interference is impossible. Only with a second spark transmitter can Marconi encounter interference. Building the second spark-gap transmitter created the need for wavelength allocation!

Interference potential everywhere

Improvements since 1894 have reduced interference, but every radio transmitter still has the potential to interfere with reception of some other transmitter. Each new transmitter costs some degree of interference, however minute. Will a new station bring more benefit than cost? That is the regulatory conundrum.

The FCC ruled that LPFM stations may park 0.6 MHz from spectrum neighbors instead of the usual 0.8 MHz. Usual, that is, with the exception of hundreds of Class-D, translator, grandfathered superpower, grandfathered short-spaced and some TV 6 aural stations that cozy up at 0.4 MHz or less.

Does the 6 MHz flat-out spacing permission given LPFM mean new interference? Sure. But how much?

Does reduced protection make sense? For some reason, I always *just knew* it did. As I tried to formulate arguments for LPFM support, I began to recall I had "been there, done that."

In the late '70s I had been part-owner of KFAT-FM, a full-power Class-B station in California. This was a powerhouse 1.15 kW ERP on 94.5 MHz transmitting from Mt. Loma Prieta, just south of San Jose. Though I had maximum Class-B power, the station was squeezed between superpower KPFA(FM), 94.1, at 9.3 dB over the power limit, and KYLD(FM), 94.9, with 5.6 dB over the power limit. As I walked out of the transmitter building door, 4,000 feet above San Jose, I could see Novato, some 90 miles distant. I could see up Highway 101 past Palo Alto to San Francisco, or turning a bit to the right I could make out Highway 17 to Berkeley.

We know line-of-sight signal strength is a whole lot better than FCC predicted F50/50. All three stations had line-of-sight *killer* signals up the San Francisco peninsula and East Bay. If second-adjacent slop-over caused trouble, I would know about it firsthand.

KPFA(FM), Berkeley, is a listener-supported radio station attracting a politically active and articulate audience. When we purchased KFAT, it was a Class-A 250-W ERP station, call sign KSND, on 94.3 MHz, transmitting from Mount Madonna.

Wrecked reception?

The Santa Cruz Mountains blocked our signal toward San Jose, Berkeley and San Francisco, yet KPFA listeners had filled a good chunk of a file drawer with complaints that KSND had wrecked reception of a favorite station. We got FCC approval to move to the much higher Loma Prieta site, with higher ERP and a change of frequency to 94.5.

If second-adjacent protection had not been adequate, we, along with the FCC, would have been deluged with complaints.

In the weeks following our move, the letters from KPFA listeners arrived. To our surprise, they were letters of praise thanking us for eliminating interference to KPFA. In the years that followed, listeners and personal experience tested the limits of second-adjacent FM protection.

So, why should you believe me, not NAB, the Consumer Electronics Association and National Public Radio? Fair question. Broadcast receivers are superheterodyne. The signal is first amplified on its radio frequency and then converted to an intermediate frequency before final conversion into audio and/or video. To convert the signal to IF, a local oscillator signal is mixed with the RF signal to produce the IF frequency of 10.7 MHz.

The principal function of the RF front-end is to amplify the fragile signals gathered by the antenna. Unfortunately, the front-end also amplifies superstrong signals. The front-end is broadband, usually several megahertz wide. Selectivity, the ability to reject stations close on the dial, is produced by the IF section.

IF selectivity is a function of IF filter quality. Since the 1950s, filter technology has been vastly improved. IF filters have changed from little cans with slugs, wires and capacitors held together by paraffin into nearly microscopic ceramic chips.

On the other hand, front-end overload became worse with the invention of the transistor. Tube anodes ran at 90 volts or more. Transistors get only a few volts. The result? Modern radio front-ends are more likely to distort when confronted with strong signals — strong signals from all over the dial, all at once. The invention of the transistor was a disaster, insofar as RF front-end overload was concerned.

RF overload

But RF overload is not what second- and third-adjacent protection is about. Heck, a station halfway to the other side of the FM dial can crunch reception of your favorite FM station due to overload.

If FM radio testers had tried to separate interference due to wideband front-end overload from narrowband IF selectivity limitations they might have arrived at different conclusions.

The worst radio I encountered back at KFAT had a Lloyds label. It was a clock radio owned by a San Jose advertising client. It didn't receive our station at all. But then it didn't get KPFA or KSAN either, though it had no problem with competing San Jose stations. That must have been front-end overload.

I recall car radios with both aggressive automatic frequency control and poor selectivity. Remember, these radios had slide-rule dials, now an endangered species? Driving north, these radios wanted to switch to KSAN or KPFA.

FM adapters

Remember FM adapters? You stuck this thing on the dash, plugged your AM antenna into the converter, and you heard FM on the AM car radio. Those adapters all had aggressive AFC. Still, these screwy things lost our signal around Palo Alto, well-outside our protected contour.

No one heard us in Berkeley, but we did fine in Oakland. When I visited my grandma in San Francisco, I remember tuning to our station on her very inexpensive phonograph-FM combo. The strong second-adjacent signals never intruded into our signal.

Did our relatively low-power FM receive interference? Sure. There was co-channel garbage from Ukiah, north of San Francisco. In places a few miles from our transmitter, you could hear Ukiah clear as a bell. Where our signal was strong, Ukiah still caused co-channel noise. Then I remember STL co-channel noise and plenty of multipath. Hey, FM ain't perfect!

Jeremy Lansman

I lived with second-adjacent signals. Interference to your station from third-adjacent LPFM won't kill ya. That is, assuming those stations run clean transmitters. I can rant endlessly about poor engineering practice polluting the spectrum and lack of FCC oversight, but that is another story.

Lansman is president of Fireweed Communications Corp., owner of KYES-TV/5, a UPN station in Anchorage. The company is also a licensee of KZND-LP, an Anchorage LPTV on Channel 6, using the aural signal as an FM station. (The aural 87.74 signal is 0.36 MHz from KRUA, 88.1, in Anchorage.

Reach the author via e-mail to jeremydl@kyes.com

RW welcomes other points of view at radioworld@imaspub.com

World Radio History

A Peek Behind Non-Com Buildouts

▶ PRC, continued from page 3

department managers in radio have an air monitor playing in their work areas.

One large studio can be used either by radio or television. Radio studios are designed to allow flexibility in program origination. Membership drives originate in show windows opening onto the main street for those walking by the WHYY-FM building.

Integration extends to content production as well. Television and radio personnel share a large open office area. This allows television and radio people to share ideas and content.

Training on new equipment was a long process for the WHYY-FM staff. Training was part of the design criteria. Training for digital editing required special attention, according to Lieberman.

Programs are stored and played by a Broadcast Electronics AudioVault that includes nine workstations.

An old router from the television station serves as an audio router for radio. WHYY-FM uses mostly analog equipment for radio other than the AudioVault and the digital editors.

Programs are edited on SadiE and Sonic Solutions workstations. One complete SadiE workstation has been built into a roll-around cabinet to allow it to be used anywhere in the facility.

Because the audio is stored in compressed form in the AudioVault and edited in the linear format, Broadcast Electronics supplied special software to convert readily from one format to the other.

Construction at KUOW

Work continues on the build-out at KUOW.

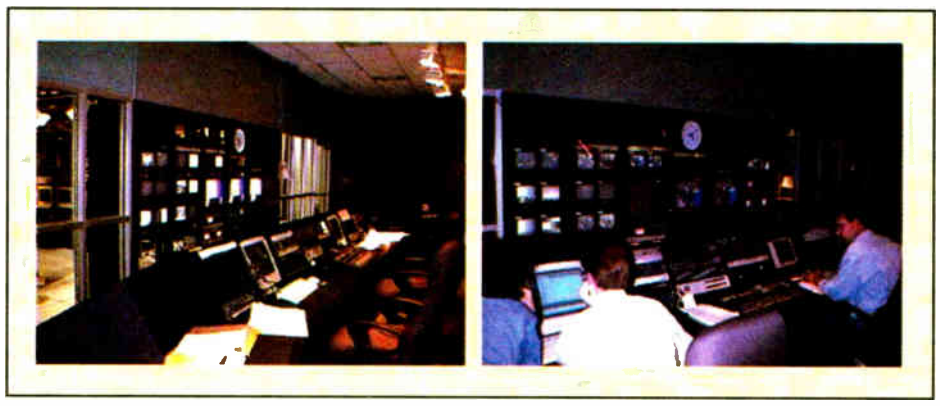
Terry Denbrook, chief engineer for 24 years, described the new studios in Seattle. This is his second major studio rebuild during his years at KUOW.

KUOW is owned by the University of Washington and the program format is news and information with a small number of music programs.

The design aim for the new studios was to be as close to state-of-the-art as possible and to provide additional space, said Denbrook.

The budget for the new KUOW studios started at $2.5 million and was revised to $4.5 million.

Denbrook said as much time was spent planning the project as was spent in construction.



Interiors of WHYY-TV-FM's Technical Monitoring Center

One of the most important aspects of the planning process was selecting a contractor. At KUOW, the building owner specified the structural engineer, the university specified several contractors, and a university department was responsible for planning and installing telecommunications.

Old WHYY-TV-FM facade, left, new facade on the right

KUOW retained a local architect for permit and code issues, an electrical contractor, a general contractor and the Russ Berger Design Group.

Harris Corp. Broadcast Systems Division installed the equipment.

The new facilities include four large control rooms, three medium-sized edit booths, two small edit booths, a talk studio, a 900-square-foot performance studio and a separate large technical center.

Completed KUOW pieces can be sent to production for further editing, to the AudioVault for broadcast or to the archive.

New studios were built in two adjoining 1920s commercial buildings in a small shopping area adjacent to the campus. One of the buildings had been a J.C. Penney store.

The new studios and offices occupied 14,000 square feet on the second and third floors of the buildings. A wall between the two buildings was opened to provide access. The facilities are twice the size of the previous installation on campus.

An acoustician inspected the buildings to confirm that they would be satisfactory before project planning began. Construction took about 18 months.

The main on-air control room has a position for two hosts, a position for the show director, and five positions for in-studio guests. Call screening can be done in the control room or in a separate booth.

The facility can handle at least three telephone callers on the air simultaneously. Guests also participate using ISDN circuits. A production control room is equipped to serve as a backup for the on-air room.

A generator on the roof provides emergency power. Two large uninterruptible power supplies keep equipment working until the generator can come on line. The larger of the two supplies broadcast equipment. All computers are on the smaller unit. Technical wiring uses an isolated ground system.

Digital audio equipment uses 110-ohm twisted-pair AES wiring. Category 5 cable connects the computer systems.

KUOW uses a hybrid analog-digital system. All consoles are analog. According to Denbrook, no affordable digital consoles were available when he was making the selections. For a talk format station, digital consoles offer little advantage. Staying in the analog domain avoids timing and synchronization problems.

The performance studio has two separate consoles. One is a 12-input broadcast console; the other is a 32-input, eight-channel recording studio-type mixer.

Most recording and editing is conducted digitally. Main program recording and playback is done by an AudioVault system. Four DAT machines are used to back up the AudioVault.

Sierra router

KUOW uses a Sierra Automated Systems router as an interface between the analog and digital domains. The SAS router mixes analog and digital signals without using external converters. In addition, it can dynamically assign AudioVault inputs and outputs, reducing the complexity and cost of the system.

The SAS router can be controlled by dedicated control panels and by virtual control panels in computers connected to the router over a local area network. All control rooms and edit booths have at least two inputs from the router.

Reporters in the newsroom can edit stories at their desks to avoid tying up studios and control rooms. From their desks, reporters can edit audio, record and play through telephones, send audio to digital workstations and send audio to Web servers or to the AudioVault for broadcast.

Edit booths provide a digital editor, telephone hybrid, a small mixing console, inputs from the router and access to the house cable system.

Completed pieces can be sent to production for further editing, to the AudioVault for broadcast or to the archive.

An in-house cable system includes all local television stations, plus news-oriented cable channels such as CNN and CNBC. All local AM and FM news-talk stations are on the cable. Two Canadian Broadcasting Corp. services and a Vancouver, B.C., news station are on the cable.

The entire facility may be monitored via a closed-circuit television system. In addition, it can access the freeway television camera system for traffic reports.

Twenty-year studios

In the nation's capital, WETA, like WHYY-FM, is a community joint licensee with radio and television stations. WETA's format is mostly classical music with NPR hourly news. WETA also broadcasts the two NPR news magazines "Morning Edition" and "All Things Considered."

WETA designed new studios for a 20-year life. An existing multi-story commercial building was remodeled for both radio and television studios. Television and radio operation are not integrated at WETA as they are at WHYY-FM.

WETA believes it may be the most completely digital public radio studio installation in the country. Its equipment is synchronous digital from end-to-end. WETA Chief Engineer Eric Hoehn answered the question "Why digital?" in this way:

- The future will be digital;
- WETA already has a lot of digital audio equipment;
- All digital avoids quality changes on-air;
- Digital has been used when the station benefits;
- A full complement of digital equipment now is available;
- Digital equipment was a good choice for relocation.

Hoehn cited advantages of a synchronous digital system.

Synchronous is the best way to connect an all-digital system, he said. In many installations, equipment is located in digital islands. A synchronous system reduces clicks or and such on switches. It reduces unexplained frame drops. It reduces the number of sample rate conversions that can degrade audio quality.

However, it doesn't solve the problem of integrating gear that won't accept a reference signal.

In an all-digital operation, Hoehn noted, an uninterruptible power supply is a necessity, not a luxury.

Looking ahead

Although it is not required by existing equipment, the WETA plant was designed to pass 24-bit audio that may be used in the future.

WETA chose to use 75-ohm coaxial cable for digital signal wiring instead of 110-ohm twisted pair. According to Hoehn, the advantages of using coaxial cable are cheaper cost and quicker terminations, constant impedance without bumps, availability of true 75-ohm patch panels and increasing availability of 75-ohm equipment.

Some equipment will require use of

See PRC, page 7 ▶

World Radio History

SPECIAL REPORT

NPR Wants to Boost Its Web Hits

The following are excerpts from prepared remarks delivered by NPR President and Chief Executive Officer Kevin Klose on May 24 during the Public Radio Conference, which drew more than 1,000 attendees.

Just two months after the year 2000 milestone clicked over, NPR hit a milestone of its own. We turned 30 on Feb. 26.

NPR came into being thanks to the leadership and foresight of a group of extraordinary broadcasters who envisioned a national, public radio service that would offer Americans standard-setting news, information and cultural programming.

However, the Internet has changed and will continue to change how Americans acquire information, ideas and cultural experiences. More and more, it will be a primary portal into the news and information that shape our culture and democracy.

Everyday tool

The Internet has become an everyday communication tool for the broadest groups of Americans. In 1995, fewer than 10 percent of Americans had access to the Internet. By the end of 1999, that figure climbed to 56 percent.

Between use at home, office and school, Internet access is expected to reach 171 million by 2004. And by the end of the decade, it is projected that Internet access will be as pervasive as radio and television.

Global commercial telecommunications and Internet companies are making huge investments in this infant medium. Media companies are engaging in mega-mergers and consolidations at an unprecedented rate — envisioning the endless possibilities of cyberspace.

Even the smallest of operations are making significant investments in developing a Web presence. We are living in the information era and a wide range of organizations — big and small — are all competing for the attention and time of the American public on the Internet.

Substantial resources

At the same time, others—including major broadcasters and publishers—are investing substantial resources into the medium (for example, CNN, The New York Times, The Washington Post). The Internet, however, is posing a threat to public radio: The threat of losing audience and mind-share to other competitive organizations that firmly establish a presence on the Internet.

NPR's Kevin Klose

The Internet audience is growing rapidly, and already includes a predominant share of public radio listeners. In

See KLOSE, page 11 ▶

▶ PRC, continued from page 6

baluns or level adjustment. People sometimes forget that the signal is not audio, but rather, data.

WETA uses Studer digital consoles, which have slots to record all configuration settings on flash memory cards. In case of a console failure, another unit can be moved into place and reconfigured instantly.

WETA designed new studios for a 20-year life.

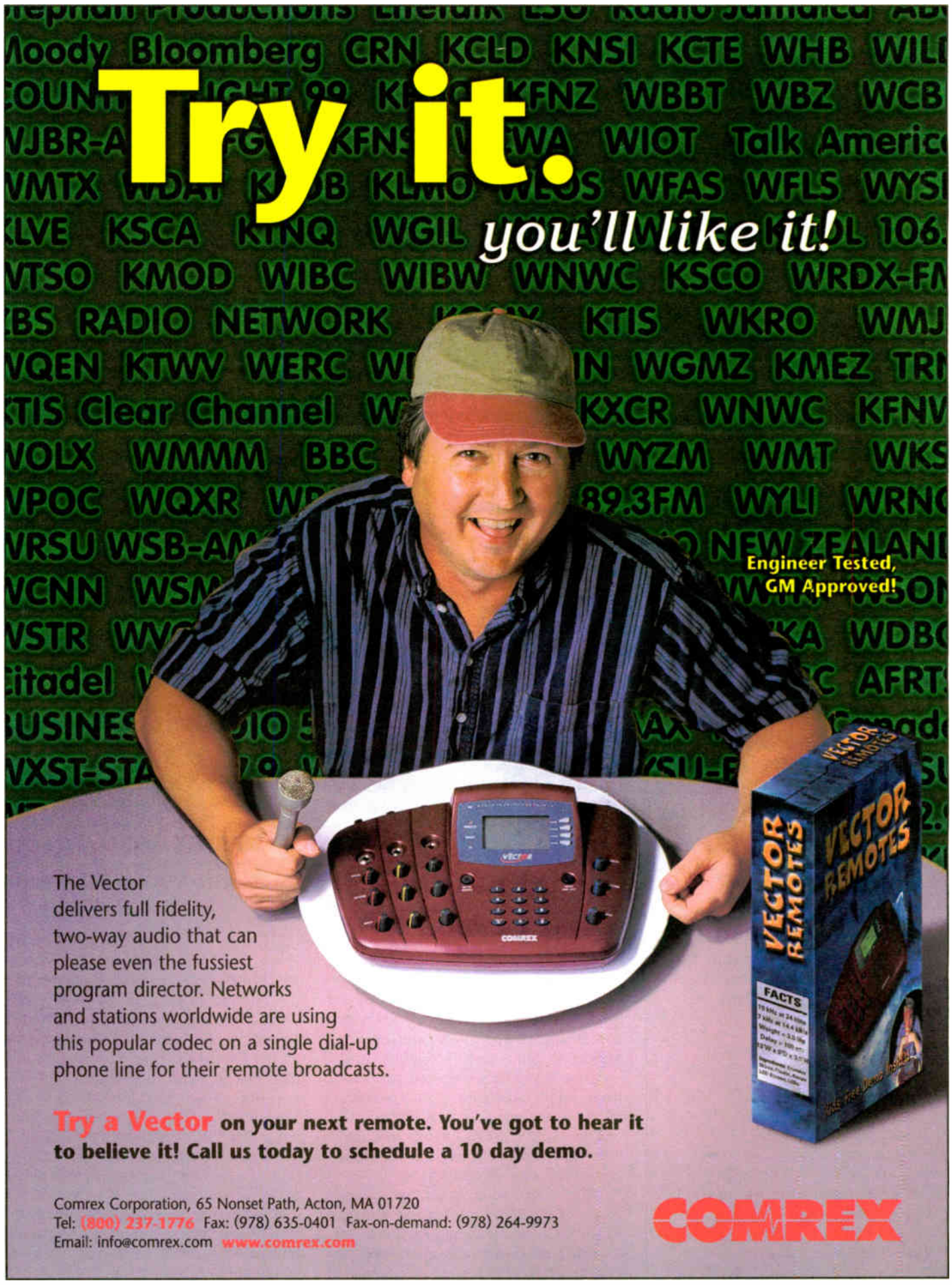
Operating levels from various sources will be a problem in an all-digital plant. Ward-Beck offers a converter that will standardize levels in the digital domain.

At WETA, equipment with noisy internal fans is located in an equipment center to prevent noise pollution of control rooms and studios.

WETA uses Cybex computer extenders to allow operation at two locations, from a remote location and from the equipment center for maintenance or testing.

The station is using an AudioVault system to record and broadcast programs. The AudioVault is run in the manual mode most of the time.

An article detailing WETA's synchronous all-digital approach will appear in a future issue of **Radio World.**



World Radio History

Back Up Data to Thwart Viruses

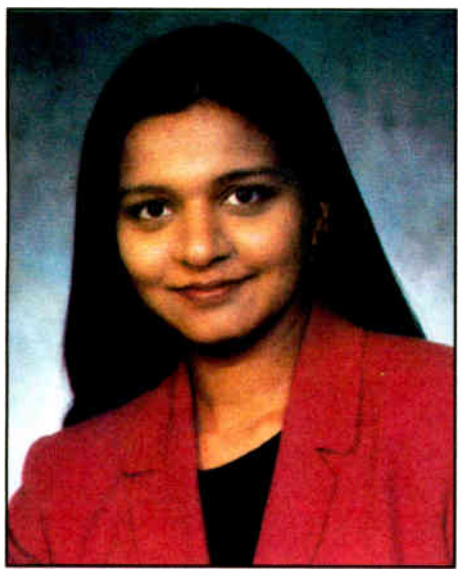
▶ VIRUS, continued from page 1

manufacturer McAfee.com. "However, they (viruses) have become much more sophisticated over the years. And the worms are very dangerous because of the Internet."

54,000 new strains

Hsia estimated that McAfee.com has "fingerprints" or "definitions" of at least 54,000 different strains of computer viruses cataloged. New ones are discovered every day.

"All (viruses) have different infectious routines. And with people using the Internet more, even now for making phone calls and transferring video and such, the likelihood of picking up a virus or VBS worm is much greater," Hsia said.



Cumulus' Mini Srivathsa

About as popular as e-mail spams, viruses can arrive as attachments to innocent looking e-mails — even from return addresses the user can recognize. Once opened, the typical virus can zero out files in directories found on hard drives and network drives. This means the files can no longer be retrieved.

"The problem with that is these viruses can arrive from a co-worker or friend and appear perfectly legit and harmless," said David Haupt, manager of online operations for Salem Communications Corp. "The thing to watch for is something that seems odd about a subject line. If so, don't open any attachments."

Haupt said Salem had some of its 80-plus stations impacted by the "ILOVEYOU" virus. However, hardest hit was the group's corporate offices in Camarillo, Calif.

"We shut down all e-mail service as soon as we realized the damage (the virus) was doing, especially to network drives," Haupt said. "We found some corruption and lost maybe an hour or two of computer time."

Citadel's Dave Marchette

Salem uses McAfee ActiveShield anti-virus software and is exploring ways to better protect itself in the future, Haupt said.

"Until McAfee or Norton gets a software patch up on its Web site, you are vulnerable," Haupt said. "And when you have a large group of radio stations, you're bound to have people who are not engineers opening these attachments and who are not familiar with viruses."

Dave Marchette, corporate management information director for Citadel Communications Corp., said his company was "unfazed" by the most recent major computer virus attack.

Early detection

One advantage Citadel has in fighting off an e-mail virus is having all e-mail servers for the group's 250 radio stations located at corporate headquarters in Las Vegas. This allows Marchette to catch a virus in its early stages.

"As soon as we receive word of a new virus, we use an attachment-filtering program that will delete any e-mail with a specific attachment or subject line," Marchette said.

Citadel uses the Norton Anti-virus Corporate Edition, a fully automated program that updates itself every night with something called "virus definitions," Marchette said.

"Any new virus we need protection from can be taken care of systemwide for all of our stations overnight," he said.

The "ILOVEYOU" virus was also a nonevent for Entercom and its 96 stations, but for a different reason.

"We really lucked out in that our group of stations is still using Windows 95 for the most part," said Rich Petschke, director of information services for Entercom's eight-station cluster in Seattle. The "love bug" affected only Windows 98 and Windows 2000 users.

Petschke said all the Seattle station's computers have McAfee Virus Scan software, which downloads the latest anti-virus program, and updates and installs the software automatically.

"Plus we hammer the point home that you don't open attachments from people you don't know. Considering we have 300 computer users in Seattle, we were fortunate only a few people opened the attachment," Petschke said.

Entercom hopes to centralize a common e-mail system by the end of this summer. According to Petschke, every station will use Novell GroupWise Internet browsers. The "ILOVEYOU" virus attacked through Microsoft's Explorer browser and Outlook e-mail programs.

The anti-virus strategy of Cumulus Broadcasting Inc. is a combination of technology and education, according to Mini Srivathsa, vice president of technology for the group.

Srivathsa said all network traffic and e-mail servers for the group's 304 stations are on a secure internal gateway, which allows Cumulus' corporate headquarters to control access to the Internet. That reduces the risk of a widespread attack and allows for central monitoring.

"This private gateway, if you will, along with primary and secondary data centers in Milwaukee and Chicago, gives us the security for our information systems that we need," Srivathsa said.

Cumulus uses McAfee anti-virus software, configured to self-update periodically, on all PCs throughout the chain.

"That's really just the first step in security. We also set up forums for our network administrators and engineers to communicate, including private discussion boards. These forums are invaluable for spreading word among the Cumulus community," Srivathsa said.

Hsia advises clients to disable Microsoft's Windows Scripting Host program, thus prohibiting any VBScript and JavaScript viruses from getting through.

"The average home user will likely never use it and if you really need it at work, just be mindful that many of the new threats these days take advantage of the Host program," Hsia said.

And finally, Hsia reminds everyone to back up his or her files on a regular basis, since there is no absolute protection against a computer virus.

"We catalog 600 new virus definitions a month — that's 600 viruses a month users are not protected from."

When Is a Virus Not a Virus?

Virus: A virus is a computer program, like any other program on your computer, but instead of being designed to do something useful, a virus is designed to replicate itself from file to file on your computer. It can be introduced from a floppy or zip disk and by e-mail. A virus is destructive in some manner and damages your system, such as corrupting or deleting files and formatting your hard drive. According to McAfee.com, there are more than 53,000 documented viruses.

Worm: A computer worm is a self-contained program that is designed to spread functional copies of itself to other computers. The propagation normally takes place via network connections or e-mail attachments, so worms travel more quickly than viruses. The "ILOVEYOU" virus was officially a worm.

Script viruses: Script viruses are written in script programming languages, such as Visual Basic Script and JavaScript. A script virus needs Microsoft's Windows Scripting Host to activate itself.

Trojan: A Trojan horse is a program that performs some unauthorized action, such as erasing files and displaying messages. A Trojan horse doesn't infect other host files.

To protect PCs and networks, Symantec recommends not opening any e-mail attachments unless users know the sender and are expecting an attachment from that person.

SYMANTEC.™

"Flat out, do not open anything you don't recognize," said Nachenberg.

"Even if it is from someone you know, remember, worms will forward themselves from someone's address book."

Need Help Fighting Viruses?

For more information and to download anti-virus software that can protect your computer, visit these sites:

www.sarc.com
www.norton.com
www.mcafee.com
www.antivirus.com
www.commandcom.com
www.datafellows.com
www.sophos.com

For the latest virus warnings and alerts, visit the FBI National Infrastructure Protection Center's Web site at *www.nipc.gov*

What you must do is build a firewall around your PCs and networks.

World Radio History

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World Radio History

◆NEWSWATCH◆

▶ NEWSWATCH, continued from page 2

in 12 of the top 15 Hispanic markets in the U.S.

For the first quarter of 2000, HBC reported a net revenue increase of 23.4 percent to $46.5 million, with broadcast cash flow increasing 23.5 percent to $16.9 million.

FCC: Don & Mike Not Indecent

WASHINGTON FCC Commissioner Gloria Tristani is calling a decision by her colleagues to dismiss an indecency complaint against "The Don & Mike Show" on WJFK-FM, Washington, a failure "to discharge its obligation to protect children from indecent material on the public airwaves."

The commission already upheld an earlier $4,000 fine against the station for airing a phone conversation without prior permission. The conversation was between the hosts and a city commissioner in Texas over a decision to make Spanish the official language at public meetings for city business.

Tristani agreed with the Latino Media Council and complained the conversation, which included sexual terms, was indecent.

In a letter to the council explaining the FCC's decision, Enforcement Bureau Chief David Solomon agreed many of the remarks that aired were offensive, but said they were not actionable.

Bay Fined for No Station IDs

WASHINGTON The FCC fined Bay Broadcasting Corp. $1,500 for failing to air legal station identification announcements on KBBR(AM), North Bend, Ore. The commission also admonished Bay for using a long-wire antenna without FCC authorization and for operating the transmitter from an unauthorized location on KHSN(AM) in Coos Bay.

The commission investigated after receiving a complaint from former employee Robert King.

Bay said it missed airing its legal IDs for two days in September '99 because of a glitch in the station's software automation program and because the station was not staffed.

As for KHSN, Bay said it had requests for special temporary authorizations pending at the FCC to relocate the station and for the use of the antenna. The STAs were granted April 5.

Bay was fined, the commission said, "because it chose to violate the rule rather than pay to have staff available to make the (ID) announcements."

Bay had 30 days (from May 31) to explain why the fine should be reduced or canceled.

PRC 2000

PRC 2000 Exhibitors

A Moment In Time/WCVE
University of Richmond
Allegiance
Annenberg Public Policy Center/
Justice Talking
Associated Press Broadcast Services
Bayer Corp./Everyday Science
BBC World Service
Bradley Broadcast Sales
British Information Services
Broadcast Electronics Inc.
Broadcasters General Store/MediaTouch
Comrex Corp.
Convio
CUE Corp.
Current Newspaper
Dalet Digital Media Systems
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ForMyCause.com
Giving Capital
Harris Broadcasting
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IAAIS/Intl. Assoc. of
Audio Information Services
Latino USA
Lichtenstein Creative Media Inc.
Maryknoll World Productions
MEMSYS — Herlick Data Systems
Mountain Stage/W. Va. Public Radio
NPR/Corporate
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New Street Productions
Prophet Systems Inc.
Public Interactive Inc.
Public Radio MusicSource
Public Radio Satellite System
Radio Netherlands, N. America
RuffaloCODY
ScheduALL
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Shively Labs
Sierra Automated Systems &
Engineering Corp.
Smithsonian Folkways Recordings
Sony Classical
Sunday Rounds
Tech Nation
Telos Systems Cutting Edge
The Loose Leaf Book Company
The Media Audit
The Stanley Foundation
(Common Ground)
WBUR
WCBU
WDUQ-FM
WFIU/A Moment of Science
WFMT Radio Networks
WGBH Radio Boston
What's the WORD?
Wheatstone Corp.
Wicks Broadcasting Solutions
World Radio Network
WUFT

Source: NPR

NPR: Turn Listeners Onto *Our* Web Site

▶ KLOSE, continued from page 7

fact, many of these Internet companies are targeting our coveted audience. Eighty percent of public radio's listening audience is already using the Internet for news and information, and new audiences can be found there too.

Online programming

However, a majority of these audiences are *not* choosing our Web sites. Only a quarter of public radio audiences are choosing NPR Online as a regular source for online programming.

It is clear that the Internet is critical to the mission and continued growth of member stations and NPR.

There is a need for an online service steeped in the values and mission of public radio. Our listeners demand that of us. A service that connects individuals to their community while engaging them nationally and even globally about issues, ideas and experiences that shape their lives.

Together, public radio has clear advantages to successfully compete online. We have the benefit of shared values and resources. The integration of our national and local content online will be pivotal in distinguishing us from the competition.

A national/local partnership between member stations is critical to the continued success and viability of member stations and NPR.

Both challenges and opportunities exist for public radio in this multimedia revolution and fast-paced business landscape. For the first time in 30 years, together we have the chance to define and create a new, public service of great power and influence by providing more and better programming online.

Only a quarter
of public radio audiences are choosing NPR Online.

But we must recognize the changing patterns and habits of public radio listeners that question our future ability to serve, and be prepared to adapt.

Together, NPR and member stations must aggressively embrace emerging technologies as vehicles for distribution of the news, information and cultural content — hallmarks of public radio.

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World Radio History

ROOTS OF RADIO

Superpowers Crank It Up

Mark Durenberger

This is the second in a series of articles about the history of clear-channel radio stations in the United States. The first appeared in the June 7 ***Radio World****.*

We discussed last time how early regulatory agencies tried, more or less unsuccessfully, to respond to the explosive demand for AM broadcast frequencies, and how the chaos of 1926 led to the formation of the Federal Radio Commission.

The FRC's first major proclamation came in 1928 as General Order 40. By its structure, this order finally demonstrated some regulatory consistency, and it sent a signal to broadcasters that they could invest in the business.

Road to high power

In 1930 the FRC authorized 50-kilowatt operation on 20 of the 40 channels previously reserved for wide-area coverage. Two years later, it officially recognized the term "clear channel," and in 1933 authorized full power on all 40 of the wide-area frequencies. Broadcasters immediately began to improve their facilities.

In 1932, the FRC recognized the term 'clear channel.' A year later it authorized full power on the 40 wide-area frequencies.

By the mid-1930s many stations were cranking out 50 kW and building solid transmitter plants, many of which are still in operation.

Even with 50 kW, the coverage of medium-wave stations had its limit, and the need for solid nighttime service to the "white areas" remained a front-burner industry issue. Proposed solutions included more stations and higher power.

Massive transmitter plants certainly had sex appeal. Power levels several dB above 50 kW were the usual suggestions. And Radio News combined high power with use of the Long-wave band. In a well-researched proposal in its April 1931 issue, the publication suggested that seven geographically dispersed, 1-Megawatt stations, operating at low frequency (200 kHz), would cover the entire country with fade-free reception.

These stations would be connected by landline. They called it Direct National Coverage. The devil, of course, would be in the details.

The Federal Radio Commission, however, was not interested in licensing LW operation, or in solving the coverage problem by other means, until it had optimized the use of the existing MW spectrum.

In the next few years, two events occurred that would affect the battle to define nighttime AM service.

Legal action

First, through a series of court actions and rulemakings, 10 of the 40 protected channels were duplicated. (Some channels were actually constricted with the consent of the licensees, not always for valid technical reasons but sometimes as a quid pro quo for regulatory relief.)

These "1-B" duplications would set a precedent for future shared use of the clear channels.

The second development occurred in early 1934, when WLW in Cincinnati began what was to be a five-year experiment, broadcasting under Special Temporary Authority at a "superpower" of 500,000 watts.

WLW went superpower at the same time serious opposition to the broadcast giants was beginning to materialize. One of the reasons the opposition to clear-channel operation was so intense was that WLW's operation raised the specter of "domination by the few."

FDR years

In the Franklin D. Roosevelt years, Congress, in response to pressure for new radio regulation, enacted the Communications Act of 1934, creating a Federal Communications Commission.

One of the early tasks facing the new FCC was the resolution of the legal and political attacks on the clear-channel stations by competitors and "have-nots."

As large targets, the clears were challenged from all sides, from Petitions to Deny to cross-filing on license renewals.

In two such cases, John Shephard III applied in 1934 for full-time operation on 640 and 830 kHz, and forced the operators on those channels to go through long and expensive hearings until his challenges finally were denied in 1936.

But the FCC had more to do than think about clear channels, and its reputation as a "body deliberate and informed" often was in question. As an act of self-protection, in 1934 a number of large stations united behind Edwin Craig of WSM to form the Clear Channel Group, later known as the Clear Channel Broadcasting Service.

CCBS operated as a cooperative including about 16 of the largest stations, and was the primary advocate for the protection of the clear channels.

The CCBS was careful to limit membership to those operators who demonstrated a clear commitment to the preservation of clear-channel service. As an example, because of concerns that some of the networks had "dealt away" 1-A protection in deals with the FCC, the bylaws initially denied membership to "network owned-and-operated" stations.

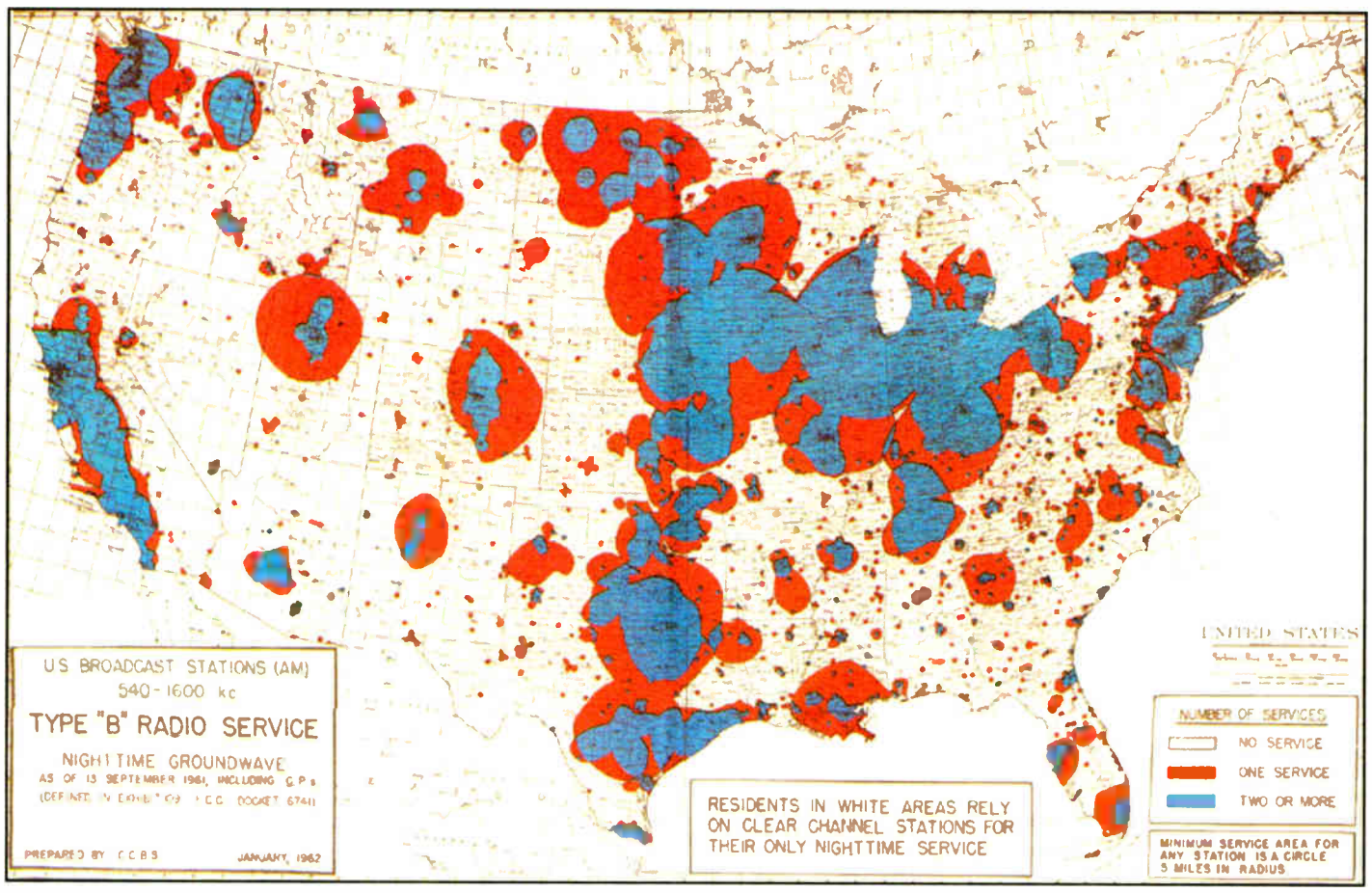
White areas remain

By the end of the 1930s, all the clear-channel stations were operating at 50 kW. While the stations on some duplicated 1-B channels had to directionalize, the others operated full-time, nondirectional, as the only domestic nighttime assignment on their frequency.

Their combined sky-wave service covered a good part of the United States, but there remained a large underserved nighttime white area, primarily in the West.

The FCC wanted to solve the white-area problem, but it had other matters before it in the mid-1930s. It was focused on preparing the U.S. position for the upcoming North American Regional Broadcasting Agreement. The NARBA would bring about a

See CLEAR CHANNEL, page 16 ▶



Map of 'white areas'

What Might Have Been: Superpower Applications

(Pre-NARBA Frequencies)

1935

Oct. 21: KNX applies for 500 kW on 1050 kcs

1936

April 11: WJZ (now WABC) applies for 500 kW on 760

April 27: WHAS applies for 500 kW, then for 750 kW, on 820

June 1: WJR applies for 500 kW on 750

June 5: KDKA applies for 500 kW on 980

June 15: KFI applies for 500 kW directional on 640

June 24: WSM applies for 500 kW on 650

July 2: WOAI applies for 500 kW on 1190

July 2: WOR applies for 500 kW on 710

Sept. 24: WGY applies for 500 kW on 790

Oct. 1: KSL applies for 500 kW on 1130

1937

Jan. 25: WBZ applies for 500 kW on 990

1938

July 1: WHO applies for test authority at 500 kW on 1000

World Radio History

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.

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World Radio History

Session Targets Physical Plant

Panelists at an NAB Meeting Take a Close Look At the Underpinnings of Your Facility

Thomas R. McGinley

Consolidation has unleashed a torrent of rebuilding projects in all sizes of markets. Many engineers are confronting the challenge of using digital building blocks for the first time.

A detailed engineering session at NAB2000 focused on the construction of radio's physical plant.

Leading off the confab, moderated by Barry Thomas, was Radio World's ARP, Al Peterson, a multi-talented, multi-media guy now working in public access TV.

Al examined the potential of Linux, BeOS and the Mac operating systems as platforms to support digital storage, playback and playlisting programs.

"I'm not an expert ... nor a software writer," Peterson said. "I have to find inexpensive and efficient ways to keep two radio stations glued together and on the air."

While Microsoft Windows dominates this workscape, Linux has a growing number of proponents. On Air Digital and Scott Studios are examining the freely obtainable Unix offshoot in their products. Scott is hoping to offer a Linux-based version of its popular platform this year.

Audio management

Several free Linux players have been available on the Internet for a few years. BeOS, while not without its fans, has fewer choices in terms of audio management for radio.

Apple has the most potential. The iMac was designed from the start with multimedia in mind, and enough disk storage for up to 21 hours of audio.

Similarly, there is little software available, but two Mac-based programs found on shareware sites — SoundByte and MegaSeg — show that someone out there is thinking about audio on the iMac.

While showing a picture of the iMac, Peterson quipped, "Isn't this thing cute as hell? Doesn't it *look* like it should belong in a radio studio?"

Peterson then showed "the world's smallest and cheapest homemade automation system" possible: a "biscuit" 586-compatible computer no larger than a disk drive, a free distribution of Linux and the free WinAmp audio player with playlisting function.

He concluded with an anecdote about how software can grow in unexpected ways. He pointed to Broadcast Software International, the company that makes the $999 WaveStation automation package, and told how its founder, Ron Burley, started off by writing a $20 shareware "cart player" for Windows 3.1. The company now is under the Cumulus umbrella and is worth millions — all because he tried to come up with a different way of doing things a few years earlier.

Jim Sensenbach took on digital conversion with his presentation of how KUSC(FM) in Los Angeles made the digital upgrade to an existing analog plant.

Sensenbach used Cat-5 wiring for permanent/trunk runs to 110 punchblocks with Cat-5 jumper pairs to Siemens Multi-flex blocks and Belden 110 ohm wire for fanout connections to equipment, all built around an SAS 64000 routing switcher.

The switcher offers ultimate flexibility, with the ability to switch, route and monitor anything to anywhere. He advised eliminating all patch panels, using instead XLR backup panels for temporary hardwire routing where absolutely necessary.

With the addition of a digital console and router, accommodating existing analog gear plus adding new digital equipment presents both choices and problems. Devices with AES outputs can be connected directly to digital inputs of the console where data-rate and sampling parameters are converted automatically.

One of Radio Free Asia's R-Boss user interfaces

The SAS router also provides automatic D/A and A/D conversion for routed sources and destinations. External sync is not required. Sensenbach installed a PR&E Integrity console in his master control and picked 44.1 kHz as the house clock standard.

He reported discovering some problems with AES bitstream compatibility, noting that some equipment manufacturers use the reserved bits for functions which are not standardized.

That can result in strange and quirky behavior, including no VU meter indication, even though audio is present. A Denon 1050R MiniDisc player would accept a 44.1 kHz signal direct from other source players, but not from the SAS router.

It turned out the sample rate "label bits" were not included so the MD machine ignored the signal.

Eric Hoehn proudly unveiled his end-to-end, all-new, all-digital synchronous plant at WETA(FM) in Washington, D.C. The all-synchronous approach cuts down on the total number of sample rate conversions to preserve quality and provides for seamless pop-free mixing between all sources and all studios.

Every piece of equipment needs to offer external sync or clock input reference to do it. Many do not, especially consumer type gear. But like a CD player, if they are connected directly to a digital console, it doesn't really matter.

Since WETA is co-located with WETA-TV, Eric selected 75-ohm coax as the wiring backbone of his plant. Coax is fully shielded, uses cheaper and more easily installed connectors, and can use video hardware for patch panels and DAs. Baluns need to be added to interface balanced circuits.

Eric chose Studer digital consoles, a Grass Valley router and the Broadcast Electronics AudioVault digital storage/automation system.

WETA encountered several unexpected "digital surprises."

First, VGA monitor extension cables do not convey ground. A separate master ground needs to tie all studios together to a terminal room. EAS equipment needs a digital adapter interface, not originally available to exist in the program chain.

And digital audio levels are not simply adjusted with a pot as in analog. Matching levels from a satellite receiver, CD player or any source to the console or router must be done through an additional active device, or in software if the console provides that.

WETA is an on-the-air test station for USADR digital audio broadcasting, Hoehn said. It soon will be one of the first truly all-digital radio stations, from the console input to the receiver.

RS-422 in disguise

"Digital Audio Studio Construction for Dummies" by G. Michael Patton offered an engaging tutorial on design considerations and construction techniques being used in the age of conversion to digital.

Since presenting his paper on new methods of wiring studios at NAB99, Mike has wired dozens of digital/analog facilities. He says there are no "all-digital" plants, because there will always be some analog to deal with.

Patton discussed the various sampling rates used in broadcast and the ever-increasing digital word size standards from 16 bit (consumer), 18 (prosumer), 20 (pro) and the 24-bit gold pro standard.

The most popular AES/EBU or AES3 digital transmission standard emerging uses the XLR connector with 110 ohm or Cat 5 wiring.

Patton said AES3 is really RS-422 in disguise and that choosing XLRs as the standard connector was a terrible choice. The S/PDIF standard also is common, using 75-ohm coax, and is similar to AES3. TOSLink (optical consumer-based), ADAT and MADI are other digital standards.

"You must treat AES3 like video or RF," Patton said, "making sure to terminate lines properly and use distribution amplifiers."

He advised that Cat 5 and SCSI ribbon cable is AES compliant and cheaper than 110 ohm equivalents. While grounding is important, the need for shielding is over-rated and only needed in special environments; he said 66 punch blocks work fine for AES3.

For a larger facility, use a router and wire up all inputs/outputs provided. Synchronization is important, so house clock standard must be implemented. Patton suggested acquiring or renting a digital audio tester and monitor from a company like Graham-Patten or Audio Precision if you are building multiple studios.

Mic processing has become a vital ingredient used by engineers to bring the best out of talent voices. Martin Wolters of Cutting Edge Technologies identified the advance of DSP technology as the force behind major improvements in the quality of speech signals in the broadcast facility.

The new digital-based mic processors like the Cutting Edge ToolVox and the Symetrix 628 offer unique settings for different voices, quickly selectable in one unit. Wolters offered tips on getting the microphone signal properly launched, including the use of pop screens, elastic suspension assemblies and true symmetric mic cable driving a high-quality preamplifier.

He explained the characteristics and proper use of the various tools offered in today's full-featured mic processor. First, the use of a high-pass filter cuts hum, rumble, and other low-frequency noise. The downward expander and noise gate shuts off background noise with no signal present.

AGC maintains a relatively constant level but long time constants are preferred for naturalness. Compression is employed to increase loudness and density to create a powerful sound. Multi-band compressors do a better job of controlling and tailoring the consonant sounds. And the de-esser reduces harsh sounding sibilance and the "lisp" effect.

Wolters cited the common error of boosting the lows and highs of a mic processor equalizer, when merely reducing the mid-band is more appropriate, offering better headroom. He suggested using a low-end shelving filter to boost frequencies around 100 Hz, but not below for cleaner bass. And he advised using switchable phase rotation to restore lost RMS level and loudness.

With the advent of digital broadcast facilities, typical broadcast operations emulate more and more an Information Systems (IS) facility.

Taking advantage of this paradigm shift, Radio Free Asia is working on leveraging IS and computer industry solutions to simplify and enhance broadcast tasks such as audio transfer, program automation and documentation.

William Eldridge and David Baden of Radio Free Asia in Washington, D.C., presented details of their project in progress called the Broadcast Open Development Exchange Initiative (presented in **RW**'s April 12 issue).

To launch this free-code exchange forum, Eldridge and Baden are offering R-Boss, a full suite of digital broadcast applications in Linux. They include News-X, a news/text editor for storage, searching and editing; Audio-X, a networked digital audio system, including text and audio; and Track-X, a scheduling

See MCGINLEY, page 15 ▶

World Radio History

FIRST PERSON

The Great Transmitter Heist II

Bill Ryan

Who would have thought that the brazen 1940's theft of a radio station transmitter could be repeated a few years later — and worst of all, during *my* watch?

In spring 1950, I was hired as a combination announcer and night watchman at KVNU Radio in Logan, Utah. The studios, offices and transmitter were in a single-story frame building on a road about a half a mile north of town.

The owner kept a watchman at the station because, during the World War II years, a gang had broken into the building, cut the wires and carted away the transmitter, which was never found. Because of wartime shortages it was many months before the station got back on the air.

The boss bore into my consciousness the possibility that the thieves would someday return.

"We can't afford to have that happen again," he said sternly.

And besides, I paid no rent.

The radio life

So I lived in an area just large enough for a cot under an outside window, a place for a few clothes and a small table outfitted with a toaster and hot plate. I could keep milk in a space in the water cooler near the receptionist's desk.

Coming from an underfinanced radio station, I found the equipment at KVNU, the "Voice of Northern Utah," to be a wonder. I thought I was in heaven, working with a fine Western Electric dual-channel console, RCA turntables, pickups and microphones, the World Transcription Service, the Mutual and Intermountain Networks, and a great 78 rpm record library. LP records and 45s were just coming into vogue. Our 5 kW transmitter was also Western Electric.

Those were sweet days in Logan. We didn't know that North Korean forces were massing for an attack on their southern neighbor.

I worked the afternoon shift, which included plenty of good recorded music and the later kids' shows from Mutual.

There was a drive-in movie on the way to town. I went alone one night to see the musical "Good News" and immediately fell in love with June Allyson. All was well.

One night around 1 a.m., I was awakened by noises outside and the glare of lights. I jumped up to see trucks on the road just outside with their spotlights on a man going up the power pole whose wires carried electricity to the station!

"Oh, my God," I thought, "They're back."

See HEIST, page 18 ▶

▶ MCGINLEY, continued from page 14

and archiving tool to create a radio log with automated data entry.

The source code is open to encourage others to use, improve and modify for their own customized applications. Eldridge and Baden are not anti-vendor but simply "want code to be free in exchange for free code."

Radio Free Asia's Open Development Exchange Initiative Web site is located at *www.techweb.rfa.org*. These gentlemen envision the World Wide Web as the universal platform for all to share solutions, systems development and information. And they expect to be doing IP streaming in about two years.

Will McCormick of Inspiration Media Inc. and Jim Dalke of KGNW(AM), both in Seattle, have figured out a way "to literally connect the transmitter to the Net and go home."

While DOS-based R/C systems worked OK, Windows crashed often and dedicated data phone lines were not all that reliable. This prompted McCormick and Dalke to rethink transmitter remote control taking advantage of PC networking and Internet technologies.

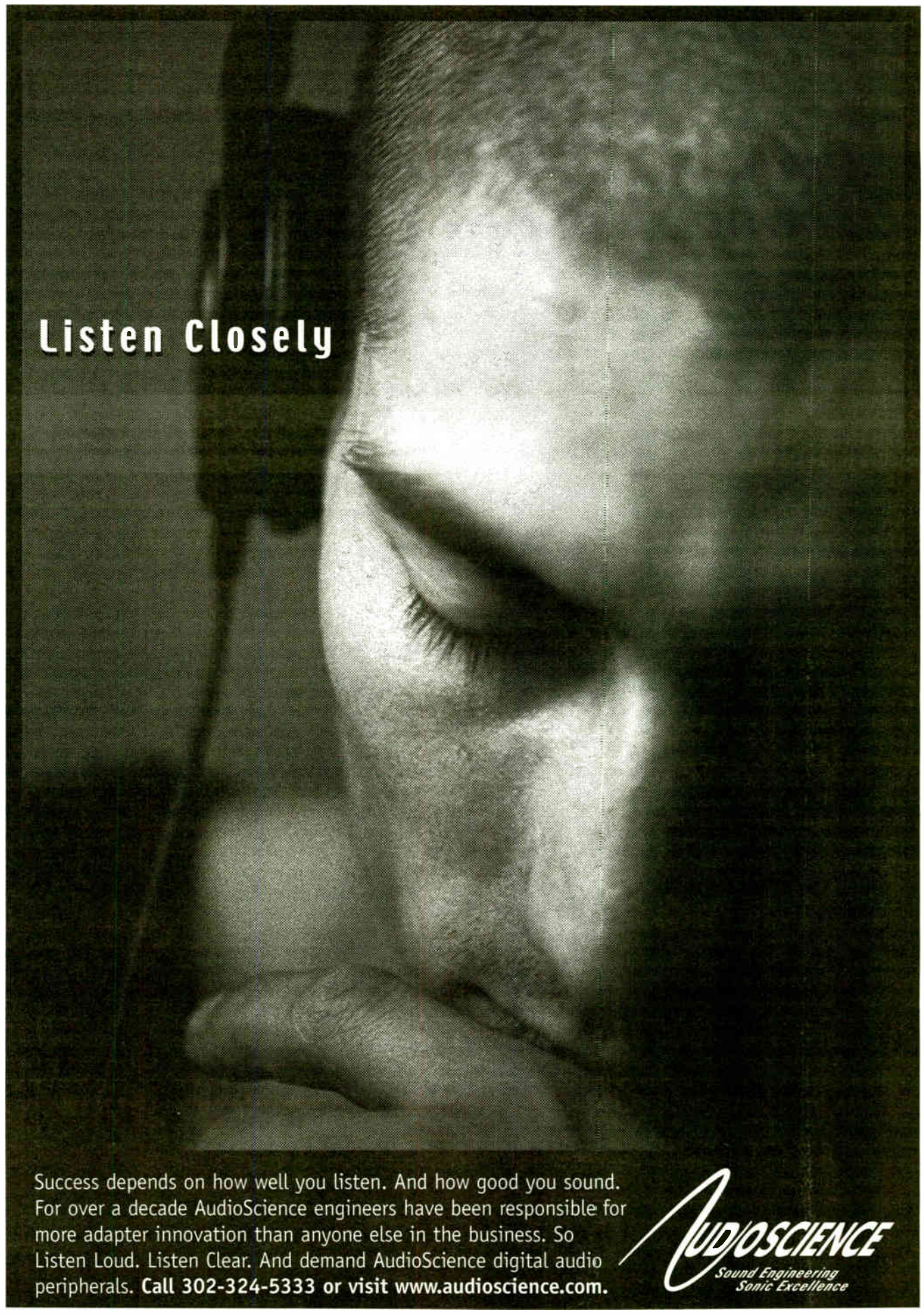
"Implementing Unattended Remote Control Operation in an Internet Environment" describes their novel system for automated monitoring and control of four AM transmitters. Three of the sites include directional antennas, requiring special attention to mode change monitoring and automatic shut down.

Their system ties the Burk ARC-16 remote control systems at each station to an Windows NT server and a WAN for availability to station personnel using an automated logging system for FCC compliance and to aid in more efficient transmitter site operations and maintenance. Operating parameters are adjusted automatically and monitored for out-of-tolerance conditions.

All of the operating parameters and controls are implemented in a Web format, to allow remote control and monitoring on both the Internet and on intranets using standard Web browsers.

■■■

Tom McGinley is director of engineering for Infinity Seattle and technical adviser to ***RW****.*



World Radio History

The Good, the Bad and the FCC

▶ CLEAR CHANNEL, continued from page 12

major frequency reshuffle in 1941, to accommodate the needs of neighboring countries.

In developing its proposed station-inventory list for NARBA, the FCC engineering staff evaluated the overall health of the AM broadcast band and asked for proposals to better utilize the spectrum.

In a 1937 report, FCC Engineers Ted Craven and Andy Ring outlined a comprehensive plan to make better use of the MW band.

They proposed across-the-board power increases and suggested six channel classes, to be defined by service area, from 100 watt "locals," to "A" channels of 50 kW-plus.

Continued protection

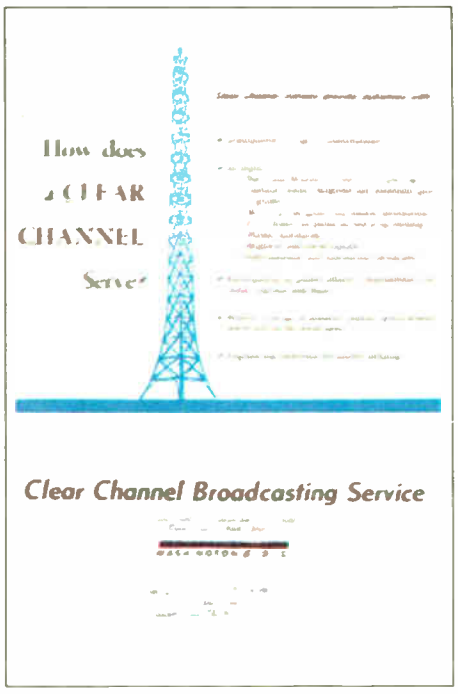
While they recommended continued protection of 25 1-A channels for single-station operation, they also suggested that co-channel duplication on these clears might be a better use of spectrum ... but *only* if the stations were separated by at least 2,500 miles.

ed five years, kept afloat by repeated requests for additional time.

The reasons the FCC finally stopped the operation are no longer clear. It's probable that interference was a major issue. (Early on, WLW had to directionalize at night to protect a Canadian adjacent-channel station some 350 miles away.)

It's also likely the FCC staff would have weighed in at some point with an

One reason for the intense opposition to clear-channel operation was the specter of superpower stations.



A typical CCBS promotion piece

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Now there's an easy way to organize and protect your copies of Radio World, the industry's best read newspaper, keeping issues readily available for future reference.

Designed exclusively for Radio World, these custom-made titled cases provide the luxury look that makes them attractive additions to your bookshelf. Each case is sized to hold a year's issues (may vary with issue sizes), and is made of reinforced board covered with durable leather-like material in blue, with the title hot-stamped in gold. Cases are V-notched for easy access and free personalization foil is included for indexing the year.

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These 1937 suggestions by the FCC engineers are of interest to us, because they would be cited by both sides in the coming battle to dispose of the clears.

Ring and Craven stopped short of recommending superpower, but in positioning for the upcoming NARBA, the FCC said publicly it *might* authorize power in excess of 50 kW on the 25 U.S. 1-A channels.

In response to this FCC notice, several stations immediately applied for increased power. The accompanying box lists those applications, using their original (pre-NARBA) frequencies (many of these stations would be assigned a new dial position in 1941).

Two radio stations also applied for 500 kW on 540, but had their requests turned down, probably because the United States was negotiating with Mexico to reserve 540 as a Mexican clear.

These superpower applications were tendered while WLW had its STA for 500 kW. Other stations may have been doing high-power experimenting as well. According to Radio News of April 1932, "Anticipating the continuing and increasing rapid growth of broadcasting service, KDKA has recently built a new 400,000-watt transmitter at Saxonburg, Pa. The new station has been operating experimentally between 1 a.m. and 6 a.m."

All of these superpower applications subsequently were withdrawn or dismissed. Most of the applicants would file again, but that's getting ahead of our story.

Was WLW successful?

WLW'S operation demonstrated the real-world impact of super-power on adjacent-channel interference and on the economics of advertising sales.

It also caught the attention of Congress. In 1938 the Senate passed a resolution "against powers in excess of 50 kilowatts." The FCC politely declined to be ordered about by such resolutions. But superpower had a lot of broadcasters concerned, and politicians have always been responsive to the broadcasters in their home states.

WLW's Special Test Authority last-

"energy-consumption" edict. Radio veterans recall a World War II mandate to drop power by 2 or 3 dB, to conserve energy (that power restriction was lifted for daytime operation on Sept. 1, 1945, and fully lifted in October of that year).

Speculation

One might speculate that the tangible returns to WLW didn't justify the cost of high-power operation, but the record does show that WLW tried to keep its superpower authorization. On June 19, 1941, it applied for 500 kW, directional night. It then modified that request to 500 kW day, 50 kW night.

It finally withdrew its application on April 7, 1943 (for the "war effort"?). That wouldn't be the last of the superpower action, as we'll see.

■ ■ ■

Mark Durenberger is general manager of Group W Network Services in Minneapolis and an occasional ***RW*** *contributor.*

The Cincinnati Post

Page 2 THE CINCINNATI POST, WEDNESDAY, MAY 2, 1934. SECOND SECTION

Giant of the Ether

WLW To Begin Radio Broadcasting on 500,000 Watt Power Tonight

Roosevelt to Press Key to Open Initial Program

BY HARRY M. FORWOOD

PRESIDENT ROOSEVELT will be seated at a desk in the White House Wednesday night. At his fingertips will be a small, gold-plated telegraph key—the identical key that Woodrow Wilson pressed 20 years ago to signal the formal opening of the Panama Canal.

At 9:03 p. m. President Roosevelt's fingers will descend upon the key, an electrical impulse will go bounding over a special wire at the approximate rate of 186,000 miles a second to a small brick building at Mason, O. There it will strike a sensitive receiver and automatically "cut in" the most powerful radio broadcasting station ever built.

The station is WLW, owned and operated by the Crosley Radio Corp of Cincinnati. Since 1928 it has been a 50,000-watt transmitter; with the completion of the presidential telegraphy it will go regularly on a 500,000-watt basis.

Would Light a City

That is a large order of watts. J. A. Chambers, technical supervisor of the station, estimates that the new transmitter will consume 15,450,000 kilowatt hours of electricity per year, which is the average current consumption for all the homes in a city of 100,000 population.

Preparations for the handling of such a tremendous order of power required, in the words of Mr. Chambers "considerable engineering attention." In plain English, the phrase may be taken to mean plenty of headaches.

If you were to take two towering oil derricks and fasten them together at the base, then jab one sharpened end into the ground you would obtain the general effect of the vertical radiating antenna erected for throwing out the radio waves of the new station.

From the ground to the steel ball atop the antenna it is 831 feet, quite enough to make the Washington Monument, 558 feet or the Carew Tower's 574 feet appear dwarfed.

Approaches Ideal

Radio engineers say that the absolute ideal in radio antennae would be a perfectly straight, tall rod. The one beside the plant at Mason is the nearest approach to this. It is a strange network of steel, standing on one point—a steel hemisphere only 30 inches in diameter. Its four sides slope outward to a width of 35 feet half way to the top, then slope inward again until they meet in a point near the clouds.

Eight 2-inch cables fastened to the center and running to the ground on all sides, support this phenomenal engineering product, its small base rests on an apparently fragile bit of hollow, cup-shaped porcelain.

Ceramics experts nearly went wild trying to bake that piece of porcelain. Naturally it had to be perfect insulation. One tiny crack would spoil it. Yet it also had to

A view of WLW's station and new skyscraping antenna at Mason, O. Center, L. B. Potey, control engineer, on duty in the master control room of the station. Top, a partial view of the six huge mercury vapor rectifier tubes especially designed for handling heavy electrical power at WLW. A seventh, used as a "spare," is always heated and ready for use.

Powel Crosley Jr., president of the Crosley Radio Corporation, seated at the control console built for the new 500,000-watt WLW transmitter.

prevent accidental electrocution. If one of the double doors in a panel is opened, an interlocking switch shuts off all high voltage. The other door does the same thing. Then there is a metal bar across the door. When it is lifted slightly, it, too, cuts off the high voltage. If entirely raised, it "grounds" all of the equipment. This minimizes sudden labor turnover.

Program Telephoned

No broadcasting is done at the Mason, O., plant. That does on in studios on the eighth floor of the Crosley Building on Arlington-st. The programs or "signals" in radio parlance, are sent to Mason as telephone messages are transmitted over a wire, are amplified, and buried into the ether from the 831-foot tower.

There are many points of similarity between radio transmitters, such as this new Crosley giant, and radio receivers. For example, listeners have to wait for their sets to warm up several seconds before they receive signals. Because of the vast difference in size, the WLW transmitter has to be turned on half an hour before broadcasting time to get it warmed up. The whole business is done with one simple move—by an automatic clock.

Just as radio tubes heat up in a receiving set, so do the huge amplifying tubes—93 of them—used at the WLW Station. Only their heat is terrific. It would warm a whole apartment building on a winter day, in fact, it would melt the glass tubes if they were not cooled with air and water.

The 20 big tubes installed for the increased power cost a tidy $1850 each. Twenty gallons of distilled water flow through each

years of research and planning, two years of actual construction and an outlay of $500,000, would be a waste of time and effort were it not for an insignificant looking little piece of quartz crystal known to Mr. Chambers and his professional brethren as a Pieto electric oscillator.

This is what actually generates radio energy and keeps them broadcasting radio programs instead of just a lot of waves of electricity.

The temperature of the crystal is controlled by a thermostat that is accurate to 1-100 of a degree Centigrade. The slightest variation in temperature would change the physical dimensions of the crystal and accordingly throw the station off its assigned wave length.

That would throw the Federal Radio Commission into something approaching an uproar. So they do not let the crystal get out of hand.

A Dream Come True

The station, 10 times more powerful than any other transmitter in the U. S. will be heard in every part of the globe when conditions are favorable. It represents the realization of a lifelong dream of Powel Crosley Jr., radio pioneer and founder of the company.

"The only way to eliminate static is to cut through it," Mr. Crosley said. "The perfection of equipment to control this tremendous power makes it possible to give a sharper signal with no overlapping into other bands. With all of its new power, however, WLW will not vary from its wave length by any measurable fraction."

Governors, senators, publishers, members of the Federal Radio Commission and other prominent

WLW goes superpower

World Radio History

PRODUCT EVALUATION

Belden Does the Media Twist

Jeff Johnson

At NAB, I encountered Steve Lampen of Belden, who also writes a column for **RW**. He told me of a new cable, 1872A, trade-named Media Twist.

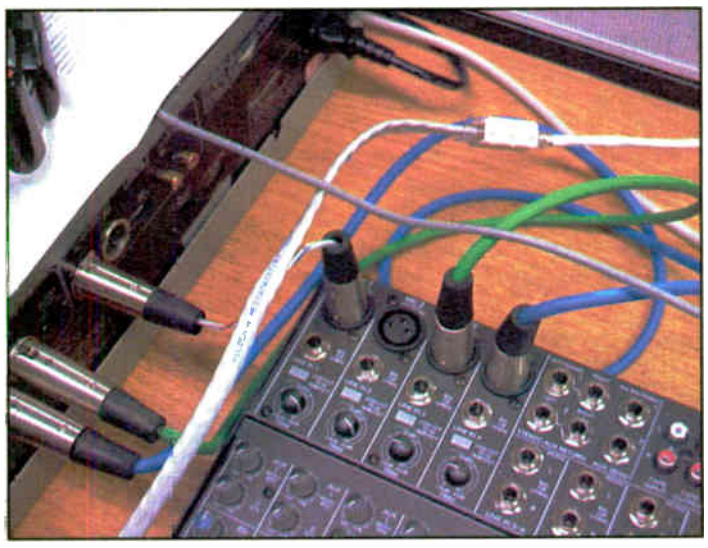


Fig. 1: Mackie mixer sits with DAT machine

Belden described the cable as a four-pair, 24-gage, UTP cable with vanishingly low inter-pair cross talk.

Fig. 2: DAT deck on LAN hubs

At 100 ohm nominal characteristic impedance and low capacitance, it is suitable for AES3 digital audio, UTP Ethernet, not to mention pro balanced analog audio.

The low cross talk is accomplished by bonding the conductors of each pair together and placing them precisely in a sheath. The near-perfect twist maintained results in surpassing common mode rejection.

I had to try it.

DAT to DAT

Here is the setup. The "orange" pairs and "green" pairs are pairs 1 and 2 respectively of UTP Ethernet (10baseT, 100baseT).

These pairs were crimped into RJ-45 connectors in the standard manner. The "brown" pairs were wired to XLR connectors to serve for AES3, and the "blue" pairs to XLR connectors for pro balanced analog audio.

A Panasonic DAT machine was placed near a Mackie mixer, as shown in Fig. 1. Another DAT was stacked on top of the LAN switching hubs, at the opposite end of 394 feet of Media Twist, seen in Fig. 2.

The cable stretched 1-1/2 times around our studios. The cable at the hub end was plugged into the LAN hub, the AES3 output of the DAT, and a Shure microphone cable test oscillator and attenuator supplying a -55 dB analog tone.

At the mixer end, the Ethernet connection fed the engineering department computer, the AES3 fed the digital input of the other DAT machine, the analog output of which fed inputs set to line level on the Mackie mixer, and the analog signal fed the Mic 1 input of the mixer.

The computer LAN connection was activated, the playing DAT was sending an AES3 level signal to the receiving DAT (for conversion to analog), and the analog input was feeding a -55 dB tone to the mixer. A line output of the mixer was feeding a distortion analyzer used for signal/noise measurements.

Fig. 3:The gun affected noise performance

The -55 dB signal was amplified to indicate 0 dB on the meter. I then turned off the tone generator. The noise floor was measured at an additional 75 dB below the reference level.

This adds up to an amazing -130dB below nominal line level on the analog unshielded twisted pair running almost 400 feet around the building.

I placed a soldering gun next to the cable, as shown in Fig. 3, and the noise came up 3 dB. This represents, however, an uneven magnetic field along only a few twists of the cable, so common mode rejection is not fairly tested.

Not surprisingly, the cable was moderately microphonic, but not noticeably more than true mic cable. Noise could be heard in the analog audio when slapping the cable around, but this was done during the "quiet" test.

The Ethernet and AES3 signals are carried perfectly, as I am listening to the digital signal as I write on the computer communicating with the LAN servers. Magic stuff.

Needless to say, a much more rigorous testing must be accomplished before everything in a radio facility is hung on Media Twist willy-nilly, but I am impressed by Belden's claims and the results of my experiments.

■ ■ ■

Jeff Johnson is network engineer for WVXU(FM) and the X-Star Radio Network in Cincinnati.

Reach him in c/o ***RW****.*

VOA, NPR Put MD Format to Work

The MiniDisc format is finding acceptance from some big-name users.

Voice of America recently installed 105 Denon MD players/recorders at its Washington headquarters.

VOA chose model DN-M991R decks. The machines replace cart decks in core on-air and production studios, central recording and tape correction areas.

Radio Broadcast Technician Brian Schiff said MD was the logical choice in a removable media format, citing advantages over DAT for archiving and instant access.

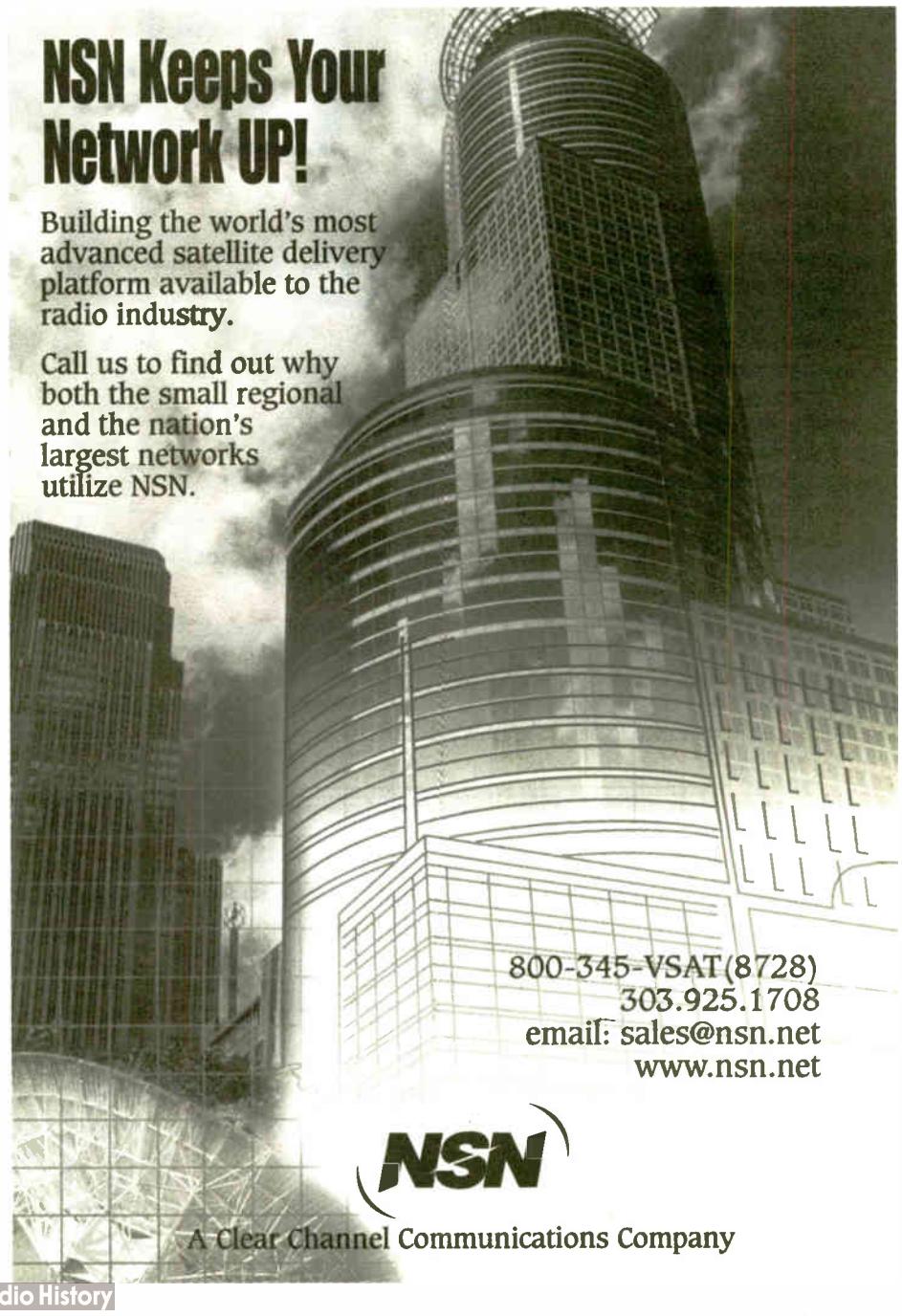
Nearby in the nation's capital, National Public Radio purchased 20 of the DN-M991R MD machines and eight Denon DN-C630 CD players for its HQ.

Most of the MD decks are used in NPR's eight production studios, with a few reserved for its new San Francisco bureau and special uses such as this summer's political conventions.

The CD players are in NPR's satellite uplink facility, delivering program audio.

For information contact Denon at (973) 396-0810 or visit www.del.denon.com

DN-M991R MiniDisc



World Radio History

The Jock Who 'Saved' the Station

▶ HEIST, continued from page 15

I hit the floor and crawled to the dark control room to get to a phone.

Our phone system had lighted push-buttons so that if one was in use anywhere in the building, they all lit up. This bothered me, because if I phoned for help, any one of the gang members looking in a window would see someone was inside and come in to grab me.

But there was no other way.

I hid under the control room console, reached up and grabbed a phone, punched the dreaded button that lit up a dozen others throughout the building, and told the operator to get me the police. And hurry!

She connected me with the Logan city police.

I was in heaven working with a Western Electric dual-channel console, RCA turntables and a 78 rpm record library.

On hearing my breathless story of a break-in in progress at KVNU, the "get someone out there right away."

I hung up the phone to kill all those lights and burrowed farther back under the console.

Before long, I heard cars pull into the driveway, doors opening and loud voices. Help had arrived in time to save both me and the transmitter.

Soon there was a knock at the front door. I ran and opened it to see a uniformed officer and a man in coveralls and a hardhat. I glanced toward the corner of the building nearest the pole to see another man in work clothes hurrying toward me with a Cache County deputy sheriff right behind him, gun drawn.

My heart sank when hardhat said, "We're Utah Power & Light linemen with orders to run new wires to the box on the building. We had to do it at night after the station went off the air," he added.

Then they all looked at me, standing there in my underwear.

At least it was clean and fairly new.

Red-faced with embarrassment, I could only say that it was my job to sleep at the station and no one had told me about any power crews coming that night.

I tried to explain that within the past 10 years, burglars had actually broken in and stolen the transmitter ... and the owner almost went broke before he could beg an old one from another station ... and I thought for sure this was another break-in ... and I didn't notice Reddy Kilowatt's picture on the trucks.

But they didn't want to listen any more. The officers left and returned to town, the linemen returned to their work and I went back to my cot.

Although it was a warm night, I closed my window to escape their lurid wisecracks and their hoots about the idiot who called the police on them. Especially loud was the fellow on the pole who had looked down to see a deputy with a gun ordering him to the ground.

The boss was upset the next morning because the chief engineer had failed to tell him about the rewiring.

"But I'd have done the same thing myself and called the police," he admitted.

I thought I noticed a faint smile when I described how the lineman was hustled down the pole and steered around the corner by the deputy with a drawn gun.

The old KVNU building has long since been replaced by a new car dealership, and the station moved elsewhere. I assume the transmitter is not so vulnerable now, and there's no longer a need for a watchman. But I'm proud to say I protected that beast when I had to.

■ ■ ■

Bill Ryan is a former college professor and wire service reporter-editor. He is retired and lives in Richardson, Texas.

Tell us about your radio adventures. Send e-mail to radioworld@imaspub.com *or write to the address on the inside last page of this issue.*

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AMFM Taps Meridian in N.Y.

Meridian Design Associates recently managed two flagship station projects in the New York market for **AMFM Inc.**

Meridian handled design and construction administration for WHTZ(FM), Z-100, and WLTW(FM), 106.7 Lite FM.

Meridian's services included feasibility, design and project management services, such as managing budgets and on-air schedules and negotiating purchasing agreements.

One of the new studios of WHTZ(FM)

Meridian worked with the WHTZ staff to design the 15,000-square-foot facility, where the Z-morning Zoo show originates. Sweeping views of the Manhattan skyline were incorporated into the design.

Station furniture was built from recycled material. Customized tables on rollers were installed to optimize space. The broadcast area includes two production studios and two on-air studios, as well as a performance space and green room.

WLTW and its soft-music format posed different requirements for its 20,000-square-foot space.

The design sought to express the "quiet professionalism" philosophy of the station. It used a palette of soft green-on-green finishes, as well as custom fabrics, materials, finishes and furniture.

Separately, Meridian furnished architectural and management services for CBS's digital television studio in New York City in the General Motors Building at Trump International Plaza. Meridian also announced it has opened an office in Miami.

For more information contact Meridian in New York at (212) 431-8643) or visit the company Web site at www.meridiandesign.com

Broadcast News Takes on SpotTaxi

Central Media Inc. and **Broadcast News Ltd.**, the broadcast division of the Canadian Press, will pursue an alliance.

BN will operate CMI's SpotTaxi.com, an Internet-based delivery system for radio spots, throughout Canada.

BN, Canada's national news service for broadcasters, serves approximately 500 radio and television stations in both English and French, through Nouvelles Télé-Radio, via the BN Satellite delivery network.

BN will serve as the operational end of SpotTaxi.com's services in the Canadian market. It has relationships with ad agencies, production houses and radio stations, easing the transition for the facilities. Its satellite network, which is used to distribute spots, will remain for those facilities that require satellite distribution.

Eric Morrison, president of the Canadian Press and Broadcast News, said SpotTaxi.com is a welcome addition to the company's multimedia products.

"Moving services to the Web is part of our overall business plan, while still using our existing satellite network as backup and for stations that do not have Internet access."

For information on BN or SpotTaxi.com call (416) 507-2127, or call Central Media Inc. at (206) 903-3400.

Neumann KMS 105s Step to Plate

Susquehanna Broadcasting station **KNBR(AM)** chose eight **Neumann** KMS 105 vocal microphones for use in the San Francisco Giants' new baseball home, Pacific Bell Park.

The station's activities there, including game announcement, interviews and talk shows, will use KMS 105s. KNBR is the flagship station for Giants baseball and Golden State Warriors basketball.

Raul Velez, KNBR's primary engineer for Giants baseball, said, "Most vocal microphones have a 'presence peak' to make vocals cut through screaming fans and guitars ... That peak makes things sound 'crunchy' on AM radio, because we process our signal so heavily.

"What we needed was a relatively flat, neutral, yet solid microphone with a cardioid or hypercardioid response. Good rejection was essential."

For information contact Neumann in Connecticut at (860) 434-5220 or visit www.neumannusa.com

CPRN Looks to PSi

Prophet Systems Innovations said it was named the system of choice by **Colorado Public Radio** and **KBSU** to handle network needs for the Classical Public Radio Network, as well as to provide digital audio software.

Colorado Public Radio's phase of the project was completed in the first quarter of this year. It enables the headend site at KBSU to send a satellite feed to other stations that play classical music.

The Classical Public Radio Network is a radio service developed in part by CPR to bring classical music to listeners nationwide.

Although CPRN is based in Denver, it chose to house the system in Boise under the direction of Rick Dorey, broadcast information systems manager at KBSU. The system has more than 400 GB of storage and serves as the satellite programming provider for the remote satellite stations, handling in excess of 10,000 classical music cuts.

The system will save resources by reducing dependence on a CD library and corresponding equipment. This will allow users to share resources and to eliminate duplication of effort and the time-intensive method of searching the CD library manually.

KBSU has been using Prophet Systems' AudioWizard since 1997.

For information contact Prophet Systems in Nebraska at (800) 658-4403 or visit www.prophetsys.com

"Who's Buying What" is printed as a service to our readers who are interested in how their peers choose equipment and services. Information is provided by suppliers.

Companies with news of unusual or prominent sales should send information and photos to: Radio World Managing Editor, P.O. Box 1214, Falls Church, VA 22041.

World Radio History

GUEST COMMENTARY

Delivering Signals to the DAB Transmitter

Or How Self-Flagellation Felt Better Than Trying To Get an STL License in Vancouver

Dave Youell

The author is chief engineer of CFUN(AM) and CHQM(FM) in Vancouver.

In early 1999, CHUM radio was granted DAB licenses for its two radio stations, CFUN(AM) and CHQM(FM), in Vancouver. The two signals had to be delivered from the studios in Vancouver to the CBC transmitter site on Mount Seymour in North Vancouver. This is a distance of approximately seven miles.

The CFUN(AM) transmitter site is located in Delta, British Columbia, about 20 miles south of the studios. A T-1 circuit supplied by the phone company delivers programming to the transmitter.

CHQM-FM's transmitter is also located on Mount Seymour but at a separate area from that of the CBC, where the DAB transmitter is located. An existing 950 MHz composite STL feeds the FM transmitter.

The fact that the AM transmitter is fed via phone line meant that the AM signal needed some way of being delivered to Mount Seymour. The existing FM STL could have been modified to accept two stereo signals.

Several problems, as follows, were associated with this concept:

1. The DAB license allows for 14 hours per week of separate programming. This would have not been possible using this scenario.

2. The modified STL would have had only one data channel. Two data channels would have been required for the program-associated data for both stations.

3. The existing FM processor would have to be moved to the FM transmitter site. This is not the most desirable situation, as having the processing at the transmitter site does not allow for easy changes to the FM sound.

4. The programming source for the two SCA channels would have to be moved to the FM transmitter site. Previous to installing the composite STL, the SCA programs were delivered to the site via phone lines and satellite receivers. There were continual problems with these methods.

5. There are no high-speed data lines on Mount Seymour. This presented difficulties for anyone who wanted to use the data channel on the DAB transmitter.

Chancey came up with the NXE1 system, which can accept an E-1 signal and can transmit in the 950 MHz band.

Faced with these problems, I approached our consultant Doug Allen of DEM Allen and Associates to have him apply for two STL channels in the 950 MHz band.

Industry Canada had expanded the STL band to accommodate links for DAB transmission. Each channel is 350 kHz in size, which meant that we would require 700 kHz of spectrum for the two stations.

E-1 in 950

At about the same time Doug Allen was preparing the technical brief for Industry Canada, I had a discussion with the local Moseley representative, Mike Brennan of Applied Electronics. I asked him for a quote on radios for this project using the traditional approach of digital encoding of an analog signal.

I commented to him that would it not be nice if we could have the source encoders for the DAB transmitter at the studio. This, however, would have entailed sending an E-1 datastream (2.048 Mb) to the transmitter.

At that time, the only way of sending an E-1 signal would have been to use a 2 GHz spread-spectrum system. In the Vancouver area, spread spectrum is beginning to be congested. I commented to Mike that I wished there were some way to use a licensed channel in the 950 MHz band to avoid the problems I believed were going to happen with a spread-spectrum system. Mike thought that Moseley might be able to do something,

David Chancey, national sales manager for Moseley, came up with the NXE1 system, which has the capability of accepting an E-1 signal and can transmit in the 950 MHz band. By using 32 QAM Modulation, the system would use less than 500 kHz of spectrum.

This was fantastic. With this system, five stereo signals could be encoded on the STL plus any data signals that might be needed. All the encoding would take place at the studio, thus allowing for total control of the encoders and processing. The studio is located in a major business area so high-speed data lines are readily available.

This system allowed for much greater spectrum efficiency. If all five stations applied for 950 MHz STL channels, a total of 1750 kHz of spectrum would be consumed. With this system, less than 500 kHz of spectrum is used.

What a concept. Our consultant Doug Allen thought so, too.

One of the big pluses of DAB is its spectrum efficiency. Each DAB pod (or transmitter) is capable of delivering five high-quality stereo signals with relative little spectrum. With this concept in mind, Doug approached Industry Canada to obtain the necessary 950 MHz channel.

Everyone thought that this was a no-brainer. Were we wrong!

The local Industry Canada office flatly turned down the request, as this was a nonconforming use of the STL channel. Doug Allen spent the next nine months educating Industry Canada as to the benefits of the concept. This involved not only the local Industry Canada engineers, but also the engineers at the Industry Canada officials in Ottawa. At one point the Canadian Association of Broadcasters technical committee was involved.

Eventually Industry Canada saw the light and licensed a 500 kHz channel on March 16 of this year.

Now the fun began. There was to be an official launch of DAB in Vancouver on May 11. This did not leave much time. Moseley promised a delivery date about two weeks before the launch.

However Industry Canada was not finished with us. On March 31, the officals informed us that their calculations had used the wrong formula. On April 7 the proper frequency was assigned.

After much sweating, nail-biting and consumption of stomach antacids, the radios arrived on May 3. Following a system check, the STL was put into service on May 8 with no problems. It performed as promised.

■ ■ ■

The author can be reached via e-mail to dyouell@cfun.com

*Tell **RW** readers about your experiences making the transition to digital audio in any part of your facility. Write to us at* radioworld@imaspub.com

MARKET PLACE

Harris Eyes IBOC, Updates DAB Software

Harris Corp. is promoting end-to-end digital AM and FM air chains for in-band, on-channel digital audio broadcasting.

Harris said it has been working aggressively with both IBOC developers, USA Digital Radio and Lucent Digital Radio, on modifications to its AM and FM transmitters to pass their IBOC signals. At the recent NAB show, a modified Gates Two AM transmitter and linear Z5CD FM transmitter were used to commonly amplify the digital and analog signals.

Harris also introduced an Intraplex STL Plus system that supports IBOC.

While the United States continues to explore DAB, other countries have implemented their own versions. For those markets, Harris Corp. is offering new software for its DAB products, developed by Harris' ITIS Transmission Solutions operation in France.

The company said it had completed new versions of embedded software and PC management software. Benefits to network operators include improved interfacing, with separate basic and advanced menus as well as functional improvements for configuring and monitoring the DAB system; automatic scheduling of DAB reconfigurations, with an embedded scheduler in each DAB device contributing to the final ensemble; and an SNMP standard alarm supervision interface that enables alarms to be collected by a supervision system based on TCP/IP and SNMP standards.

ITIS was acquired by Harris in 1997 and operates as a part of Harris' Broadcast Communications Division. The company has delivered approximately 150 DAB systems and 400 modulators to broadcasters in 25 countries. Its satellite FM signal transport solution based on the DAB system is operating in approximately 1,000 transmitters in France.

For information contact Harris in Ohio at (800) 622-0022 or visit www.harris.com

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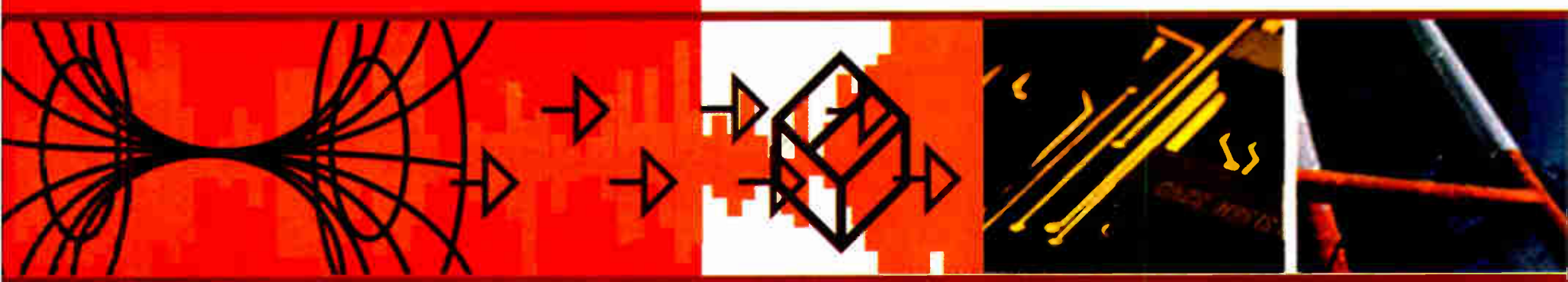

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World Radio History

Workbench

Radio World, July 5, 2000

Head Outdoors, Plug Some Holes

John Bisset

There's nothing more frustrating than hindsight being 20/20! Especially as we are handling the engineering for multiple stations, the problems we need to correct are only multiplied.

As you plan your week, set aside an "outside" day, grab a tube of RTV sealant or that expanding foam sealant from your local hardware store, and head to the sites.

Any kind of opening is an entry path for a problem. Loose LNB covers provide protected nesting areas for insects and even birds. Open satellite or control cable conduits not only serve as entry points for vermin, water can be inadvertently routed into formerly dry areas.

Figure 1 shows a sealed satellite conduit. Slop a quantity of the sealant around the opening to make removal easier when you need to run another cable in the future.

Fig. 1: Sealed conduit

Figure 2 shows the foresight of running a pull string with the coax. Keep this in mind as you install conduit runs out to your dish pad. You know the PD will always add another satellite feed — it's Murphy's engineering law!

Fig. 2: Sealed conduit with pull string

If you have conduit running out to towers, check the openings on both ends. If they are not sealed, you know what to do. Large diameter conduits. as seen in Figure 3 can be plugged with expanding foam, or stuffed with a rag or steel wool, then sealed with the RTV. Mice are discouraged from chewing by using steel wool. Keep this in mind as you block holes coming from floor cable troughs up into your racks.

Fig. 3: Seal large-diameter conduits with a rag or steel wool

★ ★ ★

As you make your rounds, don't overlook coaxial entry points in the ceiling. Commercial wall-mounted coax distribution panels provide rubber caps that can be secured with stainless steel hose clamps.

But there's an economical solution that's just as effective. In North Carolina. Deborah Proctor and her engineers at WCPE(FM), John Taffee and John Graham, used PVC conduit as a pass through for coaxial cable, seen in Figure 4, page 24.

Your local building supplier can provide caps to cover the unused pipes. These caps press-fit over the end, making removal easier. If your coax runs enter the building through a roof or attic, inspect the entry point.

A few years ago, I was called to a station that was off the air. It had rained

See WORKBENCH, page 24 ▶

World Radio History

◆ MARKETPLACE ◆

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United Power Is 'Mission Critical'

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The company said dual utility feeds, redundant back-up engine generators and sophisticated UPS systems should feed a power distribution unit that increases a system's reliability and flexibility.

United Power offers four "platforms," each of which can be customized to the application. MC-PDMs are available from 75 to 300 kVA.

For information contact United Power at (804) 359-6500 or e-mail hughson@unitedpowercorp.com

360 Systems Releases High-Speed Short/cut

360 Systems has released Short/cut 2000, an improved high-speed model of its popular Short/cut editing system.

The company said editing operations are many times faster than the original recorder/editor. Its speed is described as virtually instantaneous, "so even the most demanding editing projects can be completed in record time."

A series of Short/cut 2000 upgrade kits is available to current owners of Short/cuts. For earlier models, the kit includes many features added in recent years, as well as the high-speed operation of the new 2000 model. Features include adjustable length cross-fades, gain adjustment, fade-in and fade-out, external AES sync and file-interchange in WAV, BWF and AIFF formats.

Short/cut editors of recent vintage may upgrade for high-speed operation only. The 2000 upgrade kits include new software, hardware, and a revised operations manual. Upgrade kits can be ordered from 360 Systems at (818) 991-0360.

For information contact the company in California at (818) 991-0360 or visit www.360systems.com

Plugging Holes, Other Worthy Goals

▶ WORKBENCH, continued from page 23

heavily, and water followed the coax right into the transmitter.

The site was one of those "out-of-sight, out-of-mind," and because it was only a few years old, the owner saw no reason to spend money for an engineer to inspect it.

There were two problems with the site. First, the coax had been installed so the coax entered the building at the apex of the roof. Although a cable entry port was installed, the rubber was missing, along with the hose clamps. The second problem was that the coax ran straight down from the entry point, right into the top of the transmitter. No horizontal run, no dip or "drip" loop in the line.

There was evidence of some water discoloring the top of the transmitter — indicating this problem hadn't started overnight. This is another reason to inspect your transmitter site thoroughly. It doesn't hurt to stand on a stool and wipe off the top of the transmitter with a damp cloth. You might spot something that is ready to fall into the cavity, or that is blocking the exhaust opening.

★★★

Bud Giordano of WODS(FM), Boston, was reading our recent column, "Tricks Around the Tank," and added a useful step when working around nitrogen tanks.

After installing a new tank, Bud soaps down the regulator fitting where it attaches to the tank. Using a bottle of children's liquid bubble soap, any leak is seen as a growing mass of bubbles, which can be rectified before the tank empties. Because the system is under pressure, the soap won't be sucked into the line, and insuring that the fitting is tight will prevent a wild goose chase looking for a leak on the tower.

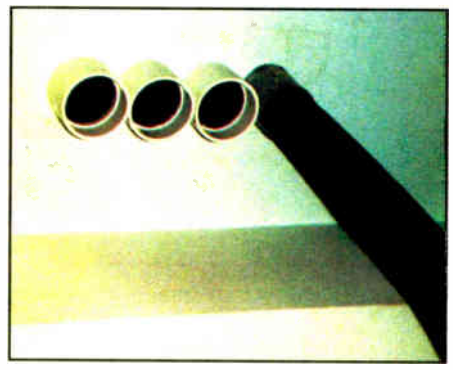

Fig. 4: PVC pipe provides an economical cable passage

I've seen the same technique used with a bottle of Fantastik or Formula 409. Usually the liquid will just drip off. If you see any bubbling, you've got a leak. Leaks can occur if the regulator fitting is not tight enough, or if you've cross-threaded the connector.

Remember not to force the fitting. Hand screwing the fitting, until the threads catch, will guard against cross-threading. Teflon tape is not necessary on the nitrogen tank-to- regulator connection; however, make sure that any of the brass manifolds, Ts or hose fittings have threads wrapped with tape.

It's not a bad idea to spritz these connections too. A leak can occur on the ground, just as easily as it can up on the tower. Bud ends his tip by noting just how much nitrogen can be lost through a minor leaky connection.

He's right, a few minutes of checking your work can pay off in eliminating headaches later.

★★★

While we're on the subject of gas pressurized lines, if you don't have a low-pressure alarm switch or pressure gauge connected to your remote control, consider this investment.

These sensors mount on an existing gas manifold, or can be connected using a T. The pressure transducer manufactured by Phartronics gives a DC voltage proportional to the line pressure. When connected to a dial-up remote control, the line pressure can be monitored any time. With the upper and lower limit features of these remote control systems, you'll be paged if the line pressure exceeds the limits.

If you've ever had to repair the damage to a line or antenna due to loss of line pressure, this is one page you'll appreciate!

■■■

John Bisset has worked as a CE 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 e-mail jbisset@harris.com

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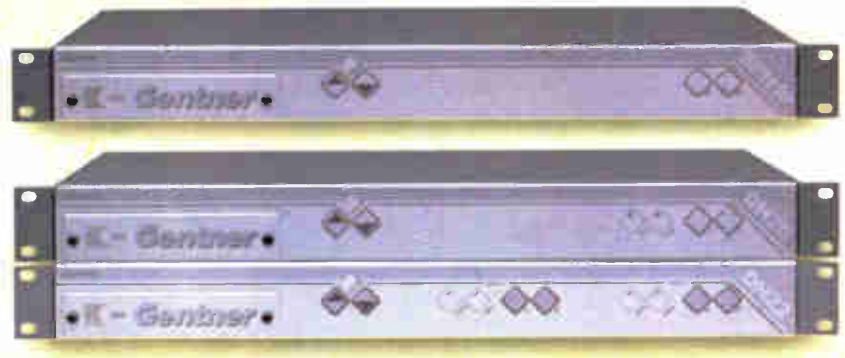

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GM Journal

Radio World | Resource for Business, Programming & Sales | July 5, 2000

Uncle Webster Results in Profits

Bill Mann

Looking for a new stand-alone revenue stream for your broadcast group? Do you wonder if your station's Web site will ever make money?

Lawrence Amaturo's radio-linked *UncleWebster.com* could answer both of these questions.

Group owner Amaturo and his partner, Ken Giddens, have answered another intriguing question: What would happen if you partnered a radio guy with an Internet guy?

And the answer is: *UncleWebster.com* of course.

"We've all heard of Web portals like Yahoo and AltaVista," said Amaturo, 32, a Columbia grad and former Tylenol brand manager at Johnson & Johnson.

"What we have created with Uncle Webster is a *local* portal that's generated more unique visitors than any of our four radio stations." The Amaturo Group owns four Sonoma County stations: News/talk KSRO(AM), country outlet "Froggy 92.9" (KFGY(FM)), FM rocker "The Fox" (KXFX(FM)) and oldies outlet KMGG(FM).

Although *UncleWebster.com* is headquartered in relatively rural Sonoma County, Calif., it pulls in $80,000 to $100,000 a month in booked business.

Amaturo said the company was profitable in April, less than a year after going online — and that's not a misprint.

"And there's no reason to expect that we will go back from that, because of the layers of contracts we add each month," said Giddens.

It is numbers like these that drew big crowds to the Uncle Webster booths at both the RAB and NAB shows this year.

Pace setters

John Marino, NAB vice president of science and technology, is familiar with the *UncleWebster.com* site.

"It doesn't surprise me that there's a lot of excitement at the convention exhibit halls about what he's doing. If he made money after only 10 months online, he's way ahead of most Web sites," said Marino.

"Most stations currently have static pages," said Marino. "I think Amaturo is probably a pioneer in this area.

"The Internet's a big place, but I don't know of anyone else that's doing it. And the content is really good."

Remarkably, Uncle Webster has created 20,000 Web sites — one for every business in Sonoma County, and all of

See UNCLE, page 32 ▶

PROMO POWER

TV Dos & Don'ts for Radio Guys

Mark Lapidus

A "radio manager" is what you call a person who places more than $200,000 worth of airtime but does not test the commercial.

Radio guys don't test TV spots because:

1) The syndication company who sold us the spot told us it tested great in other markets.

Many GMs are convinced radio doesn't require TV to promote itself.

2) The syndication company also told us that stations that have used the spot jumped four ranks 25-54 in just one book.

3) We're out of time. We waited until the last minute to produce the spot because the budget just got approved.

4) We had a horrible book and felt that we must get on television right away.

5) We don't really want to know

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World Radio History

TV Is Our Friend, Not Our Enemy

▶ PROMO, continued from page 27

if the spot tests well in our local market because we haven't budgeted enough money either to make corrections or cut another spot.

6) It was so hard to get consensus on the spot from the GM, marketing director, PD, consultant and regional VP that the person in charge of doing the spot would rather walk across hot coals in bare feet than go through the process again.

As long as we continue to sit in front of our TV 30-40 hours a week, count me as a supporter of the medium that was supposed to kill us.

How do we solve this issue? Forget consensus. Hire a great person to do your marketing and then trust him or her to make the right decisions. I'm not saying that this person shouldn't garner and then filter all the opinions of your so-called "brain trust." But because he or she is the problem holder, the person needs to be able to make hard decisions about the process and then figure how to get the very best spot on television.

Now that we've dealt with the biggest issue facing success, let's return to the beginning of the TV spot process.

Nothing happens prior to budgeting. TV may be expensive — and because of that, out of reach — but to say it doesn't work for radio is ridiculous.

It's amazing how many station managers are now convinced that radio doesn't require TV to promote its product. They claim that advertising on television doesn't work.

It works in markets of all sizes if the creative is correct, the size of the schedule is significant enough and it is placed in the appropriately targeted shows.

Tell me "we don't got the dough" and I can understand that. Tell me "television doesn't work" and I will wonder what you're doing in the advertising business.

Timeline

When do we produce this spot? Did we leave time for testing and then altering as may be required? How many days does it take for the stations to get dubs into their system?

Next comes the creative. We may begin on paper or with computer-generated graphics for a storyboard. (Sure, you can test this too — but the results are often misleading because the final product can end up being quite different than static graphics.)

Did a few good writers on your staff take a shot at this before turning it over to a TV spot company? While you will rarely find the kind of script in-house that will turn on viewers, I have seen this work occasionally.

After all, you probably do have writers who understand positioning, humor and fun. What they may not understand is how video works. But sometimes that doesn't matter if they have unlimited imagination!

it. The television spot buy is now looming.

If you're unlucky, you've inherited a buyer your boss plays golf with locally. There probably isn't much you can do about this, and you may be smart to not even try.

In case you want to give it a shot, though, here's why you shouldn't use a local buyer:

1) There's an automatic conflict of interest. They place time on your radio station too, so if there's a problem with their service, it's nearly impossible for you to do anything about it.

2) Yes, they know the local TV market. They know it too well. They know Bob at Channel 7 ... in fact, they play golf with him and he's just got be on the buy. He'll make the rate work even when the shows don't fit. They also hate June at Channel 34. She used to work for them. Wonderful.

On-target

When all you should be caring about here are numbers and correct targeting, you're dealing with baggage that an out-of-town buyer who has no relationship with your station can navigate smoothly.

By the way, be aware of what muscle this out-of-town buyer has in your city. When you're told he or she already buys lots of media in your town, it's not necessarily a benefit, but perhaps another sign to be wary.

You don't want to be caught up in the politics of three other companies they happen to placing when they call their rep to do your schedule.

Yes ... many other media can be very successful in advertising radio. But as long as America continues to sit in front of her TV sets 30-40 hours a week, count me as a huge supporter of the medium that was supposed to kill us.

Instead, it can be used to sell us.

■■■

Mark Lapidus is president, Lapidus Media. Reach him via e-mail at Lapidus@erols.com

Forget consensus. Hire a great person to do your marketing and then trust him or her to make the right decisions.

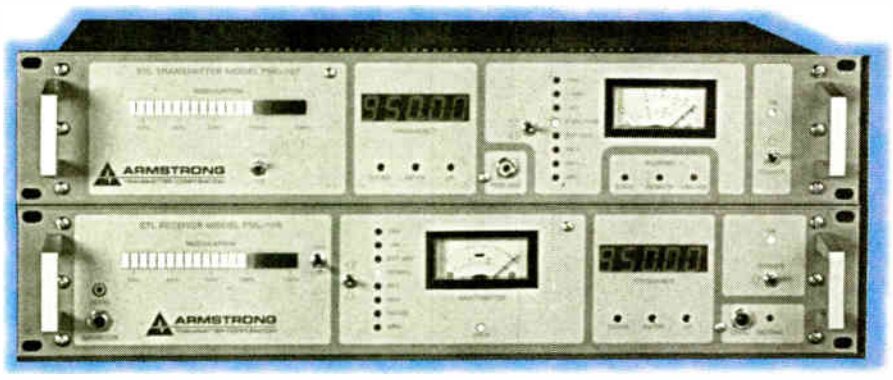
We move onto production. A darkroom with huge video production switchers, numerous monitors and endless junk food wrappers was the standard until just a few years ago.

This century you may just as easily find yourself in someone's living room where there is an editing system right on his or her computer!

Don't let appearances fool you. As long as the company does good work, don't let your history of snack foods drag you into a freezing production room just because that's the way it's always been done.

The radio spot is now done. It tested well. You even got three out of the five people involved in the process to like

Frequency Agile STL Systems



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World Radio History

WEB WATCH

Net Pirates Swarm Web for Swag

Carl Lindemann

Web Watch is a roundup of all things radio and the Web. Send your news and tips to LD@imaspub.com

Sleepless over Napster — The song-sharing scheme cooked up by **19-year-old Shawn Fanning** continues to generate more controversy — and maybe even some credibility.

If you don't know by now, Napster **revolutionizes the way people can share MP3 files online**. The scale and extent of the copyright violations are enormous. Many colleges discovered that the bulk of their bandwidth was being devoted to trading files through Napster.

Shawn Fanning

And **college kids aren't the only ones hooked**. By mid-May, the respected high-tech public relations firm **Golin-Harris** announced that the company had to block access to Napster. Employees were so busy downloading songs that it threatened to interfere with company e-mail access.

This has certainly caught the attention of the Recording Industry Association of America, but so far, legal action by the **RIAA** and various musicians has not been able to shut Napster down.

Napster attempted to satisfy the band **Metallica** by banning access to more than 335,000 users who had allegedly "shared" the band's music.

Unexpectedly, under the provisions of the **Digital Millennium Copyright Act**, many of these individuals contend that the band must prove its argument on a case-by-case basis — all 300,000-plus of them — a practical impossibility.

Metallica member **Lars Ulrich** was reduced to **preaching fitful moral lessons** about the evils of piracy.

On May 24, the **House of Representatives Small Business Committee** held a hearing entitled **"Online Music: Will Small Music Labels and Entrepreneurs Prosper in the Internet Age?"** The focus quickly shifted to Napster and piracy.

The only consensus among record industry officials and the hordes of Napster fans in attendance was that legislation to stomp Napster would be ill-advised and could inadvertently cripple the nascent online audio business.

At the same time, Napster attained increased legitimacy after receipt of **$15 million** in venture capital funding from **Hummer Winblad Venture Partners**.

Hank Barry

Hank Barry, a partner at Hummer Winblad, was named **Napster's interim CEO**.

How this all gets sorted out will likely define many of the intellectual property boundaries for online audio.

How will this affect radio? It's possible that some listenership will be lost to audiences tuning into downloads on portable players. But radio's role as the public's source to new music could increase radio's influence. Formats and music directors still play a vital role in sifting through new music to find the "hits."

Also, if Napster can somehow come to terms with the RIAA (and vice-versa), there's a potential gold mine for radio programmers and music industry marketers.

Monitoring the traffic on Napster's servers is like conducting an enormous focus group. This is invaluable information about real-life listening interests and preferences that go well-beyond what traditional resources like the Gavin Report provide.

Unlike Napster, those who seek to maintain old-time traditions like music-licensing payments have also had to contend with a maze of managerial mechanisms to keep this commitment.

On May 19, **BMI** and **LicenceMusic.com** announced an agreement that should simplify the process for Webcasters and others. The collaboration will allow them to obtain **"Klik-Thru" licenses** on the LicenceMusic.com site through BMI's Digital Licensing Center (DLC). Likewise, visitors to BMI's site will be able to click through to LicenseMusic.com upon identification of any song that is also contained in LicenseMusic.com's repertoire.

Glaser Advises End of "Prohibition" — Meanwhile, some 12,000 people managed to wrench themselves away from their Napster downloading to attend **RealNetwork's RealConference 2000** in Silicon Valley.

Rob Glaser

In his keynote address **Rob Glaser, RealNetwork's founder and CEO,** demonstrated the **new RealSystem 8 software** and pledged support to help the industry mature past the IPO frenzy era.

"We've gone from the period in which everything with a 'dot-com' in it basically got Monopoly money to play with, to where we need to focus collectively as an industry on real business models and real solutions," he said (pun intended?).

Glaser also offered his solution to what he called the "damn the torpedoes, forget about Intellectual Property rights Napster approach."

Glasser said that the widespread piracy is due to the public's limited access to

cost-effective legal downloads.

"After all, the way that all the bootleggers got shut down ultimately was by ending prohibition. We've got to get into a mode right now where there are legal alternatives to the piracy that's out there that are relatively convenient, easy to use and economical. If we steer consumers toward those choices, I am confident that they will choose them if we make them palatable," he said.

In other words, it's time to get real (pun intended).

Despite Glaser's **"end of the IPO era"** pronouncement, investors still seem willing to turn their dollars into **"Monopoly money."**

Example: the **$10 billion-plus AT&T Wireless offering** in early May **set a new IPO record**.

Appropriately, the ticker symbol on the New York Stock Exchange for the issue **is "AWE."**

Step up to the plate

Also stepping into the IPO offering ring — **iBeam Broadcasting Corp.** announced that its May 18 offering sold 12,650,000 shares, more than expected. The company raised some $118,000,000 after broker fees (NASDAQ:IBEM).

iBeam is an Internet broadcast network that provides streaming services to numerous broadcast clients.

Following on the heels of this offering, iBEAM announced that broadband provider Excite@Home will deploy its streaming media serving equipment throughout Excite@Home's network. In addition to the deployment agreement, Excite@Home has made an equity investment in iBEAM.

Intel gets into the act — Intel announced in May that it would invest **$200 million** in the next two years to establish a **new Internet service to stream audio and video** from a network of broadcast operations centers.

Intel's new 70,000-square-foot broadcast operations center in Portland, Ore.

"As the Internet evolves into a multi-media platform, the demand for reliable, high-quality content distribution networks becomes increasingly important," said **Gerry Parker, executive VP and GM of the Intel New Business Group**.

A **70,000-square-foot broadcast operations center** will be located in **Portland, Ore**. A

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World Radio History

▶ WEB WATCH, continued from page 30

second center will be activated in **London** by the end of the year.

News of Intel's intention to diversify into streaming media was followed by an embarrassing revelation: a problem with the **820 chipsets for its Pentium III motherboards** that may result in a costly recall of defective units. Microprocessors account for 80 percent of the company's revenues.

Newspapers Webcast — It's commonplace for online ventures to jump onto the Webcasting bandwagon. The online portal **Altavista.com** launched 150 channels of streaming audio on May 22. The streams are accessed with the **RadioAmp player** now embedded in the Web site. That does not raise many eyebrows among broadcasters.

But an emerging trend in one of radio's traditional competitors should. A growing number of newspapers are looking at repurposing their newsgathering for online distribution.

Recently, **Knight Ridder** announced that it would begin to stream content through its 36 local Web sites.

Cleveland-based streaming media developer **Everstream.com** has already **signed up 162 newspapers** for its services. This reporter thinks **this could have devastating consequences for radio**.

Adding audio

Much as radio reporters are discovering that it is easy to add pictures to their stories via the Web, newspaper reporters, too, are finding that gathering audio is an easy way to add value to their work. As broadcasters' focus shifts online, they may find that newspapers have become the clearinghouse of local information online.

Consolidation in the radio industry has tended to decrease radio's characteristic local focus. The viability of radio's attendant fixation with national advertisers and programming will soon be challenged by the **new in-car satellite services**.

If Webcasting newspapers **take radio's place** for local programming, broadcasters may find they can't go back home. (Be sure to read the forthcoming profile of Jerry Henrikus in **Radio World**. He's pioneered an innovative approach that can give radio the high ground to counter newspaper intrusions.)

"Valhallas" of synergy — Who wouldn't want to marry a billionaire? New media companies are coupling-up with radio broadcasters.

WebRadio.com recently joined forces with Canadian-based **MediaNet Communications Corp.**

WebRadio will provide Webcasting services for all of MediaNet's 79 radio affiliates across Canada. In turn, MediaNet will represent WebRadio as the company's exclusive agent in Canada.

Sinclair Broadcast Group has selected **Broadwing Communications** to provide frame relay, voice and Internet network services to its 61 television stations and **six radio stations**.

MTVi has chosen Beatnik Inc. as the technology to provide interactive audio for prominent sites including **MTV.com** and **VH1.com**.

Cox Interactive Media has signed up **CarsDirect.com** to offer **car-buying services** through its many Web sites in development for major markets.

And Internet appliance company **Kerbango** is partnering with *www.COM*, a B2B Internet Webcaster.

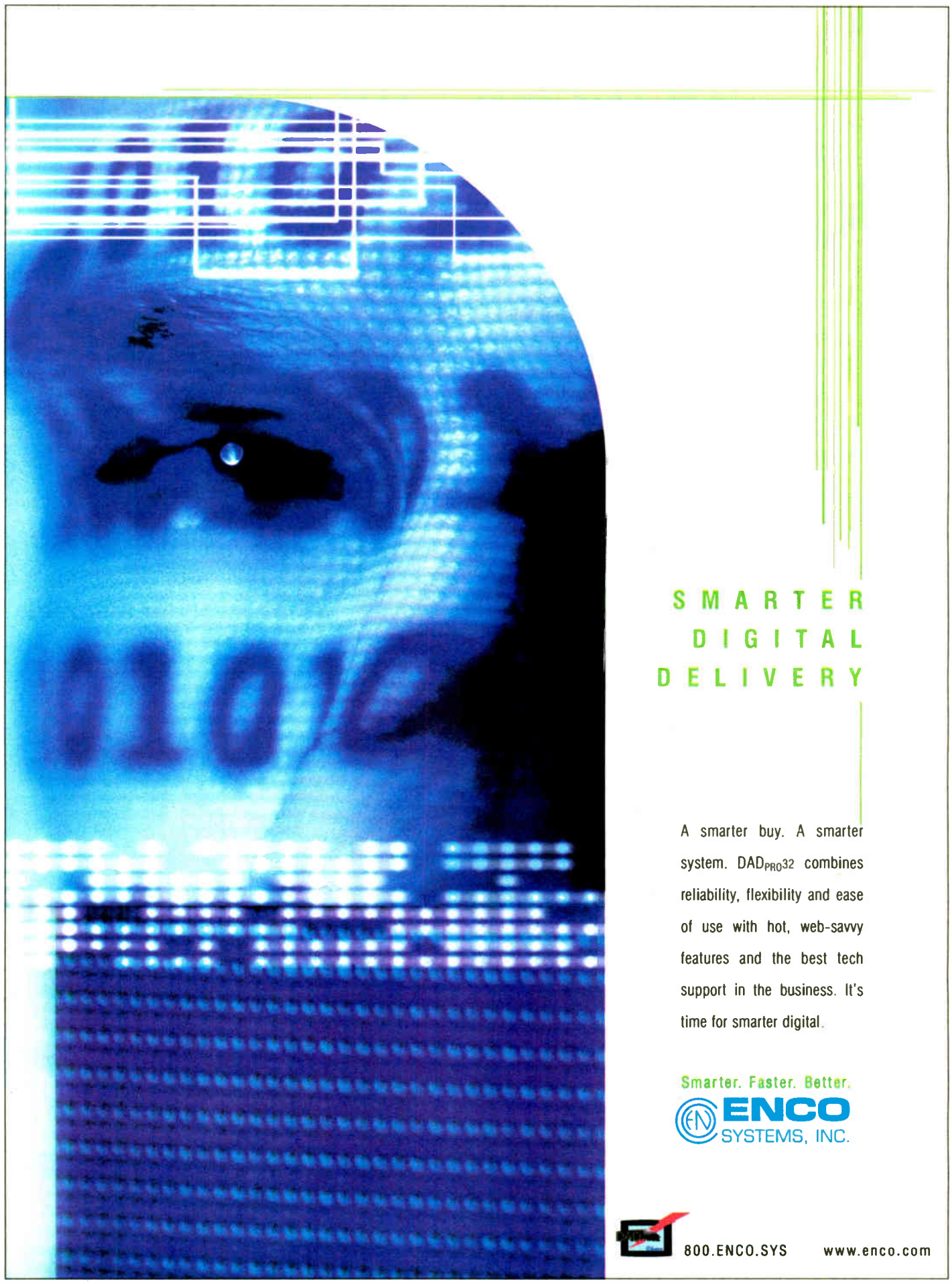
One addition, one division — On June 5, the FCC followed the **Justice Department's** lead in giving the go-ahead to AT&T's proposed acquisition of cable powerhouse **MediaOne**. To satisfy concerns that this could harm competition among broadband service providers, AT&T has agreed to divest its holdings in **Road Runner**, the high-speed Internet access provider. The acquisition will make AT&T the country's largest cable company.

After all, the way that all the bootleggers got shut down ultimately was by ending prohibition.

— Rob Glaser

This marks a curious turn **in the race** between the telcos and cable companies **to bring broadband** into households. AT&T will soon be a dominant player in the burgeoning wireless Internet arena. How content providers and consumers fare as service providers consolidate is anyone's guess.

While the Justice Department smiled on this deal 16 years after breaking up the AT&T monopoly, Microsoft and the industry built around it — get ready for what it claims is the unkindest cut of all. All of Bill's lawyers and all of Bill's PR men may still overturn Judge Jackson's order that the company be split in two. However this is resolved, the government has made its case that the whole of the software giant is less than the sum of its parts — at least in terms of competition and creativity in the industry.



World Radio History

Amaturo Gets Results From Web

▶ UNCLE, continued from page 27

them link directly off the main Uncle Webster site.

"We host the site with our servers, provide the databases, send a team to help the businesses get the local content up, do the monthly maintenance, all the trouble-shooting and the site refinements," said Amaturo, who even furnishes *UncleWebster.com* stationary and business cards to his client groups.

"We handle all the upfront costs in exchange for 20 percent of sales," he said. "An 80-20 split is unusually generous for the Web. We take the risk — the station group provides the sales force and the airtime. It's a capital commitment for groups — as opposed to a capital investment."

Magical mystery tour

Giddens takes **RW** on a quick explanatory tour around the Uncle Webster site, showing off its value and tie-ins to local businesses — the key is the eye-popping 20,000 Web sites for local businesses at Uncle Webster.

Giddens clicks on the name of a nearby state park. Up pops a picture of the park, directions and its hours of operation. Several local business links also appear on the screen.

"Suppose I'd like to go there and fish, but my tackle is out of date." Giddens clicks on a nearby "Fishing Shops" link, which displays a list of all the local tackle shops in each local town. Some tackle shops appear at the top of the listings — "gold" advertisers who have paid to get higher positioning on the site's "yellow pages."

Ken Giddens

Click on an individual business name, and you're taken to its Webster-generated Web site. There you'll see the name of its manager, its phone number, address, etc. — and a photo, if the business has paid extra to have it posted there.

Amaturo said, "Ken and I believe that to be successful as a Web business, you have to bridge the gap between the digital and the actual — those that use the Web and the businesses, activities and agencies that aren't but have information that's appropriate to be on the Web.

Lawrence Amaturo

city, in Northern California.

The two "hit it off immediately," said Amaturo. "Uncle Webster was designed as a protective flank for our four stations — a nontraditional revenue source," said Amaturo.

The money

Amaturo and Giddens said they've invested more than $1 million of their own money into *UncleWebster.com* — Amaturo has resisted venture capitalist's money.

When asked about his marketing approach, which is fronted by the balding, friendly-looking "mascot" cartoon character "Uncle Webster" (he appears on most of their Web pages), Amaturo said the company tried to create a warm, friendly, meaningful place on the Web to get local community information.

"The Uncle Webster character softens it all for the user," said Amaturo.

The Uncle Webster character, he said, was the product of marketing workshops and focus-group research.

Uncle Webster is a local portal that has generated more unique visitors than any of our four radio stations.

— Lawrence Amaturo

"We're *not* a business that links people on the Web only to businesses that have Web sites. We're a Web site for every single business in Sonoma County."

Works in progress

Many of the 20,000 local business sites that link off Uncle Webster have not (yet) developed their Uncle Webster sites beyond the raw-data stage provided (it's a free listing).

"We try to get an e-mail address on every page," Giddens said. "If a potential customer can't send an e-mail, we have a fax number listed for the business. If the potential customer sends snail mail to us, we'll mail it on to the retailer as 'Uncle Webster' mail. It's a strong sales tool."

"Sure, it's all labor-intensive," Giddens said, "but that's what makes it local."

Eighteen months ago, Amaturo partnered up with Giddens, an Internet engineer/strategist and veteran of the Netscape operation in Silicon Valley. At the time, Giddens maintained a community information database for the city of Santa Rosa, Sonoma County's largest

It's all local

A visit to the *UncleWebster.com* site shows that it provides an impressive amount of local community information: Each school in the county is listed, as are its parks, playgrounds, government officials and public meetings.

There are also job listings, classified ads, and even a dating service. E-mail and Web page links are listed on many of them. If you need a map to find, say, a park, the user-friendly *UncleWebster.com* calls up a map box from Yahoo! maps.

A community calendar of events is constantly updated and public input is solicited (and screened), as are movie

See UNCLE, page 33 ▶

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World Radio History

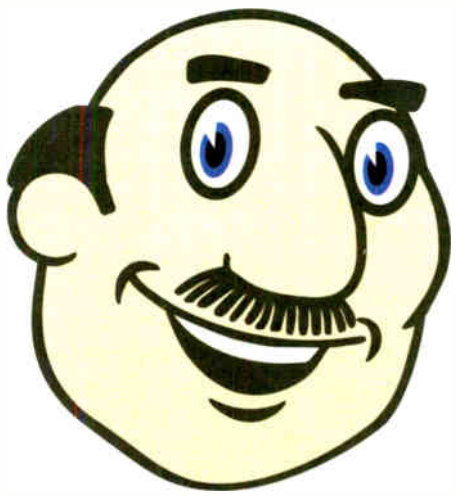
▶ UNCLE, continued from page 32

listings from 40 local theaters. *UncleWebster.com* even has its own film critic.

"We're going to buy movie preview time, too," Amaturo said.

Next

Amaturo and Giddens will soon launch a second series of revenue-producing Web sites (linked to the main site through banner ads and "hot links") for auto sales and for printing out local merchant coupons.



Uncle Webster

Amaturo recently sold his four radio stations in Santa Rosa to the Emerald City Radio Partners, largely so he can to concentrate on selling the *UncleWebster.com* operation to other broadcast groups. He said Emerald would continue the four stations' close business relationship with UncleWebster.

His model of success

Amaturo's company offers partnerships to other broadcasters who give his company a 20-percent stake in their businesses. The deals sold well at NAB2000 in Las Vegas.

What Amaturo's company offered at NAB2000 is selling: "Partnerships that give us 20 percent of the business," Amaturo said.

Using a McDonald's analogy, Amaturo said, "we'll provide the burgers, the fryer and we'll train the workers. You handle the local sales."

And, after drawing big crowds of interested broadcasters at the UncleWebster booth at the RAB and NAB conventions, Amaturo is going full speed ahead with the next step of his digital business strategy — franchising the UncleWebster setup and providing a turnkey solution and operation for other broadcast groups.

Targeted content

UncleWebster.com will provide groups with jingle packages — suitable for every format — as well as all the other things needed to get a revenue-producing site going.

Amaturo has also hired a longtime radio station general manager and local business owner, Rick Lee (former GM of San Francisco's highly rated KMEL(FM)), as his liaison to help negotiate with station groups who want to set up *UncleWebster.com* in their local communities.

"Our target is 10 groups including ours," said Amaturo.

Amaturo said the Uncle Webster Web site receives more unique visitors per month — 80,000 — than the cume of any of his four radio stations.

"We're also billing more each month for the Web operation (located at *www.UncleWebster.com*) than nine out of the 14 local radio and TV stations here in Sonoma County."

Amaturo and Giddens have created a separate company, New Generation Media, for *UncleWebster.com* and began hiring talented young Internet and Internet salespeople last year — all college graduates.

"Our radio sales staffs are also selling for Uncle Webster," Amaturo said, and they have exclusive Internet-sales rights to 100 local business clients they're already selling."

Amaturo said of the company's management style, "Ken is in charge of technical and strategic, and I handle the sales, marketing and financial side. We meet once a week — Ken's office and some of our tech staff are across town — to make sure we're on the same page — Web page, of course."

Amaturo said he hasn't ruled out acquiring other radio station properties in the future.

Fear but not loathing

Amaturo, raised in the radio business (he's the son of radio group owner Joseph Amaturo), laughs when asked who his mentor was on his Uncle Webster enterprise.

"I was driven by fear. Fear is my mentor! I was afraid someone locally would beat us to the Internet. I was running scared. Four years ago, I knew nothing about any of this technical stuff. I knew radio. I'd been pushing the Internet away."

For his part, Net-savvy Web veteran Giddens said, "Our mentor is really the public. They tell us if they're happy. Our mentor is not Yahoo! All we care about is the public — like in the radio business, we give the public what it wants.

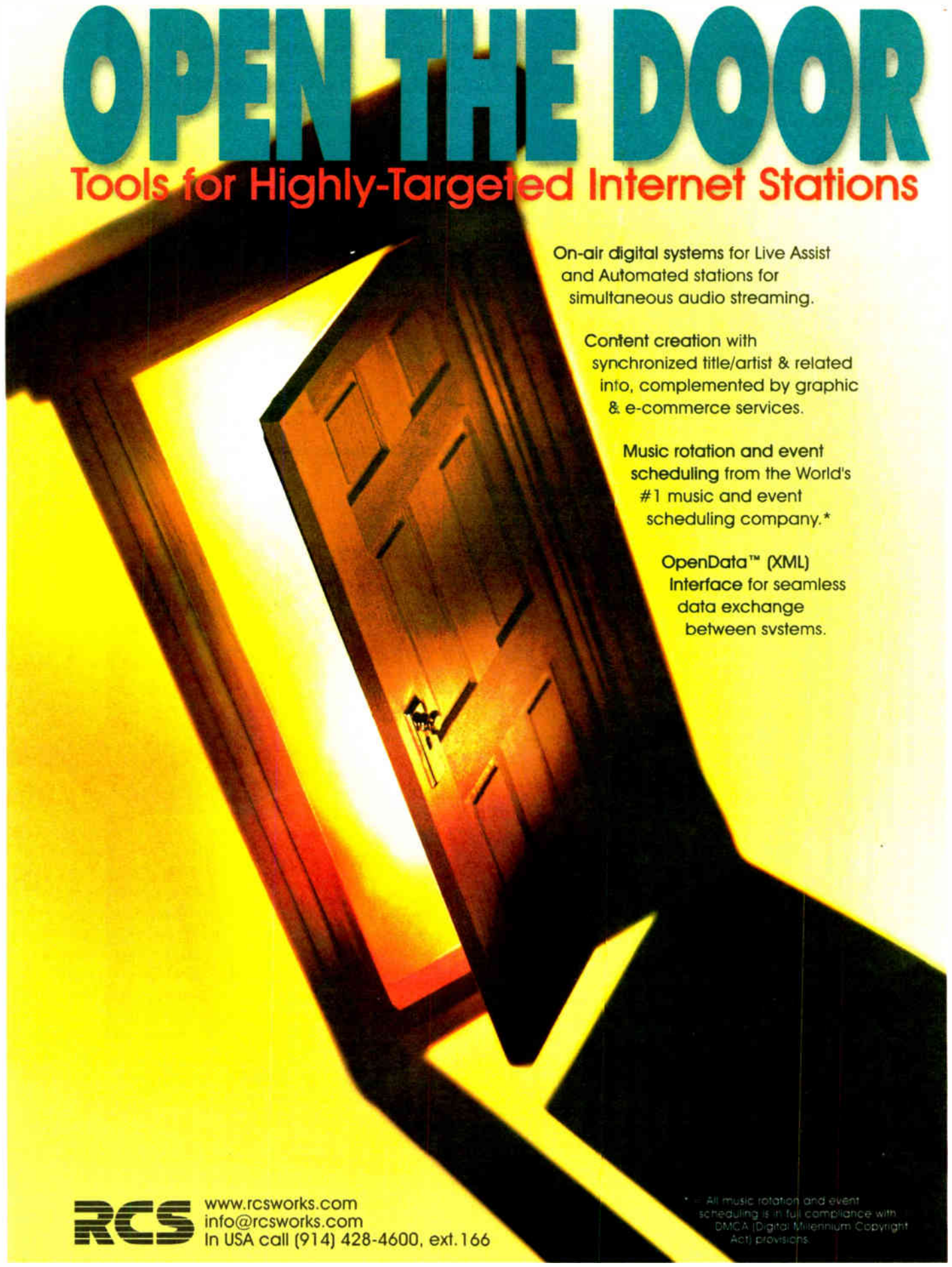
"It wasn't in our original plan to do Uncle Webster outside our local market and franchise it," insisted Amaturo. "We built it to make money in Sonoma County. But that was before all the outside interest.

"We're the only radio group in America that has a standalone media property on the Web," claims Amaturo.

"One of the best thing about this new business?" smiles Amaturo, "we don't have to deal with the FCC."

■■■

Bill Mann is ***Radio World****'s San Francisco correspondent. Reach him via e-mail at* Newsmann@aol.com



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Standard Configurations

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1200 - 15S	15 channels	$4,495

(call factory for options)

12,000 Console

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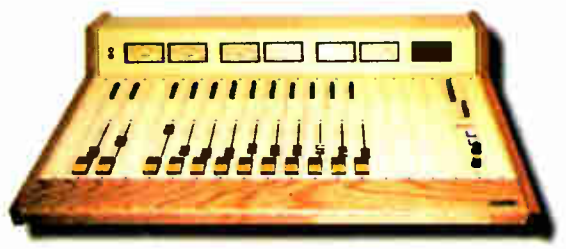

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Standard Configurations

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12K18 - 18	18 channels	$8,755

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- 18 CH Console $12,995

A breakthrough in features, performance, and price, this is a black box digital audio console controlled by a familiar Console -or- PC computer. Powerful, flexible, and designed for ease of use, installation, and service, the Revolution is a Colorado Digital Product.

Available April

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Digital

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World Radio History

MANAGEMENT CORNER

Local Advertisers Vital to Radio

Vincent M. Ditingo

Station managers must heed the following warning from their local advertising clients: Improve the way you do business or lose it.

As regular readers of Management Corner know, growing advertising income and recruiting top salespeople are familiar themes this year, even as radio garners double-digit revenue increases.

Now there is evidence, via an advertiser perceptual study, that station group executives should consider monthly billings growth vulnerable, especially if they want to compete successfully with other media in the long term.

The time has come for sales managers to closely reevaluate the quality of their staffs if they want to maintain their stations' competitive edge to attract defined demographics.

This is critical, given the fact that many radio stocks' values have softened in recent months.

Today, radio is trailing television in several "key sales representation attributes," according to an Arbitron/Sales Insights study conducted among 131 local advertisers considered to be "heavy radio users."

For instance, the study, released earlier this year, shows advertiser respondents believe that television salespeople are more professional by a margin of 57 percent to 21 percent.

Consequently, television account executives are also viewed as "the best-trained" as compared to their counterparts in radio by a margin of 52 percent to 28 percent.

(The Arbitron/Sales Insights study measured the responses for radio along with television, local cable, newspaper and the Internet.)

Related to this perceived lack of professionalism among radio sellers, local cable and the Internet are seen as the media "improving the most" in terms of the way they do business (55 percent of advertisers said that each is improving) while radio finished a distant third.

Just 25 percent of those advertisers who responded said radio is improving in the way it does business; 29 percent perceive radio buying as "getting worse." (See accompanying chart for more results.)

The time has come for sales managers to closely reevaluate the quality of their staffs.

Additionally, one-third of the respondents acknowledged that they have spent money on the Internet in the past year, a sign that ad moneys are starting to move away from traditional spot buys on both radio and television.

Cluster confusion

According to other key findings in the study, it might be time for some radio companies to modify or eliminate their cluster-selling approach to clients.

As local ownership consolidation continues, the vast majority of advertisers (70 percent) in the survey think cluster or multiple-station packaging in presentations makes radio spots more difficult to buy.

Out of the remaining respondents, only 19 percent said cluster packaging made buying easier while 11 percent replied, "don't know."

The executive summary of the study notes no major discrepancy in responses between agency-affiliated buyers and direct buyers.

Significant impact

The above findings are particularly important for two reasons.

Typically, some 70 percent or more of a radio station's annual billings is comprised of local advertising dollars, which is why it becomes vital to know what major radio advertisers are saying about the medium.

Meanwhile, according to Arbitron data, radio has been slipping, albeit slightly, in time-spent-listening levels in recent years, which is significant as the medium faces increasing media consumption competition.

Along with the above wake-up call for radio leaders to reexamine their selling practices and procedures, there is, indeed, an upside to the above radio perceptual study.

Radio performed exceptionally well with advertisers' top-three media selection criteria: the ability to target consumers, total costs and frequency of the message.

Breaking down the costs category further, respondents perceived television as the most costly (81 percent) followed by newspaper (10 percent), and radio (5 percent).

At the same time, 49 percent of the advertiser participants recognized radio as the best medium to present qualitative information about its audience. In this category, television trailed radio with a 20-percent response rate.

But, as those who sell radio on a daily basis might expect, the push to schedule larger hourly spot loads continues to fuel the perception among advertisers that radio is a very cluttered medium.

The good news to take away from this study is that clutter did not figure as a key criterion in selecting media for advertising placements.

In the Arbitron study, the phrase "amount of clutter" ranked eight out of a possible 11 key factors impacting media selection decisions.

It is also interesting to note that radio salespeople are perceived by advertisers as "the most creative," especially when compared to television.

However, here the study's executive summary suggests that the "creative attribute assigned to radio salespeople has little to do with developing copy and producing radio spots" since television has the longstanding perception as the creative medium.

Account execs

The term "creative" to describe radio account executives is more likely related to "negotiating, packaging, developing promotions and finding creative ways to claim to be 'number one,'" the Arbitron/Sales Insights study states.

While sales execs continue to find ways to better harness their local station's flexibility and ability to target specific demographic groups, it is undeniable that radio remains an effective advertising medium.

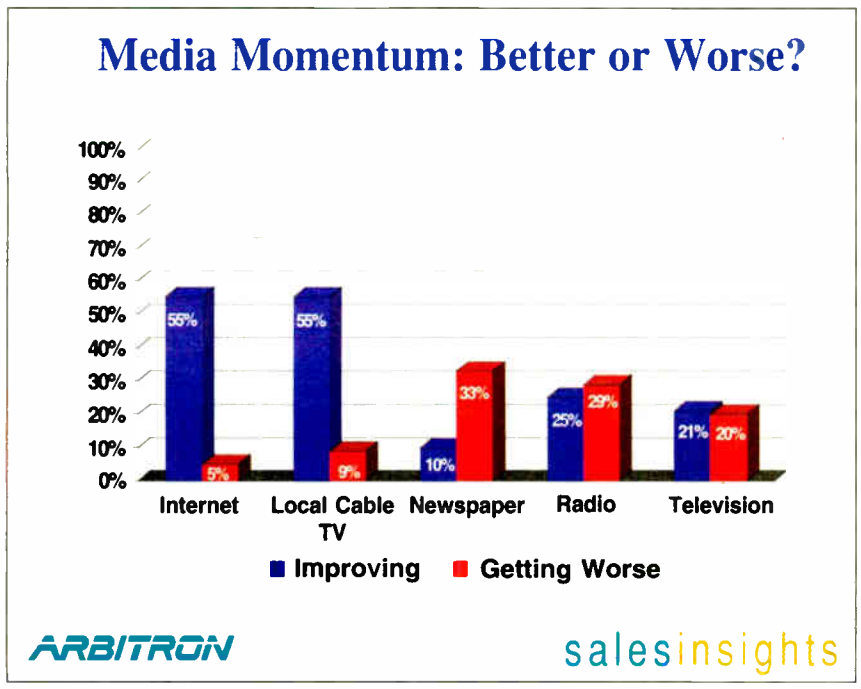
This is evident by the results of the fourth Arbitron Internet study, conducted in January among fall 1999 radio diary keepers in conjunction with Edison Media Research.

Analysis of the study shows that the number of Internet users in the United States who visit Web sites as a result of radio advertising is rapidly rising. That figure has jumped from 29 percent in July 1999, the last time a similar study was implemented, to an impressive 45 percent.

Key Findings — Media Momentum

Local cable and Internet "improving the most." According to Arbitron, warning signs for radio appear when advertisers were asked, "In terms of the way they do business with you, which media are improving, staying the same or getting worse?"

Local cable and the Internet are seen as the two media improving the most, with 55 percent of advertisers saying that each is improving. Only 25 percent say that radio is improving, while 29 percent say that radio is getting worse. Clearly, momentum is on the side of local cable and the Internet.



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World Radio History

Men Heavy Users of Radio, Online

According to a new Interep report, men showed the strongest index against radio and online services in the three most advertiser-requested male demographic groups.

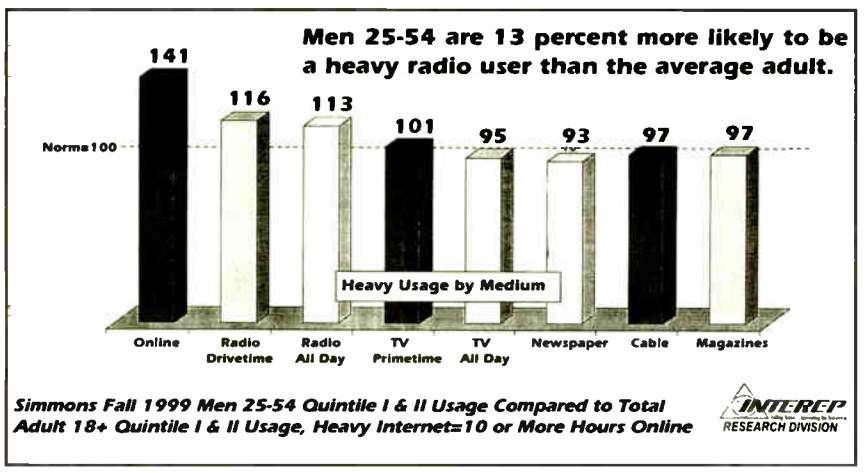
In the Interep report, men 18-plus used online banking, message boards, chat rooms, financial information, news/sports/weather and newspapers in significantly higher proportion in comparison to women 18-plus.

In radio formats with highest concentration of men by demo, all-sports predominated in men 18-plus, men 25-54 and men 35–64. Men 18–34 preferred the album oriented rock format.

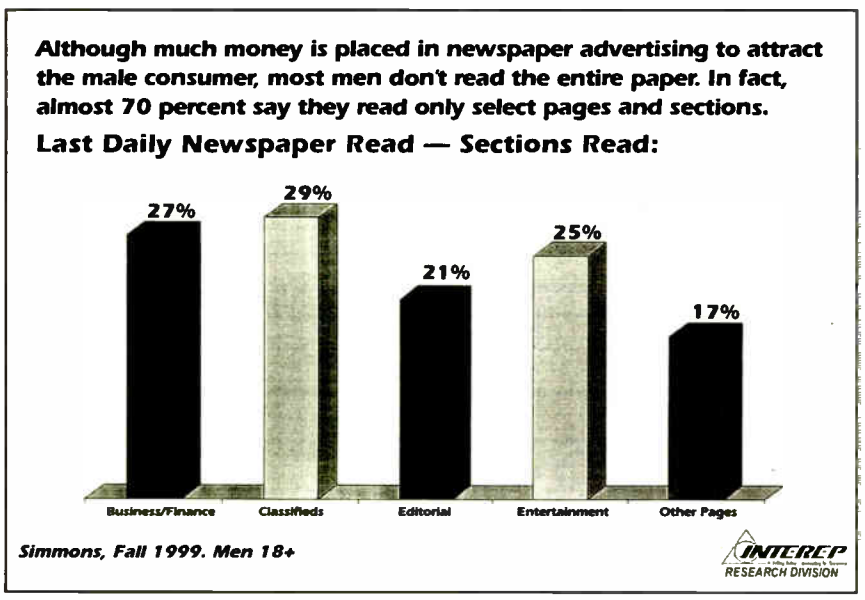
In response to the question "What is the last daily newspaper section read," men read the classified section most, closely followed by business/finance section (see chart).

— Laura Dely

Men 25–54: Use Radio and Online Services Most



Will Your Newspaper Ad Reach Men?



Arbitron, Nielsen Sign Agreement

Nielsen Media Research will join the Arbitron Company when the Arbitron Portable People Meter is deployed in the United States, the companies announced June 1. Arbitron also announced that Philadelphia would be the first U.S. test market, beginning in the fourth quarter of 2000.

Nielsen will provide financial support and its television survey research expertise to the field test in Philadelphia and will have the option to continue in further PPM system deployment in the U.S.

The PPM is a pager-sized device that is worn by consumers throughout the day. It automatically detects inaudible codes that broadcasters embed in the audio portion of their programming using encoders provided by Arbitron. A base station that recharges the PPM unit at the end of each day also downloads the collected codes to Arbitron.

The device will measure radio, TV and cable programming.

The Arbitron PPM system. From left to right: audio signal encoder (will fit in a standard 19-inch rack), the PPM (to be worn by consumers throughout the day), the docking station and the household hub (collects information from all the docking stations in the household via the home's AC wiring)

STATION SERVICES

'Big Snoop Dogg Radio' Debuts

NBG Radio Network Inc. will syndicate "Big Snoop Dogg Radio," a weekly four-hour radio show hosted by hip-hop personality Snoop Dogg.

Currently broadcast on KPWR(FM), Los Angeles, the show features Snoop's favorite R&B and hip-hop old-school cuts as well as hits from some of today's rising stars. Listeners are privy to world premiere releases of Snoop Dogg's music, as well as debuts from artists on his new record label "Doggystyle Records."

For more information contact Ollie Holmes in affiliate relations at NBG Radio Network in Oregon at (800) 572-4624 or check out the KPWR Web site at www.power106.fm

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World Radio History

Cowboy Hits the Airwaves In July

Cowboy news, music, memorabilia, humor, philosophy and "Western witticisms" are featured on the "Wild West Show" with Montie Montana Jr.

The hour-long weekly show is broadcast from Montana's ranch, Pedo Viejo, in the foothills of California's Sierra Mountains. Abernat Broadcasting Network will distribute the radio program.

Montie Montana Jr.

"This 40-acre spread keeps me busy," said Montana. "I'm buying an old schoolhouse and will move it to the ranch where we'll remodel it and put in a state-of-the-art digital studio."

Executive Producer Sam Knoll said that Montana will tell some campfire stories, maybe even sing a few lines, have some guest interviews and, most importantly, have a good time sharing what being a cowboy is all about.

For more information contact Lowell Homberger at Abernat in North Carolina at (704) 544-7615 or via e-mail to ARBradio@aol.com

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Westwood One promises to deliver bone-crunching, blow-by-blow coverage of the World Heavyweight Championship live from London Saturday, July 15.

The undisputed heavyweight champion, Lennox Lewis, will defend his title against the current North American heavyweight champion, Frans Botha.

Photo: Michael O'Neil

Lennox Lewis

Lewis has fought and defeated both former heavyweight champions Mike Tyson and Riddick Bowe. His challenge to Evander Holyfield ended in a "much-disputed" draw, according to WWI.

Lewis holds a record of 36-1-1, with 28 knockouts.

Frans Botha has faced some of the greatest fighters in the world, including Shannon Briggs, Mike Tyson and Lee Gilbert. Botha was crowned North American heavyweight champion when he defeated James Stanton. He holds a record of 40-2-1, with 25 knockouts.

For more information contact Telly Wong in New York at (212) 641-2057.

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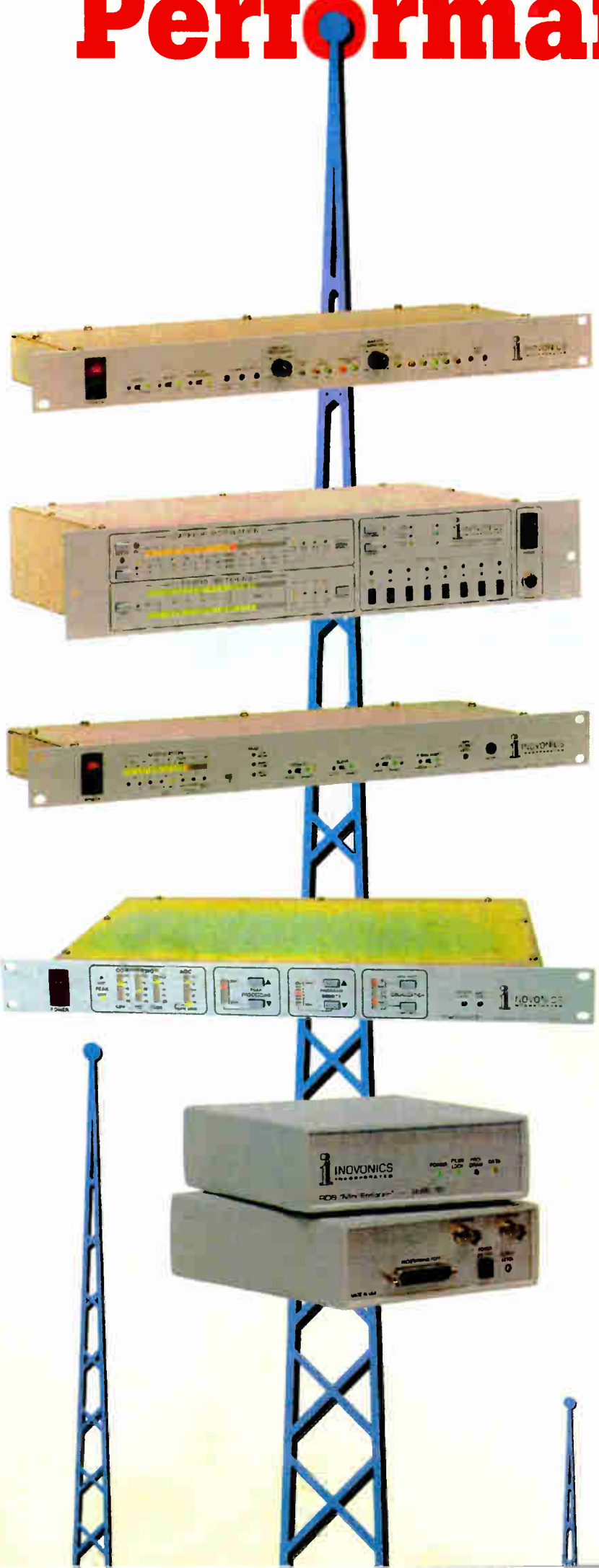

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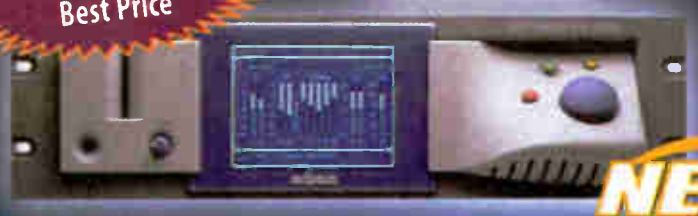

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Orban 8400 List $10,700.00

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The TeleRadio even has a DTMF selectable external audio connection so it can be used as a standard telephone coupler too. An optional call progress decoder is available for using the TeleRadio on PBX analog lines and in areas that don't support *CPC*.

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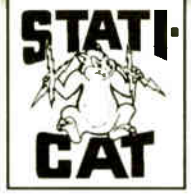

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World Radio History

Studio Sessions

NPR Explores Linux
Page 44

Digital Consoles Come of Age

Read G. Burgan

Digital technology first made a subtle incursion into our broadcast studios with the advent of CD players in the early 80s. Since then, its presence has multiplied with the addition of MD, DAT, DAWs and PC-based editors and processors.

One area that stubbornly resisted the digital revolution — the audio console — also is giving way to digital.

Is it time for you to replace old Betsy with a shining, new, full-featured digital console? If so, what do you need to know before you plunk down your hard-earned dollars?

Karl Moet, Tascam

While everything you already know about audio consoles will stand you in good stead, there are more aspects to a digital console than the number of line and mic inputs, busses and EQ features.

To find out the answers to these and other questions, I asked a series of the same questions to a few folks who manufacture audio consoles.

Some make on-air boards, some make production mixers. But most of their answers apply to both.

Comparing old and new

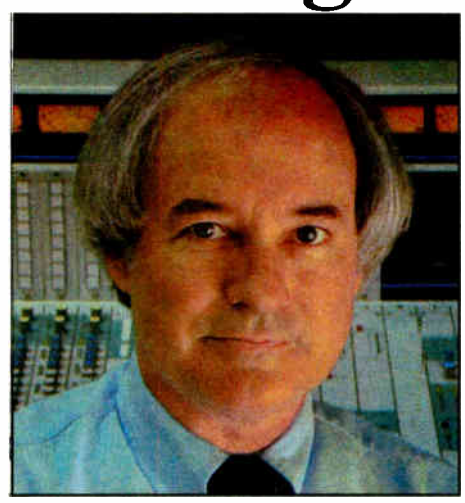
One of the questions I asked was, "What does a digital board do that an analog board cannot?"

Terry Murphy, marketing manger of Sony Pro Audio, pinpoints the unique contribution of digital in the area of audio consoles.

"The area of speed and precision is where a digital console can outshine an analog board, especially where instant recalls of various setups is required," said Murphy.

"Digital boards allow the user to quickly go from one part of a production to another, or to try some 'what-if' adjustments, then get back to exactly where the user was when he started," Murphy said.

For Bob Groome, systems engineer at Arrakis Systems Inc., other digital advantages include "remote control of all mixer commands from a remote site via PC control, the ability to change features on the fly, control by a hard-disk audio workstation and the ability assign some mixers to a second studio."



Mike Shane, Wheatstone

Mike Shane, marketing manager at Wheatstone, said, "It allows enhanced processing capability — EQ, compression, ducking — without those functions getting in the way of basic console operation."

Jim Laird, director of engineering at Autogram, takes a somewhat different position.

"As far as what digital consoles can do that analog consoles cannot, my answer would be 'very little.'

"Sure there are bells and whistles on many digital consoles that have not previously been seen on their analog counterpart, but most of those features could have been added if the demand had been present," said Laird.

"Autogram has the distinction of having built a highly sophisticated microprocessor-controlled analog console several years back that did everything but

See FOCUS, page 52 ▶

PRODUCER PROFILE

Joey DiFazio Gives 'The Fan' Its Edge

Ken R.

In the 1920s, Charlie Chaplin worked his movie magic in front of the silent cameras at the Kaufman-Astoria studios in Queens, N.Y., just outside of Manhattan.

Today, in a little corner of that original historic building, Joey DiFazio creates his own production magic at all-sports WFAN(AM), "The Fan."

Joey DiFazio in the studio

"I'm here at 5 a.m. for 'Imus in the Morning,' just in case he needs me to edit out some curses from an interview or cart some song intros as bumpers," said DiFazio. "The rest of the day I'm working on station promotions for the various show producers here."

See DIFAZIO, page 48 ▶

World Radio History

NPR Explores Power of Linux

PUBLIC DOMAIN

Rich Rarey

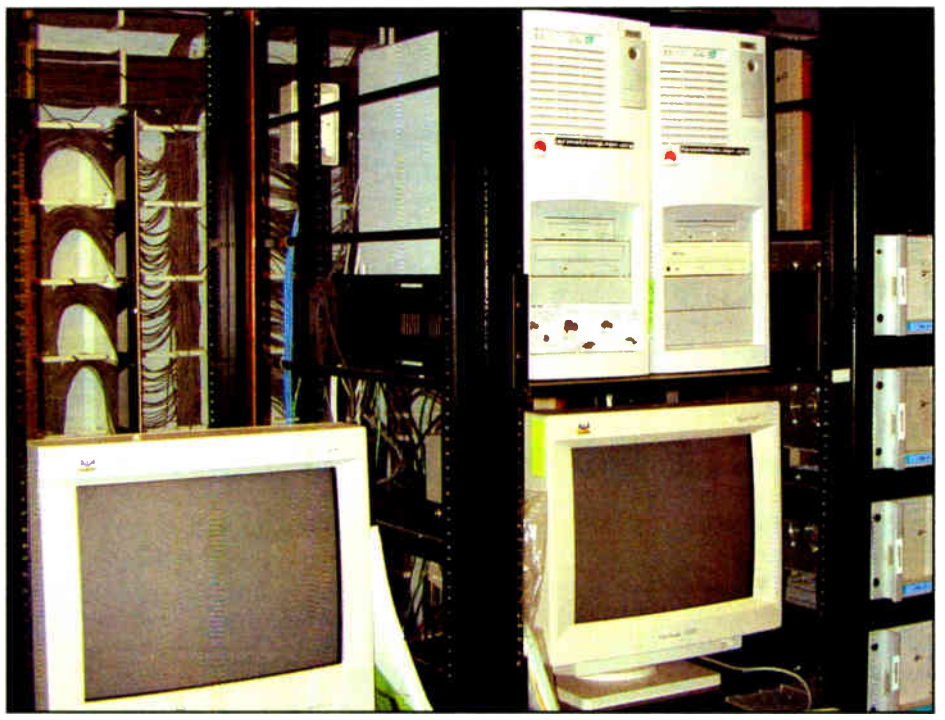
In 1995, National Public Radio commissioned space on its Web server for the purpose of receiving audio files destined for broadcast.

Some readers may remember a series of *Public Domain* articles that discussed the construction of the site. I argued that its best use was receiving non-deadline audio from places that could not support any other high-quality transmission method.

Now, five years later, much has changed — Internet accessibility is common, opportunities to use increased bandwidth have appeared that make ISDN seem slow by comparison, and it seems like everyone believes they can launch their own radio station on the Web and rake in millions of dollars.

Another change is the commissioning of two dedicated servers at NPR in 1999 for the purpose of receiving audio files by analog serial modem connection, analog PPP modem connection, by ISDN modem from both serial and PPP, by e-mail attachment, by Internet FTP and even by Web browser upload.

In the year since the sites were commissioned, we have learned what works and what does not, and created new Internet-based services for NPR member stations.



'Armstrong' and 'Fessenden' shown at work.

My assignment in the winter of 1999 was to take two HP Vectra tower CPUs and two ISDN/analog modems and transform the overloaded site into a fully-redundant, secure place for receiving audio by the most means possible.

The equipment was purchased in fall 1998 and the NPR systems guru had recommended replacing the existing Windows NT operating system with the robust and free Linux operating system.

My knowledge of Unix, let alone Linux, was that you could type *vdir* and receive a directory listing. Clearly, further study was indicated.

If anyone is faced with a similar challenge, there are books available that spell out exactly what to do. One of the best introductory books was from RedHat, a company that sells support for Linux.

The installation guides and tutorials in the RedHat book made it easier to say "yes" to, "Do you really want to eliminate Windows NT from your hard drive?"

The hard-disk reformatting and loading of Linux was a non-event. All we did was answering several pertinent questions about the network address, what processes should run during startup and the name of the servers. We chose names that had meaning to those in radio — *Armstrong* after Howard Edwin Armstrong, the inventor of FM; and *Fessenden* after the first person to broadcast music by wireless in 1906, Reginald Fessenden.

The realization that one can have a really good computer operating system for free and can legally have the source code for the entire operating system makes me wish all software were so freely available and well-crafted.

Once the operating system was installed, the more difficult tasks began with configuring the modem monitoring software, creating the restricted users accounts, configuring the point-to-point protocol (PPP) processes for the modem and tightening the security.

The security was easiest, as our plan called for two autonomous servers, each an island that was separate and alone. Our theory and experience of operation is that our audio servers will be hacked — it is only a matter of when. The task, after attempting to make the servers hack resistant, was to make any damage an inconvenience, not a crisis.

Trusted Information Systems Firewall Toolkit freeware was configured to allow access by few Internet tools in the TCP/IP suite.

Utilities

Using a RedHat configuration utility called Linuxconf, we quickly set up user accounts, groups, directories and passwords.

Another Linux tool that made the transition from the DOS/Win environment easier was a freeware application called Midnight Commander. It has the functionality of the Symantec Norton Commander, but was written for Linux with many more features.

Mgetty+sendfax was installed to configure the modems. This is a freeware application suite that is well documented by the author, Gert Doering, and it includes source code for custom compiles. Unfortunately, it was not installed in the default RedHat setup, so it had to be manually installed.

Once configured, it monitored the modem for ring activity, checked once an hour to see if the modem was still there and ran caller ID. Overall, it is a fine piece of free software that just works well.

I thought allowing callers to use plain serial transfers, using tools such as dsz or xmodem would be difficult to integrate with the capacity to connect with using point-to-point protocol, but it was not.

After browsing a reference book, we found the exact typing needed to configure the login and system details, so that the caller can connect to the server as if the server was an Internet portal or an old-fashioned BBS with static menu options in a restricted shell. The BBS case is for times when the reporter's computer cannot run Internet tools and we wanted to keep all filing options open.

Configuring the massive SendMail application to receive e-mail and place the attached audio file in the correct directory required writing a script, authored by NPR's Rob Holt. It worked well after development and is another way to receive files.

One of the most enjoyable points was configuring the httpd process that typically listens and responds to Web browsers. Using Apache Web server freeware, we built the simple home page, installed security and found another freeware script that made uploads by Web browsers practical for our purpose. Complete documentation allowed me to tweak aspects of the Web server as needed, and being a Web server, easily able to observe the results.

After a shakedown period, we commissioned the servers and began phasing out the old site. Over time, particular performance problems were noted in some areas.

The Web upload interface appeared to be unreliable to connections from outside the United States. Usually the connection timed-out and broke the upload. Changing the httpd process parameters to permit longer connections had little or no effect.

The modems were a great addition. Originally designed for use when the reporter had no local Internet connection, modems have proven to be invaluable when the Internet was sluggish from heavy traffic.

If you are contemplating building servers and have little experience with Linux-type systems or computer networks, don't allow the apparent complexity scare you. There are plenty of good references including newsgroups that list the steps to accomplish exactly what is needed.

The Society of Broadcast Engineers has started a new certification program that will build your general network skills. I found their certified broadcast network technologist program helpful in filling these gaps.

Even though Linux and its superior tools are free, expect to spend some free time browsing books and planning. It is worth the investment, and the sound quality of the news spots and pieces filed is "ears" above POTS without a codec.

■■■

Rich Rarey is master control supervisor at NPR.

Share your own experiences with Linux via e-mail to radioworld@imaspub.com

PRODUCT GUIDE

Portable CD-R for Burning on the Go

CD CyClone Duplication LLC has a new external CD-RW drive called CDRevo. It has a futuristic-looking case with a handle.

Two models are available: a 12 x 10 x 32 FireWire version for $479 list and a 4 x 4 x 32 USB version that lists for $299. An iMac version will be available soon in five colors to color-coordinate the unit with an iMac.

The CyClone RW kit comes bundled with CD mastering software, cables, CD-R and CD-RW media, along with all the necessary items to start producing CDs.

The unit with FireWire support can be hot-swapped — meaning it can be removed without requiring the computer to be restarted.

For information contact the company at (949) 470-4795 or visit www.cdcyclone.com

World Radio History

◆ PRODUCT GUIDE ◆

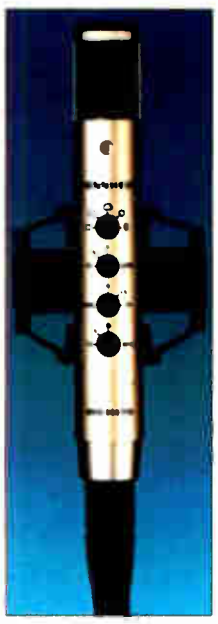
Products for Radio Production

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

Sennheiser Debuts Microphone

Sennheiser redesigned its studio condenser, the MKH80, as the MKH800.

This new mic uses a wideband transducer operating on the push-pull principle for a 30 Hz to 50 kHz frequency response.



The mic has a dynamic range of 126 dB with a selfnoise of 10 dB (A).

Sennheiser engineers said they minimized interference at high frequencies by keeping the microphone dimensions small, and by redesigning the capsule and acoustically important parts of the housing. The very first recording using the MKH800 was made in July 1999.

It was of Mozart's "Requiem" performed by the Berlin Philharmonic Orchestra in, Austria, for Deutsche Grammophon/Universal Music.

For information contact the company in Connecticut at (860) 434-9190 or visit www.sennheiserusa.com

Broadcast Electronics, Sonic Foundry Allies

In an alliance with Sonic Foundry, Broadcast Electronics will bundle specific SF software, enabling users to customize audio content for digital distribution and streaming Internet audio broadcasts.

The first of Broadcast Electronics' streaming audio products to include Sonic Foundry software will be eStream Studio.

The package includes the eStream Internet audio processing card and Internet audio processing plug-ins, which enhance audio for "on-air" quality over the Net.

The package also will include SF's Vegas Pro with multitrack editing to allow for the mixing of file properties, bit depths and sample rates on a single track, along with Sound Forge to author streaming media formats for both Windows and RealNetworks media players.

The eStream Studio is intended to provide the user a one-stop streaming audio production suite.

For more information contact BE in Illinois at (888) 232-3268 or visit the eStream Studio Web site at www.audiovault.com

BroadcastAmerica.com Supports WindowsMedia.com

BroadcastAmerica.com has incorporated support for Microsoft Windows Media into its network of online TV and radio broadcasts.

In turn, BA.com content will be featured on WindowsMedia.com, the MSN guide to audio and video on the Internet. Now, visitors to MN.com can log on directly to BA.com and its channels, including those that focus on music, TV news, sports, talk and Europe.

BA.com also will become a Windows Media solution provider, offering all WM streaming and downloads. WM.com attracts more than 5 million unique users a month, according to Media Matrix.

For information contact the company in Maine at (207) 321-5100 or check out the Web site at www.broadcastamerica.com

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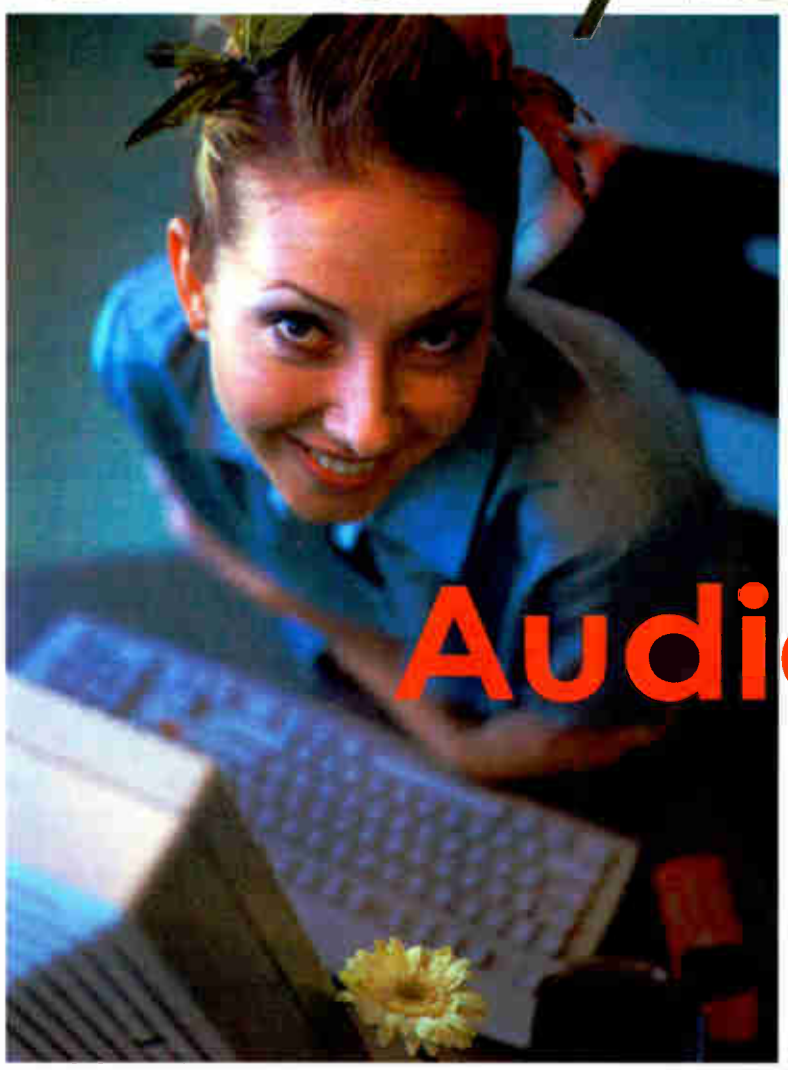

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World Radio History

PRODUCT EVALUATION

M-One a Good Effects Value

Ed LaComb

Whenever I review a new piece of production equipment, I look at it from two angles: how "radio friendly" is it, and how cool is it for die-hard production types?

I was excited when I was asked to review the new TC Electronic M-One multi-effects processor. I have always been a fan of TC products, especially the Finalizer, and I look forward to getting my hands on any new toys that the company puts out. TC Electronic has a reputation for high-quality equipment that is user-friendly and esthetically pleasing.

TC Electronic M-One

effects that work well with *both* voice and music.

Even though the M-One focuses on a variety of reverbs, it has an impressive selection of dial-up, ready-to-run programs for natural choruses, interesting delays, de-essing, dynamics, that '70s "swishy" phasing/EQ combo effect and more.

The M-One is a great toy to use right out of the box. Radio people will appreciate the simplicity. Production gurus will appreciate the flexibility.

Routing options

Routing options on the M-One are well thought out. It can be operated in a variety of modes including stereo, mono or dual engine routing for two different processing effects with different outputs simultaneously.

The signal can be routed serially, which allows the user to feed one effect directly into another, or parallel for side by side routing, as well as stereo linked or dual mono.

The "Tap" function is great when working with beats in a music composition. It allows the user to manually tap in the tempo of the piece and then applies this value to algorithms like delays and chorus effects. If your sense of rhythm is somewhat lacking, just enter a value in milliseconds and the M-One creates the beat.

Nobody would accuse the M-One of having too many factory programs. But its beauty is in its simplicity and the clean, natural sound of primarily its

See M-ONE, page 50 ▶

The author models his M-One

The M-One doesn't disappoint from either perspective. For a radio production person, the M-One features a nice set of

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- Pro Audio Review
April 2000

"It's extremely clean, very clear, and amazingly accurate. Rock solid with a wide range of programs."
-Recording Magazine
February 2000

"The LynxONE is an excellent mastering card in terms of sound quality and flexibility. Suitable for today's professional studio."
AUDIO QUALITY: 5 [out of 5!]
-Electronic Musician
August 1999

LynxONE

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PRODUCT EVALUATION

TC Electronic D-Two Is Dedicated to Delay

Ken R.

The D-Two Multi-Tap Rhythm Delay from TC Electronic does exactly what it's supposed to do. The 50 factory presets, all user-editable, provide a lot of different ways to delay an audio signal including fast, slow and even backward. But how would a radio station use it?

To start with the basics, it's a handsome 1 RU box with digital and analog inputs and outputs. The digital connections are RCA S/PDIF and the analog is balanced 0.25-inch TRS.

The front panel is a thing of beauty, which puts a nice face on an easy operating system. The 23-character 280-icon LCD display is easy enough to read.

The Rhythm Delay at work

Powerwise, the D-Two does not use a wallwart. The unit only weighs about 4 pounds but it feels sturdy.

I did not need to look at the manual to get started, but it was there when I was ready to delve into the features. I just plugged in an audio source such as a mic or a guitar, and I was ready to go.

The front panel is not only a thing of beauty, but a breeze as well. The data wheel on the right dials up the presets, which take effect only when the user hits the "enter" button.

When a selection is entered, the number display stops blinking. This is great because an alternative effect can be dialed up while using the current one. The left data wheel controls the parameters, which one can easily find in the display window.

There are six effects buttons that light up individually or in groups to indicate they are being used when a preset is selected.

TC Electronic D-Two

The effects are spatial, filter, chorus, reverse, dynamic and pingpong. This box invites experimentation.

There are four function buttons — edit, recall, setup and store. Two small knobs control the input and mix level and even a bypass switch. Everything is intuitive and well-planned.

The first thing I tried was just plugging in a mic and scrolling through all the presets. Keep in mind that there are no room reverbs in here; each sound

See D-TWO, page 50 ▶

World Radio History

PRODUCT EVALUATION

MixMax! Solves a Unique Problem

W.C. Alexander

"Necessity is the mother of invention."

The old adage was used in creating MixMax! This device can switch or fade between audio sources, and control external devices. It features a silence sense that triggers an alarm or initiates some other action.

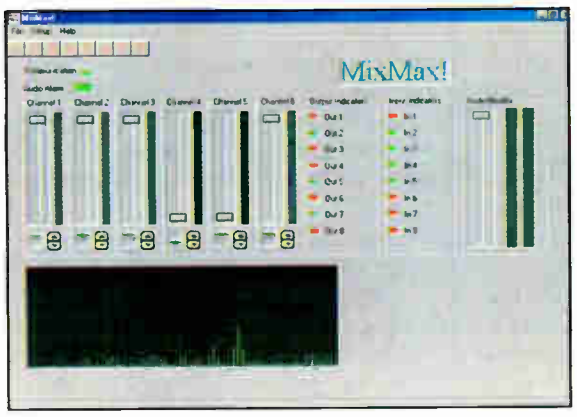
In broadcasting, engineers regularly find themselves needing specialized equipment for applications for which there is no commercially manufactured equipment available. In these situations, engineers have to be creative to design and build their own gear. I can think of several instances where engineers have gone on to manufacturing and marketing equipment.

In recent years, at the radio station where I work, I have found myself in similar situations. One situation called for a mixer/fader unit that our automation computer could control and fade, mute and unmute during a switching operation.

Left to our own devices

We built our own devices for this application and they worked well, but they were not versatile and took a lot of man-hours to build.

A radio station owner in Texas found himself in the same boat. His automation system, like most, supported a "cuts only" type audio switcher to select between external audio feeds.



Control software

Because of occasional differences between local and network clocks, transitions between local and network feeds were often choppy or loose. A device was needed that allowed programmed cross-fades.

This resulted in creating MixMax!, a six-channel stereo mixer that is both programmable and remotely controllable. Not only does it allow external control of all mixer functions, it also supports up to eight macros that can be recalled by an external closure.

The device is housed in a single-unit rack-mounted chassis. It features front-panel LED bar graph metering and local overrides. It has on-board CPU and memory and it supports RS-232 control by a Windows-based PC. The software is included.

Several applications come to mind.

One allows the automation system to control all the on-air audio sources even when the automation is not providing source material. Cassette, CD, DAT, MD, satellite and other sources could be selected, started and faded up or down.

The silence sense feature could be incorporated to fire off a macro or function within the automation to start a clock, if the selected external audio source failed.

Another application might be a remote broadcast, where the talent in the field could control audio sources back at the studio using a laptop computer and PCAnywhere or a similar remote control application. Such an arrangement might eliminate the need to have an operator on duty at the station altogether.

MixMax! can store and execute macros. These macros, programmed through the RS-232 port using software, essentially allow the unit to be reconfigured by an external contact closure.

This reconfiguration can include turning channels on and off and fading up or down, as well as producing TTL output state changes.

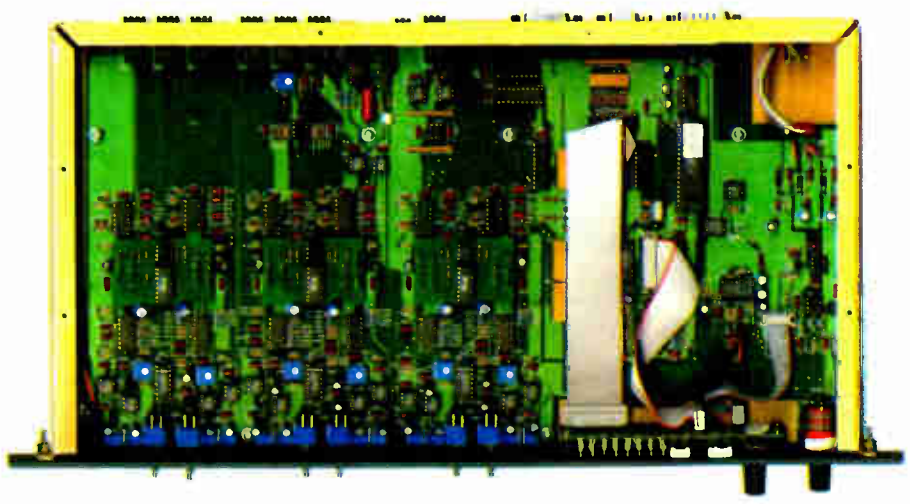
With a single macro execution, the unit could fade out one source, fade up another and start an external device. Again, up to eight macros can be programmed into the MixMax!

Audio connections through rear-panel plugs can be balanced or unbalanced. Control inputs also are through the rear-panel General Purpose Interface connector; TTL control outputs appear on a rear-panel DB-15 connector. The control outputs are active-low and capable of sinking 24 V at 200 mA.

Audio trim adjustments are on the front panel for each channel. There is no master gain trim adjustment; it is designed as a unity-gain device.

I did not like the lack of a front-panel software override. Other than gain trim, and a hard on/off override switch on each channel, there was no way to control channel gain functions from the front panel. The user would have to use a PC and the supplied software to make local changes.

Silence sense threshold is adjustable from -60 to -5 dBm and the delay is adjustable from 0.25 to 5 seconds.



Inside view of the MixMax!

The software provided on CD-ROM is user-friendly and follows a standard installation routine. It took me only a couple of minutes to navigate the different windows, learn how to control the unit and program macros. The program allows screen labeling of channels to help keep things straight.

While MixMax! is a fairly simple device, it fills a need that is present in many radio stations. The next time you think you will have to custom build something for your audio switching or mixing application, consider the MixMax!

■ ■ ■

Cris Alexander is director of engineering for The Crawford Group.

Product Capsule:
MixMax!
Six-Channel Audio Mixer

Thumbs Up
✓ Versatile operation
✓ Programmable macros
✓ Silence sense

Thumbs Down
✓ No master gain control
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For more information contact the company in Missouri at (314) 345-1030 or visit the Web site at *www.radiomax.com*

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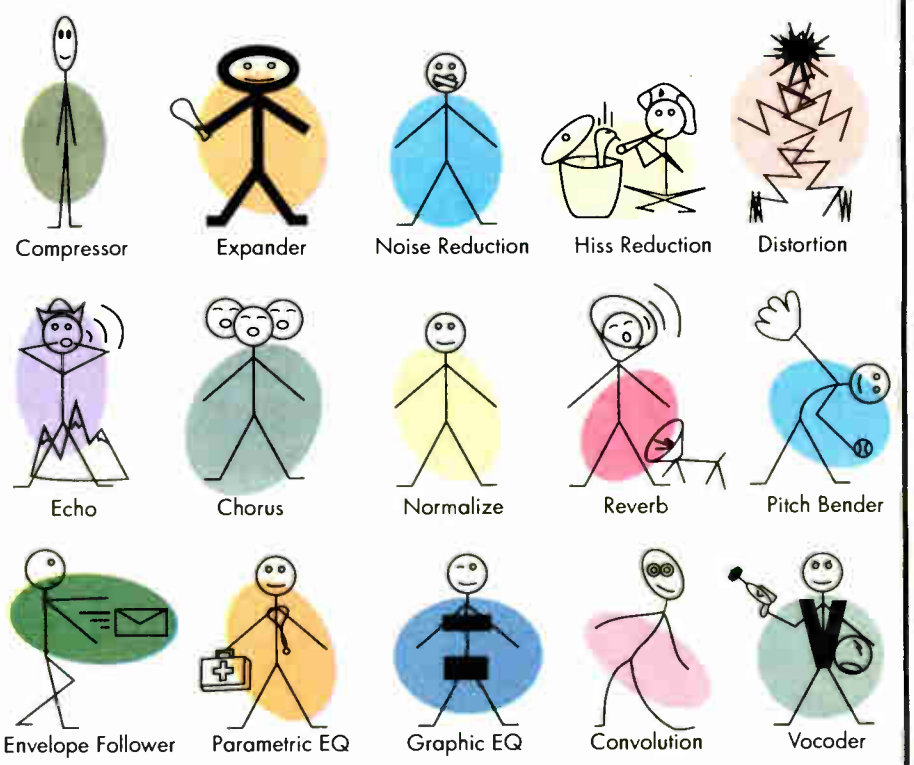

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*No stick-figures were hurt in the making of this advertisement.

World Radio History

Twisted Liners and Sweeps on WFAN

▶ DIFAZIO, continued from page 43

"Imus in the Morning" is better known as Don Imus, syndicated radio madman. According to DiFazio, it was Imus who was responsible for helping him land the top production job when it came open at WFAN.

"I was just the assistant production director who worked his way up from a lowly board op here," said DiFazio. "I got to know Don Imus and when production director Jeff Shade moved away, Imus pushed for me to get the job."

DiFazio credits Don Imus with helping him land his current gig

History made, hot dogs sold

Joey DiFazio started his radio career in 1984 at the Center for the Media Arts, a broadcast school in lower Manhattan that is now closed.

"I wanted to be a DJ but the instructor's hot clock was so intense I couldn't keep up," said DiFazio. "I was fooling around putting sounds together in a back room when my teacher came in and told me this is what a production director is supposed to do. It was something I always liked but I didn't realize it."

From there, DiFazio interned at WNEW(FM), WOR(AM) and WNYC-FM in New York. WHN(AM), the country station that is now WFAN, advertised for a board op and DiFazio got the job.

"In fact, I was the guy that pressed the button that changed it from country to sports," said DiFazio. "All these camera crews were around. One of the on-air announcers called for an actuality of some sports highlight and I accidentally started a hot dog commercial instead."

WFAN management will always remember July 4, 1987, for another reason as well.

"We had this weird kind of wiring at the station with everything running under the carpets," said DiFazio. "One of the camera guys covering the event stepped in the wrong spot and we were off the air for 15 minutes."

"I'm primarily in charge of station imaging," said DiFazio. "All the bits on the Imus show, the song parodies and station liners are my job."

Philadelphia talent Paul Turner is the official voice of WFAN, and he sends his scripted liners on tape to DiFazio. Program Director Mark Chernoff is responsible for most of the writing.

"I also can add character voices and I have access to several other announcers here. We're all in the American Federation of Television and Radio Announcers union (AFTRA)."

Much of the work DiFazio turns out is done in connection with the many sports broadcasts WFAN originates, including the New York Knicks, Rangers and Mets. The station also carries other games, which are produced elsewhere.

"The promo workload is very heavy here. I sometimes create 30 to 40 pieces a week, including show opens, revisions and contest material."

The station is curiously behind the times in technology. The board in the production room is a custom-built Harrison console from the '70s. "A dinosaur," as DiFazio puts it.

Equipment

His mic is a vintage Electro-Voice RE20. Production is handled on a pair of Orban Audicy workstations, but the material is all dubbed to cart by DiFazio and his two assistants, Paul Arzooman and Jonathan Grundfast.

"I love that Audicy," said DiFazio. "We had some agency guys in here and they were blown away by the speed. In radio you don't have time to trim off ends and check out different mixes. These guys told me the hour we spent would have taken twice as long at some of the other studios in Manhattan."

DiFazio uses only the plug-ins within Audicy for his effects, including the reverb, chorus, flange, digital delays and stereo simulation tools.

"There's also a cool feature called the vocal eliminator that removes the center channel of the stereo. It's really great for song parodies, although a little stereo reverb still bleeds through," said DiFazio.

Morning-show talent Rob Bartlett sings most of the song parodies.

"The two Audicy systems are tied to a central server so we can share production back and forth. I use it for everything," said DiFazio.

The station has not gotten rid of carts yet because a complete digital system is a hard sell to station management.

"The learning curve is tough and our whole traffic system revolves around an old database so we want to move cautiously."

DiFazio developed his own method of using the automated "punch-in" feature on his workstation to remove "pops."

"I define the area of the pop by marking the in and out points, then roll back and let auto-punch record over it for just that fraction of a second," said DiFazio. "It solves the problem."

In addition to his chores at WFAN, DiFazio runs his own successful production service with the full knowledge and blessings of his station.

"I'm in here primarily doing my own thing in the early mornings, and I bring in a lot of my own personal equipment and sound effects, so it works out well for the station too."

Image Audio, and its offshoot Joey Dee Voices, currently work with three radio clients.

"It used to be more, but I couldn't handle it all. I want to focus on just a few clients for now," said DiFazio. "I'm into deeper, harder stuff and my latest client is WEDJ(FM), 'Rock 107,' in Indianapolis. My work for them is edgier and pushes the limits of decency. I think some of these stations in the Midwest are more willing to take a chance."

Sometimes DiFazio likes to find funky, retro-sounding production libraries from the 1960s just for fun.

"I haven't been able to find a library of exactly what I need, but some of the stuff by AV Deli in Racine, Wis., is close," said DiFazio.

He likes to alter the sound of almost every piece of audio he uses.

"We twist and turn it so it doesn't sound anything like the original. I really like to tear the clips apart and put them back together differently. I have a whole collection of tape winds and odd voice tracks and basically try to look for unexpected sounds."

Joey DiFazio is married and his wife helps him with his business. The production director of WFAN has no regrets and offers a thought for the young men and women just entering the field.

"Never be satisfied with where you are. Always be thinking about where you're going next," DiFazio said.

DiFazio's Work on the Rock

"WEDJ(FM), Rock 107, in Indianapolis, is almost like a college station. It plays a harder type of music that I'm really into," said Joey "Joey Dee" DiFazio.

The station began using the voice imagery talents of DiFazio last fall when Rock 107 unveiled its current format.

"His voice demo was completely different from anything we had heard," said PD Tom Posz. "It was dark and really fit what I wanted to do."

Posz writes the copy for his station liners and promos and faxes his ideas to DiFazio who takes it from there.

"Rarely do you find someone who can translate your thoughts exactly," said Posz, "and this guy does it. It's all about 'gee whiz' — something that grabs people!"

DiFazio's promo work is extremely unusual. Listening to his demo is a future shock experience.

In rapid succession, and sometimes simultaneously, one hears filtered voices, dial tuning, gunshots, general grunge, intimate gravelly voices, people shouting, static, record scratches, stutters, flanged rockets, telephone beeps, a clip from Plan 9 from Outer Space, a guy singing about a dead goat and hip-hop drums — and that's just in the first 20 seconds.

"Bleeding edge" doesn't even cover it. Adventurous souls wishing to experience Rock 107 and DiFazio's work can log onto *www.wedjfm.com*

— *Ken R.*

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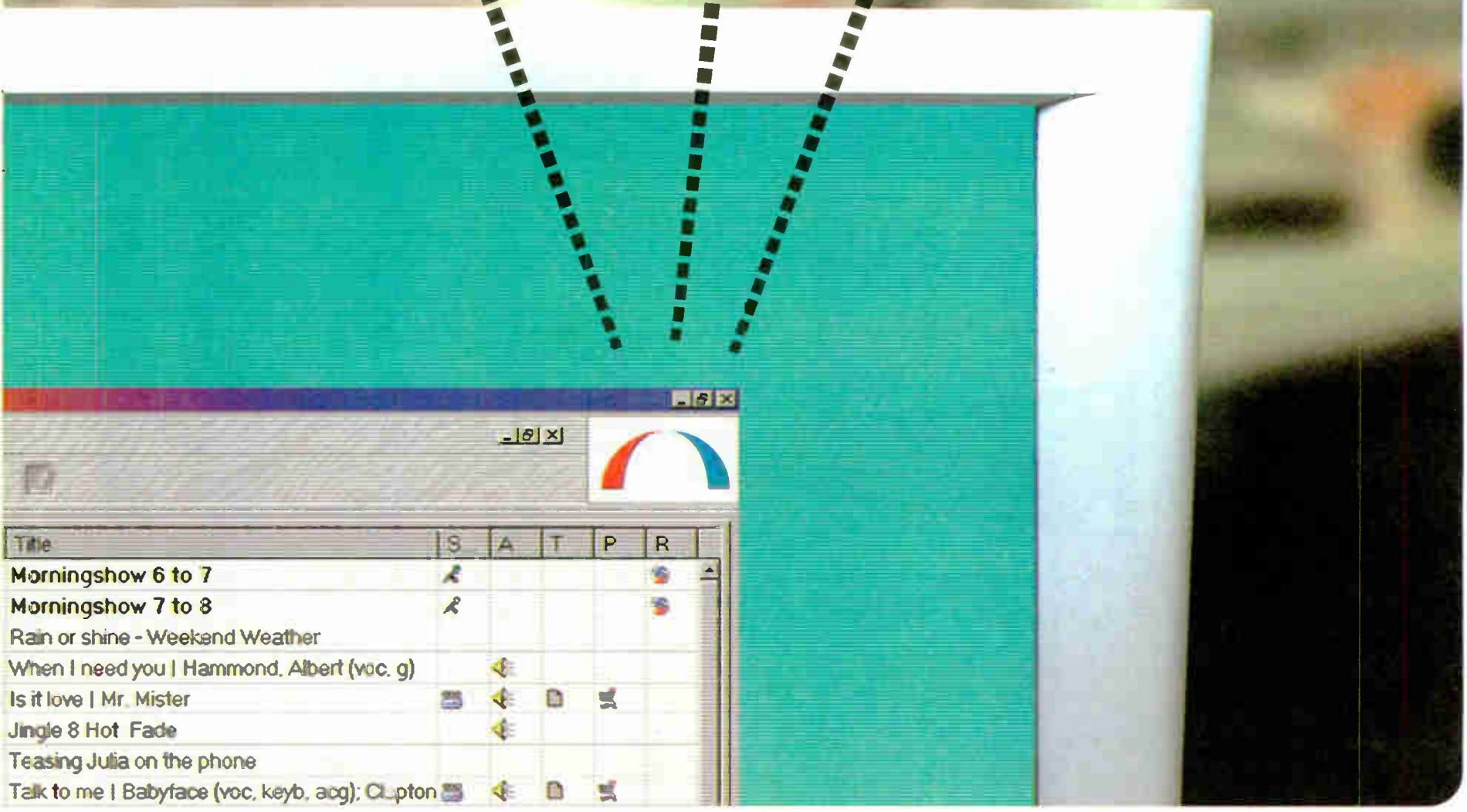

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World Radio History

TC Quality at Lower Price

▶ M-ONE, continued from page 46

reverb algorithms.

If you don't find a program that fits a particular need or you want to create your own, the graphical user interface (GUI) allows access to a "road map" of each of the signals. It is as easy as selecting the type of input — analog, 44.1 or 48 digital — select the type of output and then select the algorithms that you want to use in between.

Once the input level is adjusted manually, the dry/wet mix can be dialed in. If more than one algorithm is used to create the final effect, there is a function that dictates to what degree one engine/algorithm has dominance over the other.

If the user would rather not think about all the elements that go into creating a particular effect program, it is a simple matter to dial up a factory preset program and hit the recall button.

The front panel

The front-panel design is intuitive in the layout. I figured it out in about two minutes without having seen the manual.

There is an input level control, a mix control ranging from 0 to 100 percent wet. There is also a balance control the user sets to determine which processing engine has dominance over the other, ranging from 100 percent on the first effect to 100 percent on the second effect, and everything in between.

Moving from left to right across the front panel, there is a graphical LED interface, which takes a pleasant departure from the boring monochromatic green we see on other boxes. This adds nice ambers and reds to go along with the standard greens.

It may not seem like much, but after spending a lot of time in the studio, I appreciate anything that breaks up the routine.

To the right of the GUI are the setup controls for I/O, routing and tap. Punch the I/O button, turn the shuttle knob to select the type of I/O and you are set. Routing and tap works the same way.

Next is a bank of four buttons that isolate algorithms for modification or bypass. After that is a choice of using up/down arrow buttons or a shuttle knob that sets parameters or chooses preset programs. And there are recall, enter and store buttons.

The backside has 1/4-inch and XLR balanced I/Os, MIDI jacks and S/PDIF (no AES/EBU) ports. There is also a foot pedal input.

I like it when a unit has balanced 1/4-inch I/Os. It seems like many companies want to be cheap with unbalanced gear, but not so with the M-One.

The M-One operates in 24-bit digital mode with 44.1 or 48 kHz sampling rates, making it sound exceptionally clean. I use ProTools at my work, and the M-One interfaced seamlessly with the digital I/Os on the ProTools hardware.

The M-One is probably not the only processor you will need, but it clearly has its advantages over similar designs from other manufacturers.

TC Electronic M-One

If more than one algorithm is used to create the final effect, a function dictates to what degree one engine/algorithm has dominance.

The average radio production person should enjoy the simplicity of the M-One. At a retail price of $699, it shouldn't break the bank.

Rocket science?

A user need not have a degree in rocket science to run the basic programs. And with a little time and practice, a user can create programs or modify the existing presets and save them as new programs.

For the die-hard production types, the M-One delivers great sounding, natural reverbs and delays, plus it gives the flexibility needed for both analog and digital applications.

If you are looking for a piece of gear that will give you hundreds of bizarre sounds, then the M-One probably won't be the box for you. But if your needs are solid outboard reverb, chorus and dynamics processing, then you need to take a look.

■■■

Ed LaComb is the owner of Ed LaComb Audio Imaging, a production company based in Syracuse, N.Y.

Product Capsule:
TC Electronic M-One
Multi-Effects Processor

Thumbs Up
- ✓ Aesthetic design
- ✓ Ease of use
- ✓ Clean sound

Thumbs Down
- ✓ Limited to being a reverb and delay box — not many special effects
- ✓ Only S/PDIF digital I/O

For more information contact the company in California at (805) 373-1828 or visit the Web site at *www.tcelectronic.com*

Dialing for Delays With TC D-Two

▶ D-TWO, continued from page 46

uses delays only.

I found everything from Elvis slap back to metallic sounds. The device has slow canyon repeats as well as rhythmic and strange repeats. The pingpong function all but gave me whiplash as it slammed the audio from left to right.

A user can select delays that lose fidelity with each repeat as if they are going into a phone or a classic analog tape echo box. There are tight delays that evoke memories of John Lennon's vocal tracks. Some incorporate chorus and flanged effects, too. And, of course, the user can alter the lengths and other characteristics easily and store the new creations.

TC Electronic D-Two

Many of these settings are better-suited to fattening up a guitar or keyboard than for voice. Some of the presets are cute in that they follow 3/4 rhythmic patterns, and some are so complicated and unnatural that a user would be hard-pressed to figure out how to fit them into a production.

One of the coolest features is "reverse." Normally one would expect a box like this to have some sort of typical reverse envelope on a decay so it would get louder instead of softer as the repeats occur. But the D-Two actually samples the audio and reverses it. I have no idea how this box does this.

The words "multi-tap rhythm" appear in the title of this device for a reason. There are actually three delay modes you can select.

The Traditional Delay Mode is as expected, where the delayed signal is fed back into the line by controlling the percentage of the feedback.

The Straight Delay Mode gives all the normal controls but also has the ability to control the number of repeats.

The Rhythm Delay Mode lets the user tap the rhythm on a designated key. The rhythm pattern can then be quantized to a specific subdivision. The latter comes in handy when the source material is music and the delayed effects should enhance rather than step clumsily all over the song in question.

User groups

I asked Karyn Ormiston, U.S. marketing manager for TC Electronic, who might use this box. She said that the biggest potential user groups for the D-Two would be recording engineers and concert sound persons.

"It's great for a front-of-house situation when you want a particular effect on a vocal mic, for example," said Ormiston. "And a lot of the settings work well on a guitar or keyboard."

She also noted that this box comes in handy in an auditorium or arena sound system where speakers placed a distance apart would need to be timed to coincide with each other.

Ormiston also came up with some unexpected uses around a radio station.

"If you are feeding two signals into a device, the propagation time of one might take the two out of phase. This device can be used so that they are both delayed by the exact same amount," Ormiston said. "Some stations may want to just dedicate it to a seven-second delay for talk shows."

Then there are the typical production uses for re-creating different acoustic environments. The odd special effects can also be fun in commercial production.

The D-Two Multi-Tap Rhythm Delay works well. The audio is clean in that it sounds great with no artifacts or grunge. The interface is so simple that even I can figure it out. It purports to be a delay box and nothing more and it does that superbly, with a lot of flexibility and ease-of-use.

If this box were $200, it would be great to have it in the air studio or production room for spur-of-the-moment effects. At $699 list, I would think twice.

Ormiston responded to the price of this box. She said, "The D-Two offers the highest quality-to-value ratio of any delay in its class in both hardware and software — far above anything a $199 processor can provide. In air studios and production rooms where audio quality standards are important, the D-Two is the perfect solution."

For recording or live-sound applications, this box is something I would definitely consider.

Product Capsule:
TC Electronic D-Two
Multi-Tap Rhythm Delay

Thumbs Up
- ✓ Easy to use, elegant design
- ✓ Great sound
- ✓ Lots of variations within stated purpose
- ✓ Performs clever musical tasks well

Thumbs Down
- ✓ Pricey for a single-function box
- ✓ Limited applications for radio

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World Radio History

Looking for a Digital Board?

▶ FOCUS, continued from page 43

sell. Perhaps the industry is now ready for that level of features, we'll see."

Next I wondered, if I was looking to buy a digital console, what would be some of the questions I should ask?

Karl Moet, Tascam product training manager, cut to the chase when he advised, "How will the console interface with my existing multitrack recorders? How do you install the I/O modules and what choices are there? How easy is it to navigate through basic mixer functions, in other words assigning inputs to busses/tracks, adding EQ, effects, dynamics and setting up and saving mix?

"The end-user should communicate what they are planning to do with the mixer, such as music production, audio/video production or broadcast, and should know going into the purchase that digital mixers do not operate like analog boards," said Moet.

Autogram PM-228

Nicholas Boehmer, Studer

Maintenance and compatability

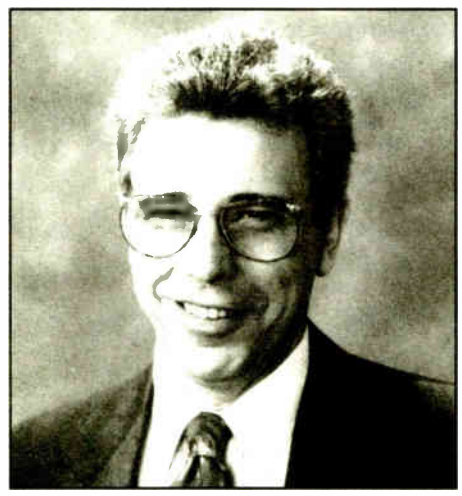
Bob Groome has counsel relating to maintenance and compatibility. He said, "Can the board be expanded in the field? Is there a method to back-up the mixers controller in case of failure? Is there an on-site evaluation program?

"Is there an overnight engine replace program? Because there must be a quick and simple way to effect repairs. Are there any extras for adding digital sources later? Does the vendor manufacture a line of complementary studio items like hard-disk audio workstations or furniture so it will match a large installed base of audio equipment?"

Arrakis REV-18C

Jack Williams, who heads engineering and product development for Harris' Pacific Research & Engineering console line, suggests investigating the console's design.

"What is the underlying architecture and how flexible will it be in supporting current and future needs? What design choices have been made to minimize technological obsolescence?"



Bob Groome, Arrakis

Knowing the right questions will get one started, but "How should a buyer evaluate a digital console?"

Moet provides a good summary when he asks, "Can the operator use the board and all features to make the job easier or expand his or her creative flow? If the tools get in the way, they are not very good tools."

Nicholas Boehmer, technical writer at Studer, has one of the most practical suggestions when he recommends visiting reference sites and talking to the people about how the equipment fulfills their needs. "Do not visit reference sites right after the installation," he warned. "At least six months after the installation is fine and the owner/user will give a more realistic feedback."

He suggests the purchaser and users visit another broadcaster who has installed the same equipment.

When it comes time to actually start shopping for a console, one needs to know, "What are the most important features a buyer should look for in buying a console?"

While there were a number of good answers to this question, Moet suggested, "Ask yourself what is needed to accomplish with the board. How will it interface with what he already has? The most important question is ... what's the learning curve for operating the console proficiently?"

Jim Laird, Autogram

Shane emphasized pragmatic concerns like, "Does the feature set fit your intended use? Can the operators sit right down and understand the console with little or no training? Does the console have the flexibility to grow and change with time? Will the company behind the console be there to truly support it over its useful life?"

Murphy suggested, "Is the user interface the best that is available? What is the audio quality? Can the unit handle the current sampling and future sampling rates?"

When I am looking for a new product, I also want to know what other customers are asking for.

Shane's customers want the ability to

See FOCUS, page 53 ▶

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Arrakis Systems inc.

web: arrakis-systems.com phone: (970) 224-2248

World Radio History

▶ FOCUS, continued from page 52

"accept external control from automation systems, integration with router and networked sources — any source anywhere — and flexible combinations of analog and digital inputs with an easy and economical means of changing the configuration as studio needs change."

Williams is seeing a slightly different emphasis, including modular construction for both visual configuration and service, and the ability to hot-swap console modules.

Control issues

Murphy said, "Customers are asking for a digital mixer with a professional user interface. They are looking to get away from drilling down through numerous layers or pages to get to a particular control. Users want to be able to press one button and then turn a control.

"Customers are asking for an automation system that's easy and quick, yet precise. They're requiring faders that are touch-sensitive and have over 1,000 steps of resolution. For the emerging formats, people want the higher sampling rates of 88.2 or 96 kHz and surround capability," he said.

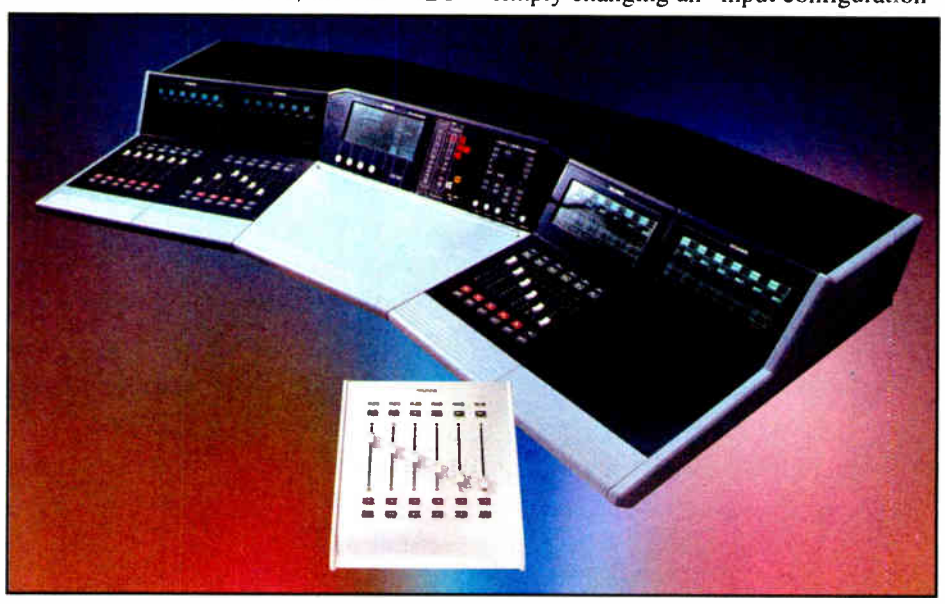
Groome's clients are mixing both analog and digital sources and feeding both the digital broadcast chain and an analog back-up feed, simultaneously.

"They prefer standard VU meters and need telephone hybrid drivers and easy to use mix-minus logic."

I was curious to know what gear or automation system clients are linking into their consoles.

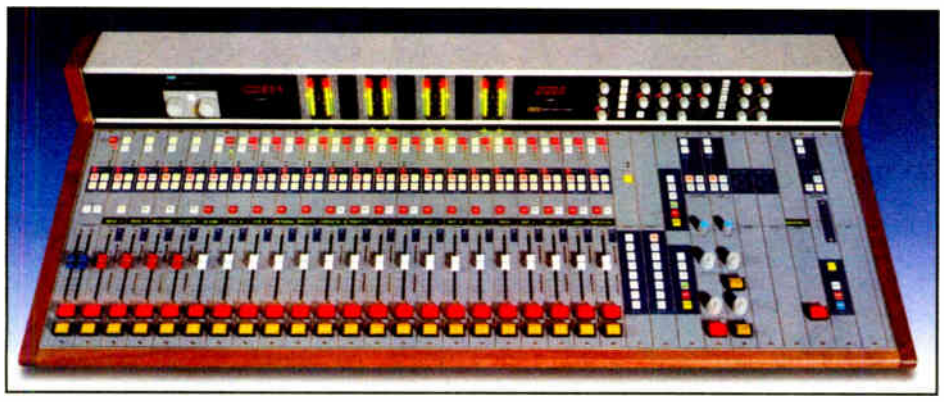
specific examples of their current digital consoles and the associated price tags.

Arrakis has four models in its new Revolution Console series ranging in price from $3,995 to $11,495. Options include a touchscreen "glass" console or a traditional control surface. A full-featured board that is equipped to do both analog and digital ins and outs for a majority of stations lists at $3,995 plus the cost of a PC and any stations can trade the PC. For stations that demand a traditional control console, the REV-12C lists for $7,495 and features 32 inputs to 12 mixes and is field expandable.



Studer On-Air 2000

The first on-air, all-digital console from Soundcraft is the RM1d. It is available in four configurations as standard; six- and 12-fader versions, and with input extender sidecars taking the RM1d to a maximum of 24 channels. The frames can be ordered with or without script tray.



Wheatstone D-600

"Most end-users who purchase digital consoles are computer-savvy and familiar with MIDI," Moet said. "They interface with software-based multitracks and a ton of sound modules and either outboard or computer-based MIDI sequencers. We are also noticing that there are many end-users that cascade two or more mixers together."

Andy Brown, product manager at Soundcraft, said customers have a slightly different emphasis.

"Most of our clients are using normal CD and MD source players, hard-disk systems like SADiE, but not much in the way of automation apart from the usual fader starts," Brown said.

Of course, we all want to know what it is going to cost us.

Until recently, price may be the one single factor that has discouraged broadcasters from converting to digital consoles. In many cases, the price spread has been significant, with inexpensive boards selling for a few thousand dollars and full-featured consoles selling for six figures or more. But, that is changing.

What you pay will depend on the features you need, but there is an increasing range of models in the mid-range. To find out what one can expect to pay, I asked each person interviewed to give some

Sony hopes to release a digital console called the DMX-R100 by September that will retail for around $20,000.

The DMX-R100 includes 48-channel digital audio mixer with signal processing; touch-sensitive motorized faders; color LCD touch panel and dedicated channel strip controls; automation functions including snapshot and dynamic modes, touch-write fader operation with automation data storage; and matrix switcher for routing flexibility.

Fast, easy access

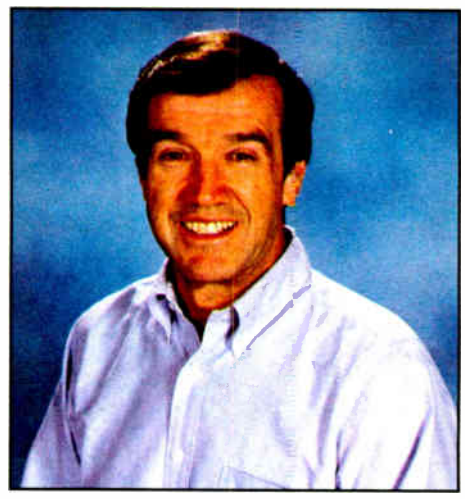
Studer has several on-air consoles including the On-Air 2000 that includes the new "Touch'n'Action" concept. The center-touch-screen and the tactile encoders together with the touch-screens on the channel-sections make fast and easy access possible.

The six, 12, 18 or 24 channels can be equipped with different input-cards — analog, digital, two inputs, six inputs (selector) with or without transformers. The outputs can be analog or digital or even both. The mixer can control radio automation systems as well as it can be controlled from automation. The On-Air 200 sells for about $20,000.

Harris offers several digital consoles through its Pacific Research & Engineering division, including the Impulse Digital Console. It includes three stereo program busses, each with digital and analog outputs; two frame sizes with 12 and 20 faders; sample rate conversion on all digital inputs; inputs are useable configurable from analog to digital by simply changing an "input configuration" card, and optical digital input configuration cards are available.

The Wheatstone product line includes the Audioarts Engineering D-70, an entry-level console priced at less than $7,900. Next on the price ladder is the company's Auditronics 220, priced from $10,000 to $15,000. The Wheatstone D-5000 is designed to provide much of the technology of its top-of-the-line D-600 at a price range of $25,000 to $30,000.

The Auditronics Nustar 4.0 can handle up to 256 inputs in a router-style interface, in a price range of $28,000 to $40,000. At the top of the ladder is the Wheatstone D-600/D-700 at $30,000 to $60,000.



Jack Williams, Harris PR&E

console and up to 12 AES/EBU or S/PDIF stereo inputs and two AES/EBU or S/PDIF stereo outputs in the PM-228 console.

Unique to the Autogram approach is its "dual mode"-processing processing scheme. With this system, all analog sources remain in the analog domain and all digital sources remain in the digital domain.

Klotz Digital offers a line of consoles, including the Vadis D.C. which uses a fiber optic network, and offers more than 50 different modules. There is the Spherion, with unlimited input and output expansion; and the Paradigm with 24 input sources, eight channel faders and five output busses expandable to 48 input sources and 16 channel faders.

Should it stay or go?

Is it time for you to add a digital console?

I am reminded of one of the first audio consoles I ever saw at a local radio station, where my father was chief engineer — a many-input Western Electric board that had been installed in 1948. For 30 years, it handled two studios and an announce booth, as well as numerous sports remotes. When the station was sold in 1979, it was still in service.

Harris at work at KFMB in San Diego

The new digital console from Tascam is the TM-D4000. There are three versions. All include eight channels of analog inputs, featuring quarter-inch balanced and XLR balanced inputs with phantom power. The TM-D4000T has 16 channels of TDIF digital I/O, and the TM-D4000A features 16 channels of ADAT light-pipe I/O, both for a suggested price of $3,999. The base model TM-D4000 lists at $3,699 and it allows the end user to select from four different I/O cards.

Autogram is offering an upgrade package for its Pacemaker II console line. The package will allow six AES/EBU or S/PDIF stereo inputs and two AES/EBU or S/PDIF stereo outputs in the PM-218

What's the point? That board was the consummation of nearly 30 years of technology and provided state-of-the-art service for more than three decades.

Today's digital consoles are a dramatic leap forward from their predecessors of just a few years ago. If you have a good reason to purchase a digital console now, you will find a bountiful array with features, specifications and user interfaces to meet most any situation..

■ ■ ■

Read Burgan is a free-lance writer and a former public radio station manager.

*Tell **RW** readers about your digital console experiences via e-mail to* radioworld@imaspub.com

World Radio History

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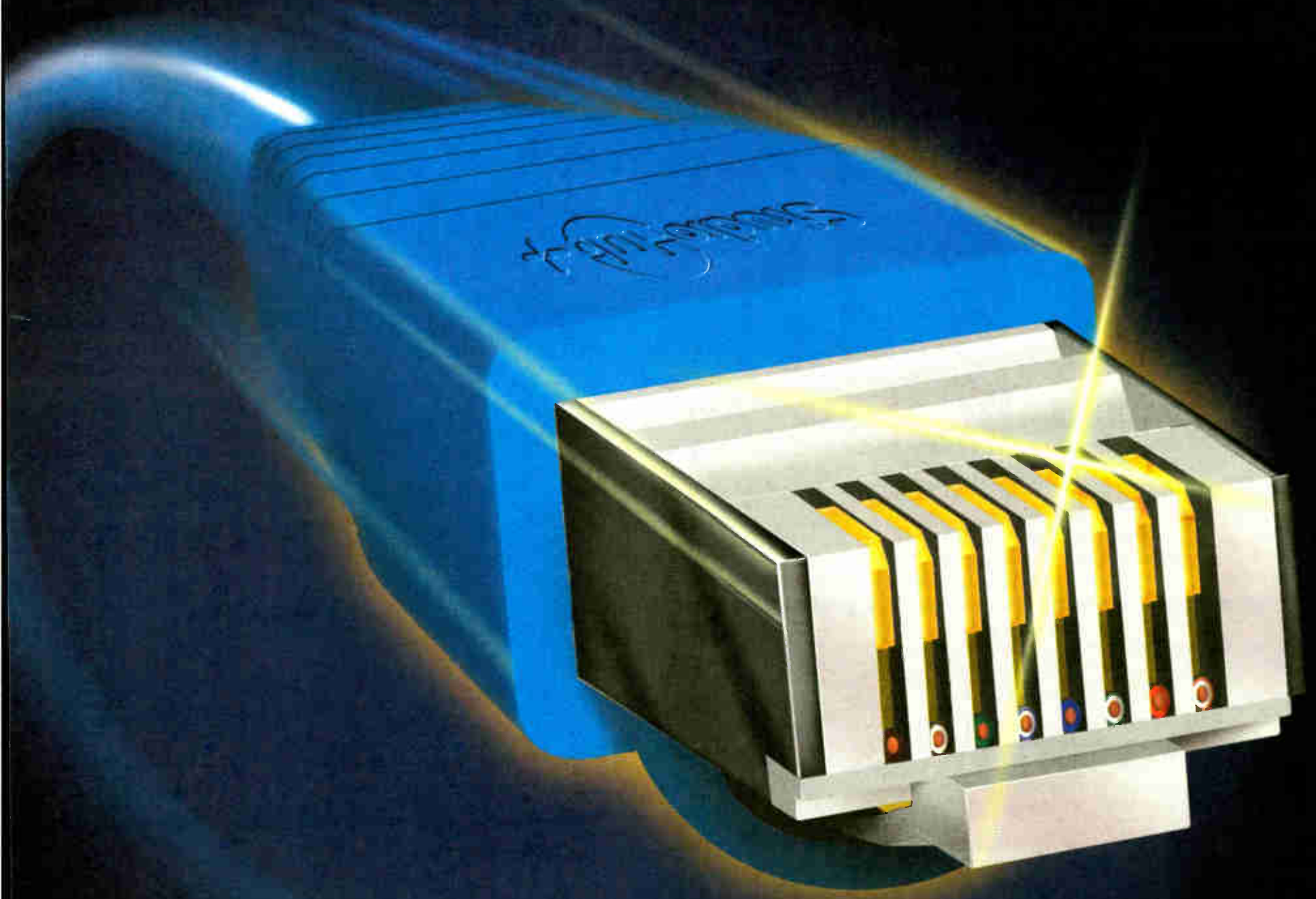

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World Radio History

Buyer's Guide

PC Radio Automation Does More

Alan R. Peterson

Once, radio managers were happy enough if a computerized automation system could simply store music and commercials. Now that same machine can answer the phone, talk to other computers in the same building and around the world, make jocks sound live and help listeners buy their favorite album on CD.

And it is being done inexpensively. Software that can drive an entire day of programming can begin at less than $1,000.

Such is the role of the new breed of radio automation, live assist and storage systems. In this issue, *Buyer's Guide* contains information about numerous offerings.

If you are still propping up a tape-based carousel system long past its prime, here is a sampling of trends in radio automation.

Nearly every manufacturer has voice-tracking software. While far from new today, it made digital automation appealing during the buyout frenzy of the late '90s by cutting the costs of staffing multiple stations.

The voice

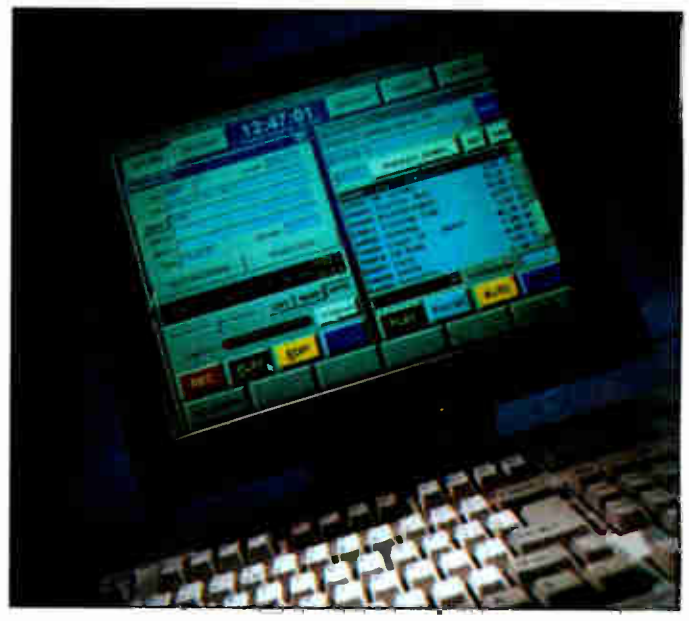
Voice tracking is the ability to record on-air talent in a non-real time situation. The computer then assembles a show complete with smooth segues to effectively sound live.

As long as weather emergencies or other local crises did not occur, a four- or five-hour music show could be "jocked" a day or more in advance, yet sound perfectly fresh.

This, however, obligated the air talent to be in the building to create the tracks.

Radio Computing Systems (RCS) took an interesting tack recently that got around that limitation.

RCS Internet Voice Tracking allows talent to voice-track a show from anywhere in the world. A laptop PC is used to rehearse a segue, then to record and transmit an MP3-encoded announcer voice track back to the station's on-air storage machine.



Enco DAD$_{PRO}$32

This was a natural outgrowth from remote control of the automation computer. Companies such as Scott Studios, Broadcast Software International (BSI) — the originators of $1,000 automation software — RCS

See TRENDS, page 57 ▶

Alternative Choices In Radio Automation

Alan R. Peterson

When Microsoft implemented "DirectX" DirectSound in its Windows operating system, it provided computers with the built-in capability to play overlapping soundfiles with varying compression schemes. All it takes is some inexpensive software and a basic sound card to turn a PC into an automated storage and playback system.

Many such programs lack integration with traffic software and log reconciliation. But these are also finding favor in the Webcasting community and in preliminary LPFM applications; neither one have great need of advanced features.

Some are works in progress, which could mean buggy operation and sparse support. Others are in widespread use. Raduga by Bill Spry (*www.raduga.net/raduga.htm*) is among the oldest. It creates and saves playlists, schedules PSAs, has a nine-button cart wall and supports MP3 playback.

Equally mature is Radio Wolf, a $299 automation program from Australia. Developer Geoff Harrison boasts of its ability to play both WAV and MP3 files, drag-and-drop log generation, and automatic start on power up. A 3,000-cut sound effects collection is available as an option. Check out *www.radiowolf.com.au*

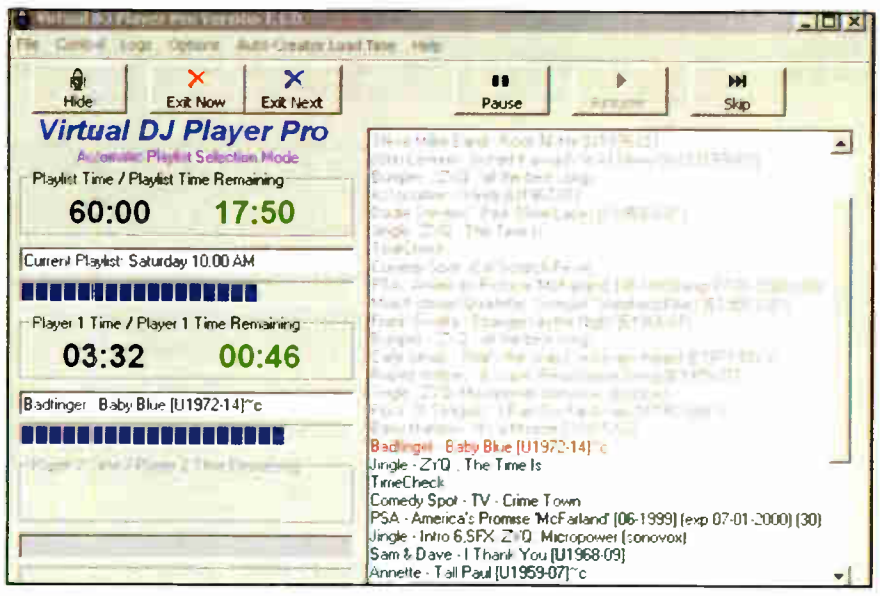


Fig. 1: A screenshot of Virtual DJ

MegaMix from *www.soundsoft.net* is a $999 package that mixes WAVs and MP3s. An optional module generates RDS data within the same computer.

See ALTERNATIVES, page 57 ▶

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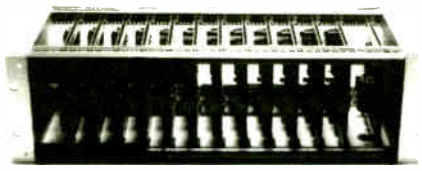

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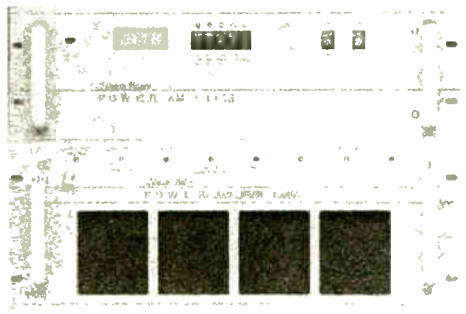

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Automation Solutions

▶ TRENDS, continued from page 55

and others all offer some means of outside control via modem and programs such as PCAnywhere.

The ability to control the on-air flow from outside meant live remotes no longer needed a board-op back in the studio. The talent at the remote could have control over the system from a laptop machine.

Today's systems also require the ability to communicate with other computers and interchange files easily. Music playlists and commercial logs can be merged and transferred to the on-air machine with no misunderstanding. Audio files must be delivered to numerous stations within the chain, so machines have to be compatible with WAV, MP3, AIFF and in some cases ADPCM compression schemes.

What's your code word?

A recent product introduction from Scott Studios — the Automated School Closing Reporter (ASCR) — all but does away with overnight snow emergency newsroom reporters. School administrators access the system directly by telephone and a security code, and record their school closing announcements for playback without human intervention.

The ASCR system also does away with pesky phone calls to the on-air talent, asking "if school has been canceled." The ASCR actually answers the telephone and gives reports to listeners phoning in.

Snow-closing programs do not spell the end of the radio newsroom. The NewsDAD32 from Enco Systems provides automated capture of newswire copy and can embed audio files in news stories for on-air playback directly off the computer.

Scott Systems offers Scott Newsroom, which runs under Windows NT. Computer Concepts Corp. produces NewsRoom, which likewise edits audio and newswire copy.

Jocks that do live or live-assist shows need instant-playback "cart walls" for program elements. Among the companies offering individual or bundled products are BSI, MediaTouch with its QuicPix II software, the Enco DAD$_{PRO}$32, the QuickStart feature of the Broadcast Electronics AudioVault and others.

Finally is the issue of platform. Manufacturers realize Windows may not be for everybody. On-Air Digital offers up a Linux-based server, as does Scott Studios, which still enjoys success with DOS-driven systems.

Automation shoppers have much research to do, and as the user stories in this issue reveal, each system has its strengths.

The good news: there is little today's radio automation computer cannot do ... except hit the streets and sell. But somewhere, somebody is working on it.

Radio Automation Provides Answers

▶ ALTERNATIVES, continued from page 55

MiniMax from BTSG Software (*www.btsg.com*) is a $300 piece for basic radio automation. It includes a random playlist generator, 12 "F-key" hot buttons for instant playback and a nifty color organ display for fun. BTSG also has a free three-slot cart machine program on its site. Hear BTSG products in use on BNet Radio at *www.broadcast.net*

Virtual DJ (Fig. 1, page 55) from *www.virtualdj.com* adds a fairly sophisticated music scheduler for artist and song repetition protection. It outputs playlists to other players such as Raduga and WinAmp.

Although it's not exactly an automation program, jocks will be pleased with KickWave, a free cart wall program found at *www.radioearth.com/kickwave.htm*

This allows 27 cuts to be loaded into three virtual cart machines. The screen is not totally intuitive (Fig. 2), but it works on inexpensive PCs.

From Italy comes WinJay (*www.winjay.it*), another $1k bundle that shows potential. A Windows networkable program with a music scheduler, cart wall, time announce and a 90-day digital logger, WinJay is only available in its native Italian at present.

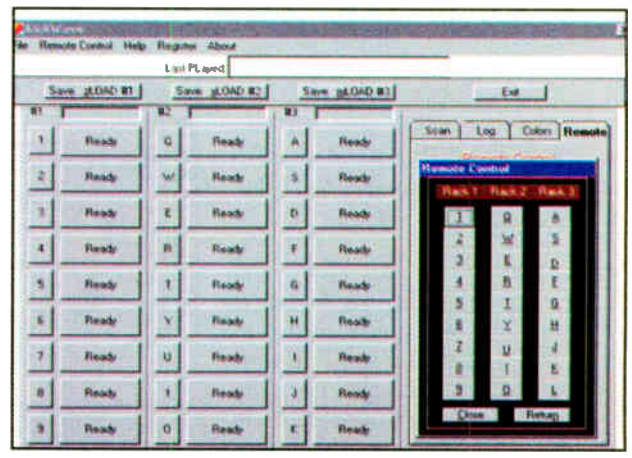

Fig. 2: A screenshot of KickWave

Closer to home is WebJockey (*www.web-jock.com*), a $99 program distributed by LPB Communications. It also includes a random playlist generator, MP3 compatibility and live-assist modes. A 36-button cart wall can be played while songs are playing back on air.

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World Radio History

USER REPORT

South Central Selects Scott Studios

by Steve Edwards
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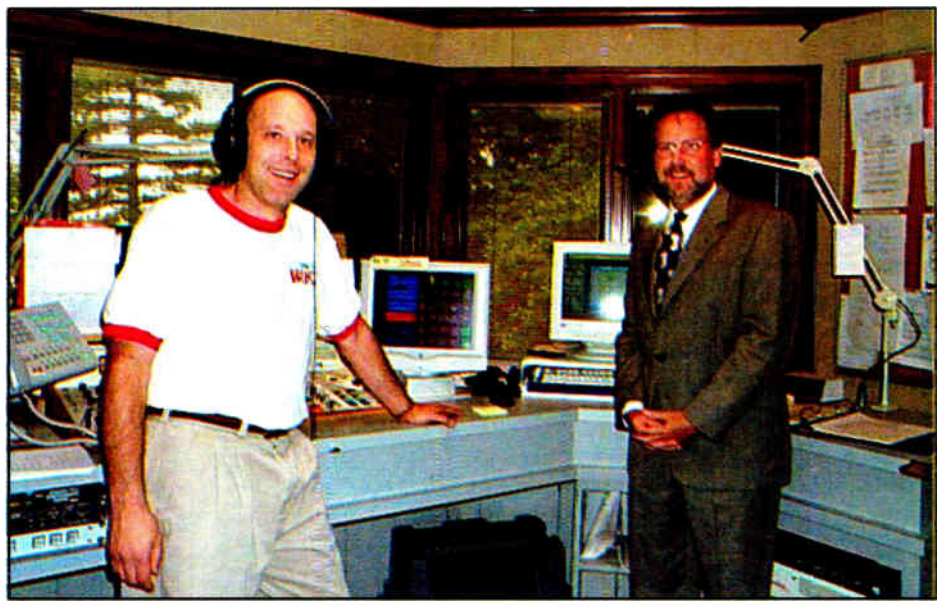

WIKY GM Rob Burton (right) is shown at his Scott System with morning man Phil Parker

NASHVILLE, Tenn. After thoroughly researching all of the major digital systems, South Central Communications made the move to **Scott Studios** for our Nashville stations: WJXA(FM) "Mix 92.9" and WRMX(FM) "Oldies 96.3."

"We were impressed with what other Nashville stations were doing with Scott Studios Systems at WSM(AM), WSM-FM and WWTN(FM) as well as WQQK(FM), WNPL(FM) and WRQQ(FM)," said Clinton Hooper, chief engineer for South Central Communication Corp.

Key criterion

"Another key criterion in selecting a Scott System was its robust ability to play multiple linear audio recordings. Our stations don't compromise on audio quality. We definitely want our stations to have the premium quality of uncompressed audio," said Hooper.

South Central's Nashville facilities were being rebuilt when we installed our new Scott Systems. Our air staff had plenty of chances to get familiar with the new gear prior to switching studios.

Now both Oldies 96.3 and Mix 92.9 have identical air studios using PR&E/Harris consoles interfaced to Scott Systems. The two production studios also use PR&E consoles with Orban Audicy workstations, which export directly to the Scott without dubbing.

In addition, South Central Nashville has two dedicated Scott Voice Trax rooms for added flexibility. Digital audio is backed up on a Novell file server common to both stations.

The WRMX overnight show is voice-tracked by Jay Phelps, who handles production duties by day.

"Scott's Voice Trax system has proven to be so user friendly and Jay is so live-sounding that recently we won an award based on air checks submitted of the show," said Oldies Program Director Dave LaBrozzi.

Scott in the Smoky Mountains

We moved on to our Knoxville stations WIMZ-FM, WJXB(FM), WTXM(FM), WNFZ(FM) and WIMZ(AM).

"The success we had with Scott Studios Systems at our stations in Nashville led us to also make the conversion here," said CE Bob Glenn.

The Knoxville facility overlooks the city from atop Sharps Ridge, affectionately referred to by station personnel as "The Rock." Occupying all three floors of a former TV station building has its benefits for this five-station cluster.

Glenn said, "We have plenty of room for studios, engineering, sales, traffic and programming. All the studios have picture window views of the Smoky Mountains."

All the air studios run on Scott Studios touchscreen systems. Jocks have direct access to news, weather and the Internet. Each of the five stations has its own traffic workstation, and three full Scott Production and combo Voice Trax studios serve all of the stations. Another room is dedicated to Voice Trax.

All the PDs use the Scott TLC (Trim, Label and Convert) program to import music directly from audio CDs into the Scott Systems through a CD ROM in their office computer. A five-minute song transfers to hard drive in 20-30 seconds.

The PDs can fine-tune segues, adjust levels and enter artist information from their offices without re-dubbing. PDs and copy people can also edit start/end dates/times and change rotations of promos and spots without going into the production studios.

As in the top-ranked hometown, Knoxville South Central also stays on top with an impressive lineup of stations running Scott Studios.

Acing Evansville news

Finally, we revamped WIKY-FM, WJPS-FM and WABX(FM) in Evansville.

In addition to installing similar touchscreen Music-on-Hard-Drive Scott Systems, like the sister stations in Nashville and Knoxville enjoy, the Evansville stations also added Scott Studios NewsRoom systems for active news operation.

WIKY News Director Randy Wheeler was no stranger to computerized news, having experience with other systems and serving as president of the Indiana AP Broadcasters Association.

"Through the installation of several different newsroom systems over the past decade, I've learned the process is always challenging for reporters, engineers and systems people. But I must say the Scott installation and Scott training eclipsed the efforts of other vendors," said Wheeler.

Wheeler relies on the Scott NewsRoom to keep his operation running smoothly.

"Scott NewsRoom is performing far better than any system we have used. It is a networked, eight-workstation system. It's intuitive, reliable and fast, meeting the needs of a fast-moving news operation."

We share Voice Trax, spots, promos and even news between our cities automatically over the Internet using Scott's Remote Recording Router.

It's fast and easy, because RRR handles the transfers and management so we never have to worry about whether something got where it was supposed to go. RRR notifies everybody if it did not arrive as planned.

Since South Central switched to 100-percent Scott Studios, I'm happy to report that our digital systems are performing at or very near 100-percent of all our expectations. Scott's support staff is responsive and sensitive to our needs. Buying Scott Studios Systems was one of the best decisions we ever made.

■ ■ ■

Steve Edwards has been working in the broadcast industry for 37 years. He has held senior management positions at Shamrock, Malrite, Cox and GE.

For more information contact Scott Studios in Texas at (800) SCOTT-77, fax (972) 620-8811 or visit the Web site at www.scottstudios.com

Scott's Voice Trax System has proven to be user friendly. Jay is so live-sounding that we won an award based on air checks.

— Dave LaBrozzi

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Our dream was to be able to provide our show live to both formats – simultaneously – with Rock songs going to Rock affiliates and Country songs going to Country affiliates.

We looked at nearly every computer-based digital audio system out there (well, ok, someone on the staff did) and the Prophet system was the *only* system that would even come close to allowing us to do it.

So with some creative rearranging of the system on our side, utilizing Prophet, we were not only able to accomplish the impossible dream of multi-format live delivery, we were also able to time shift the show on both formats so that affiliates in other time zones could take the show on a delayed feed *live* in their markets 6-10 AM!

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USER REPORT

Harris, Enco a Hit at Z-100

Digital Storage, On-Air Production and Routing Systems Work as One to Keep Station on Top

by Josh Hadden
Chief Engineer
WHTZ(FM)

JERSEY CITY, N.J. I can still remember the moment the idea popped into my head. It was several years ago, and a salesperson from one of the top console manufacturers was showing me a new digital board that included little designation strips with alphanumeric readouts above its faders.

"Wouldn't it be cool," I thought, "if those 'labels' could be used as *real* communication tools, allowing different sources such as the hard-disk system and routers to speak in detail to the console and, by extension, the person running it?

"We could cut out what we affectionately refer to as 'pilot errors,' like starting the wrong song, because the jocks could see what they were about to play spelled out right in front of them, not just a designation like 'CD1.'"

As I thought more about it, I realized that there were also a lot of complicated remotes that we do.

"Wouldn't it be great to have a console and router that could be configured once, and then recalled on demand, to provide the appropriate mix-minuses, sends and effects on the faders every time?"

Movin' on up

About two years ago, the powers that be at WHTZ(FM), one of the flagship stations of AMFM Radio Group in New York and, with 2.45 million listeners, one of the most listened-to radio stations in the country, decided it was time for a move up, literally.

We had been broadcasting from a facility in Secaucus, N.J., since the station signed on in 1982. The infrastructure was, shall we say, well-aged.

The new facility would be located on the 36th floor of a skyscraper in Jersey City, N.J., with a sweeping view of the Manhattan skyline. I wanted the inside of the station to be as spectacular as the outside.

To that end, I developed some custom specifications for the design of the two new on-air studios and two production suites to make them fully digital and integrated so to make them appear as one system to the operators.

Enco DAD$_{PRO}$32 at the WHTZ(FM) studio

Specifically, I wanted the hard-disk system, consoles and routers to communicate and control one another. And I wanted to handle all the control serially, thereby saving a lot of wiring and connection time.

I looked at various equipment suppliers but selected Harris for its turnkey selection of products and competitive pricing. **Harris** was able to bring together studio products it manufactures with equipment it distributes from companies like **Enco** and SAS—and make everything work together to offer true systems synergy.

I started with the hard-disk system. Although many radio stations may be looking for a hard-disk system to help implement broadcast automation, I was concerned primarily with storage and flexible access to music and other programming. Above all, I wanted a graphical user interface (GUI) that wouldn't intimidate or alienate the DJs as well as system reliability and stability.

You don't want to be the chief in the market and miss a stop-set because of something you bought.

The right do-DAD

The Enco DAD$_{PRO}$32 fit my needs like a glove. It's presently the repository for every bit of audio that used to reside on cart machines and CDs in the old studio. (Of course, the automation capability is also a handy fallback in case of a staffing crisis—such as flu taking out most of the air staff.)

The DAD$_{PRO}$32 is easy to use in a live, on-air environment. Enco is known for having the best GUI on the market. It's operator-friendly.

Simple, intuitive screens emulate the equipment and procedures that jocks are already familiar with such as cart machine players with spot-playlist schedules, script displays and cart walls. Plus, the DAD$_{PRO}$32 features an excellent security system to limit user access to cuts or groups of cuts they shouldn't be loading and a quick search engine for things like sound effects or the right jingle at a moment's notice.

Each of our on-air studios and production suites has at least one Enco workstation, configured to meet specific needs and modes of operation. The jocks use Enco's 4PLAY software module — one half of the screen is a music playlist schedule provided by the music director, the other an interface of four virtual cart machine players with instant access to our entire audio library.

Jocks load 4PLAY systems with the musical and positioning elements from the music log (generated by Selector and imported into the DAD). Quad players handle jock-specific sweepers, IDs, etc.

The PBK, or playback machine, is loaded automatically with the entire day's spot log and is configured to run an entire set (complete with segues, pausing for live reads, and auto-loading the first element of the next set).

Shake on it

Here's where the Harris vendor relationships added extra value.

When jocks load the players with cuts from the music log, they may lose track of where the cut is, i.e. what player it's on. The technology people at Enco worked with the console engineers to develop code that allows the DAD$_{PRO}$32 to "push" the song name onto the Harris DRC2024 on-air consoles we purchased — via the designation strips above the faders.

The alphanumeric display reads out the first eight letters of the song loaded on the fader vs. a simple CD1 or CD2. Our incorrect plays and out-of-sequence events went from several per week to zero.

Because the hard-disk system and consoles are serially connected, they're also bi-directional. The consoles can control the DAD$_{PRO}$32 as well as vice versa, eliminating many redundant functions.

For example, jocks can turn console channels on and off, set program assignments, and cue music, commercials or other programming on the console and have it immediately refresh the DAD$_{PRO}$32 display.

The same interconnection exists between the SAS router, Enco system and consoles. Remote feeds show up in descriptive terms on both the router's alphanumeric front panel control and the console designation strips so jocks know exactly what's where. The tight integration also makes it easy to add or change sources quickly —from the router, DAD$_{PRO}$32 or the Harris DRC consoles.

The bottom line is this: everything is so tightly integrated; we can do pretty much everything and do it more efficiently and quickly, with less hand-on engineering and frustration for the staff. All of this increases our productivity. We can program requirements for different dayparts, with different faders doing different things, then change assignments with the push of a button. The sky's the limit. And that's exactly as it should be, I think, given our new high-rise digs.

Enco DAD$_{PRO}$32

Josh Hadden is chief engineer for WHTZ(FM) in New Jersey.

For more information contact Enco in Michigan at (800) 362-6797, fax (248) 476-5712 or visit the Web site at www.enco.com; *or Harris in Ohio at (800) 622-0022, fax (513) 701-5306 or visit the Web site at* www.harris.com

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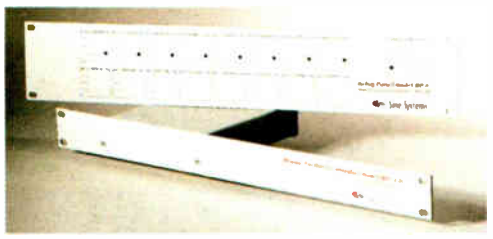

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World Radio History

USER REPORT

WUMX(FM) Signs On With Linux System

On Air Digital USA's Linux-Based Radio Suite Is On the Air in This Booming Virginia Town

by Brian Demay
Operations Manager
WUMX(FM)

CHARLOTTESVILLE, Va. I have used the UDS II from **On Air Digital USA** since we started WUMX(FM) "Mix 107.5" in 1996.

At the beginning, jukeboxes seemed the best way to go for us, mainly because sound quality suffered with the hard-drive systems I had used in the past. Pure CD-quality music was several steps up from the compression schemes of four years ago.

ON AIR DIGITAL USA

That changed with the proliferation of MP3 technology. When On Air Digital approached me about upgrading my system to the new RadioSuite HD, I was intrigued enough to ask for a proposal and astounded to find out how little the cost would be compared to similar systems.

I went ahead and made the order. By February we were up and running.

Suite assembly

Our configuration consists of a Linux-based server with dual mirrored 18 GB hard drives. This seamlessly replaced the five jukeboxes we had in rotation and the hard-drive storage system that had previously handled spots and liners.

It took less than a week to convert the library and less than a day to record spots and promos.

Converting our library was a snap because the Xing Audio Catalyst CD-Ripper was included in our package. Xing gave me fantastic quality and many variables to tailor the music the way I wanted.

I chose to go with a 320 kbps bit rate at 44.100 kHz sample rate, and am pleased with the sound of my station. I run a 600-song library and with songs, spots, promos, liners and voice tracks recorded, I still have 40 percent disk space remaining.

It took less than a work week to convert the library and less than a day to record spots and promos. Best of all, since we were already running UDS II, we could record as we went with no down time. Overall, it was a leisurely process.

Since we signed the Linux box on, we have only had to reboot once and that was more due to a power outage spike than server error. Once I upgraded the UPS, it has been running smoothly.

Ed Dravecky and Bob Nelson from On Air Digital came to install the server and RSE interface. We have had the benefit of On Air Digital providing us with upgrades via TCP/IP without any interruption in the air signal or the operation of the RadioSuite.

Clear sailing

Despite this being a relatively new system, I have had no problems or glitches to speak of, and aside from having to reboot the Windows 98 workstations daily (or "refresh" them as Mr. Gates prefers to call it), the system has run flawlessly.

MIX 107.5 rock & roll without the hard edge

Considering the options, I could spend tens of thousands of dollars on a system using proprietary hardware and take my chances, or I could get personal one-on-one attention from the folks at On Air Digital.

In addition, I upgraded my system buying one Linux-based server, a couple of off-the-counter desktop computers and five $99 sound cards, with a cost outlay of less than $10,000. Stability, fidelity, a friendly and helpful support team and room for future expansion, for us, the choice was clear.

For more information contact On Air Digital in Texas at (972) 481-8700, fax (972) 481-9499 or visit the Web site at www.onairusa.com

Do More, Spend Less

"Scott Studios Saves My Stations $45,000 per Year"

Doug Lane, owner and GM of WWDL (FM), WICK (AM) and WYCK (AM), Scranton and Wilkes Barre, PA says he "saves more than $45,000 per year with Scott Studios' Voice Trax automation. While the investment was major for a small family company like ours, ***the pay back was fast and real***. And the savings are year after year after year.

"Unless we are running evening baseball or Friday night high school football, we close the building at 6PM and operate unattended until 5:30 the next morning.

"We use several independent announcers to record Voice Trax for us, along with our regular staff. Even me! We operate both live assist and automation."

Normally, each announcer records a fresh show every day. Scott's exclusive Voice/Music Synchronizer guarantees every song plays only with the correct voice track. If a jock gets too busy and doesn't do their show in time, Scott's unique Voice Trax System automatically airs evergreen standbys that sound right! Doug says, "No one but Scott Studios has this great fail-safe feature. Scott Studios' System provides a separate specific generic Voice Trax for every track for every hour and every day of the week in case someone can't track their show in time."

Scott's Voice Trax recorder is the industry's easiest to use: most tasks are done with just one button. The mouse and keyboard are seldom touched. Voice Trax take only seconds per cut to record. Scott's AutoPost makes announcers sound better and minimizes Voice Trax re-cuts. Experienced jocks don't waste time checking their work because they hear their voice and surrounding music and spots in context while recording.

Doug Lane, Owner and GM, WWDL, WICK and WYCK, Wilkes-Barre and Scranton, PA

Doug's stations have used Scott Studios' Voice Trax systems for many years.

The Scott System is radio's most user-friendly. You get instant airplay or audition of any song simply by spelling a few letters of its title or artist. You see when songs played last and when they'll play next. You also get voice tracking while listening to music in context, hot keys, automatic recording and graphic waveform editing and scrub of of phone calls, all in one computer!

Stations can lock the door and go home with confidence. Scott has exclusive watchdog circuits that make our systems more self-healing and reliable than others. Scott predicts many problems ***before*** they occur, usually as soon as logs are done. Scott also pages people who can make last minute adjustments off-site by modem (if needed).

After a year of trouble-free operation, Doug Lane says, "It was fun to get five calls at the studio over the Holidays from out of town PD's and GM's wanting to speak with me because they heard me 'on the air'. Guess what? I wasn't even there! They were amazed at our Voice Trax and Scott's accurate Time Checks too. Actually, they were 'very impressed'!

Doug is now installing Scott's automated temperature announcer. He says, "Scott's features are great. The savings are even better! I wouldn't want to run my stations without Scott Systems!"

Scott Systems are delivered with your music library pre-dubbed, plus time-saving CD rippers that digitally transfer music to hard drive in seconds, no-dub instant LAN spot uploads from Sonic Foundry multi-track production, MPEG and uncompressed digital audio (at a compressed price) and a week of Scott School training of your whole staff ***at your station***. You get Cart Walls for instant requests, a phone recorder with waveform and audible scrub editing, the ability to record Voice Trax in your air studio while listening to your music in context in headphones, title and artist displays for your website, time announce and Cat. 5 audio wiring for fast installation. Scott's SS32 System can feed different spots to webcasts or second stations, run satellite formats and ABC's LocalMax. Scott Studios offers optional auto-transfers of spots and Voice Trax to distant stations over Internet or WAN, wire capture and newsroom editors, unattended school closing reports and 24/7 live support via toll-free cell phones.

Scott Studios' unequaled money-saving features mean more U.S. stations use Scott than any other digital air studio systems (5,500 workstations in 2,250 U.S. Stations and nine of the top ten groups). See our web site and toll-free phone at the right.

See Scott's NAB Radio Booth R4093 and Video Booth L2506 at the LVCC.

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World Radio History

USER REPORT

Upgrading for the Millennium

In Mississippi, CartWorks Replaces Outdated Automation System For Clear Channel Jackson

by Roger Lamb
MIS/Production Manager
Clear Channel Jackson

JACKSON, Miss. After several years of operating older DOS-based automation systems with CD jukeboxes, it was time for an upgrade.

Our fear was that the old timers wouldn't survive in the new millennium. As computer guru for our five-station operation, I was assigned the task of finding a solution.

After it was determined that replacing everything with new **CartWorks** WAV/MPEG units would cost considerably less than upgrading the old systems, the choice became clear.

We could move to a modern digital audio system that offered better compatibility, state-of-the-art features and overall easier operation and integration.

Different needs

We have a diverse group of stations. One is live full-time, one is jock-intensive and live for half the day, two are automated music-on-hard-drive and another is satellite automated.

Because CartWorks allows us go live anytime with the press of a single button, special situations, routine remote broadcasts and various weekly programs are accommodated easily. This is not the case with many of the systems we considered, some of which cost five times as much.

Our old systems used CD jukeboxes. Therefore, all our music was on compact disc. We dreaded the chore of dubbing music for four stations at once.

Fortunately, CartWorks WAV/MPEG systems can play virtually every commercially available music library and includes a CD ripper for converting CDs to audio files. CartWorks also plays uncompressed WAV, MPEG Layer II & III, ADPCM and many other formats. This helped speed up the process, saved countless man-hours and allowed for a relatively smooth transition.

We use DARTS for traffic and RCS Selector for music scheduling. These computers are on the local-area network, so there are no floppy discs or paper logs to deal with.

CartWorks reads the logs generated by each program and allows the operator to make changes to either, in real time if necessary. A comprehensive Audit Log function creates reports of what has played, what did not air and any errors that occurred.

We can also perform quick scans in advance to make certain all spots on a log are available. The general manager and operations manager are pleased because this has resulted in far fewer missed spots and fewer mistakes on the air.

We experienced a few problems getting the music logs correct at first because we were attempting to reuse templates for the old system. CartWorks requires fewer commands in Selector and is much simpler to integrate.

Installation of our systems took only about two days.

CartWorks is designed to look familiar to radio operators. Required training was minimal. The system is has a quick learning curve.

Our jocks were up and running immediately with few complications. That is not to say that the system is bare bones. Believe me, it is not.

Practically every useful feature available on systems costing more are built into the CartWorks system. CartWorks presents these features in an easier to use, logical manner. Gone are the multiple levels of menus and screens to drill down through just to make a simple change.

CartWorks operates on the Windows 98 or Windows 2000 platforms and takes advantage of their 32-bit capabilities.

Is it live, or ...

With our previous system, voice tracks were recorded cold. The announcer just recorded her or his voice.

With the Vtrax Voice Tracker, the announcer actually sees the log on the screen. The user selects the voice track position to record and clicks start.

The final 15 seconds of the song before the voice track is played, as well as the song that follows the voice track, while recording. Announcers get the feel of actually being on the air because they hear what will be playing in context. Our

See CARTWORKS, page 69 ▶

USER REPORT

TuneInNow.net Rides the Wave

BSI WaveStation Keeps Internet Radio Station On Course

by Erik Schwartz
Owner, Founder
TuneInNow.net

SAN FRANCISCO WaveStation is one of the central pieces of our 16-station Internet radio network.

Each of our stations consists of a WaveStation-equipped PC, streaming internet encoding software and some custom software we wrote ourselves to do real-time publishing of song information, generate commerce links and help in the collection of song popularity data.

Different venues, similar methods

Internet broadcasting isn't so different from traditional broadcasting.

We use WaveStation in almost exactly the same way a typical automated radio station would use it. We download playlists from our scheduling software, and WaveStation plays the playlists.

One machine holds two soundcards. We take an analog loop out of the card associated with WaveStation and feed it back into the second card associated with the encoding software. Triggers within WaveStation control the encoder. The encoded stream is sent via dedicated line to our co-located media server.

At the same time our custom software publishes information relating to what song is playing, a link to buy the CD from Amazon.com and a customized form that allows the listener to give instant feedback about how they rate the song.

That data automatically is fed back into our music scheduling software, where the data is taken into account as the next playlist gets generated.

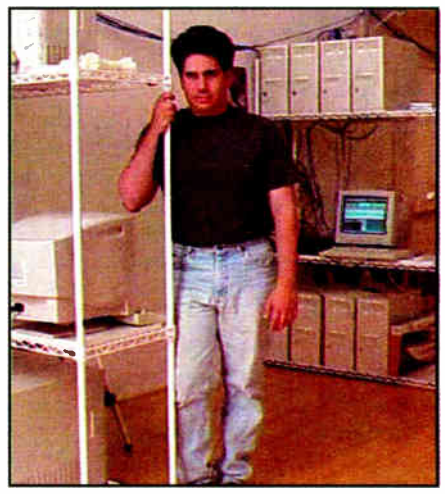
We love WaveStation's tight integration with the streaming encoder and its ability to fully control the PC it is running on. It allowed us to get our first eight fully automated Internet radio stations up and running in less than four weeks.

Catching the Net

When we first started this venture, no one at TuneInNow.net had any traditional radio experience. We had music industry folks and we had Internet folks.

So we were initially a little concerned about trying to get a single automated radio station up and running, let alone more than a dozen of them.

It turned out that WaveStation was easy to use, and we got the basics down in a matter of hours. Later, after I spent a weekend up at the BSI training course, I learned all kinds of new tricks and have since been able to take advantage of many of the advanced features in WaveStation.



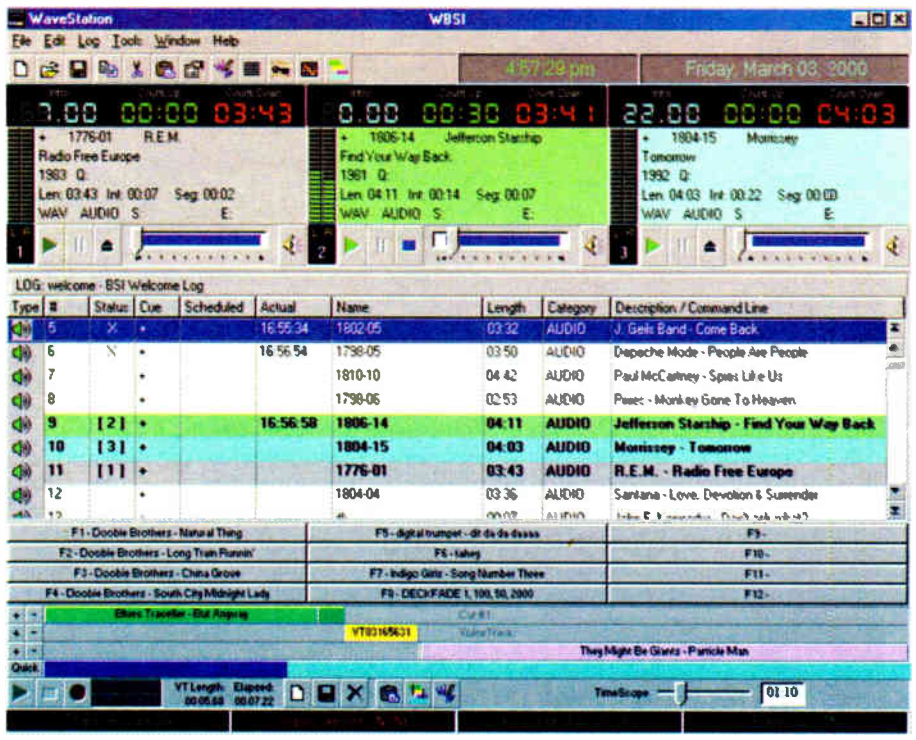
Erik Schwartz

On the few occasions we needed help, the BSI technical support team has been great. On one occasion, I accidentally deleted some files late at night while upgrading. I paged BSI at 10 p.m. one Friday evening and got a call back within five minutes. The problem was solved 20 minutes later. The best deal about that is that tech support is free.

Overall, I love our BSI WaveStation systems and would recommend them to anyone doing Internet or conventional radio. The ease-of-use, reliability and versatility of WaveStation makes it the best bang for the buck of any system out there.

Erik Schwartz, founder of TuneInNow.net, was previously senior producer for entertainment at Yahoo! Inc., where he managed the team responsible for the creation and launch of such products as Yahoo! Games, Yahoo! Music and Yahoo! Radio. He can be reached at eriks@TuneInNow.net

For more information contact BSI in Oregon at (541) 338-8588, fax (541) 338-8656 or visit the Web site at www.bsiusa.com



World Radio History

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

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World Radio History

USER REPORT

Innovating With Internet Radio

RCS Puts WABY.COM On the Internet 'Airwaves'

by Paul Bendat
Owner, Founder
WABY.COM

SCHENECTADY, N.Y. Back in mid-1998, I had an epiphany.

I had just gotten broadband access on my computer (via a cable modem) and RealNetworks had released RealPlayer G2. I found myself listening to high-quality streaming audio over the Internet. I started thinking about the possibilities inherent in this new distribution medium. It wound up changing the course of my career.

At the time, I owned WABY-AM-FM serving Albany, N.Y. Our format was essentially what you hear when you visit *WABY.COM*: show tunes, standards, swing and the like, targeted at adult women. The stations were successful. Despite a marginal Class A signal, we had a 7.2 share.

I became convinced that we could do well by moving WABY to the Internet. Not only was our format unique on the Net, I had found existing Internet radio generally lacking in terms of production value and quality.

I sold the broadcast stations, keeping the call letters, and started up an enterprise that launched in May of 1999.

Running Internet radio

On the Internet, it is amazingly easy and inexpensive to start up a radio station that has the potential to reach a global audience but that does not mean the station will be worth listening to.

That is tremendously important to broadcasters. If listening to broadcast radio gives the audience what it wants better than Internet radio can, the audience will turn to broadcast stations and vice versa.

The standard, I believe, should be an Internet radio station that is as well produced and professional as a "real" broadcast station. That was our goal with *WABY.COM* and we feel we have achieved it.

To many broadcasters, the Internet is *terra incognita.* And indeed, an Internet radio station can be set up that bears little if any resemblance to a traditional broadcast operation. But that may not produce the best results.

For example, many Internet radio stations store individual song files on a server, loading and streaming each in turn. The result is not like broadcast radio; instead, there is a delay between each track as the next is loaded from the server. The result is a choppy, unsatisfying listening experience.

It is easy to start up a Net radio station to reach a global audience. That does not mean the station will be worth listening to.

With *WABY.COM*, we realized that if we wanted to sound as good as we had on the air, our operations needed to emulate those of the broadcast station. So we set up an operation that runs exactly like an ordinary tape-delay broadcast radio station, with one exception — we have no transmitter.

The daily operations are familiar. We do what most stations do to choose content, using a combination of commercial research services and listener feedback.

Our on-air talent comes in to lay down voice tracks or broadcast live in real time. Then the actual programs are created using software from **RCS**, which we were already familiar with and had been using for years with excellent results.

We use RCS Selector to choose music and RCS Linker for managing produced elements. The show is then assembled using RCS Master Control NT. The Master Control servers are all resident here at our facility. All of this is exactly how we ran the broadcast station and is routine for those familiar with broadcast radio.

Once the Master Control file is created, the operation diverges from traditional broadcast. We encode the file into the streaming format produced by RealNetworks and send it via a T1 line to Streampipe.com, our audio host and distributor, which does the actual hosting of the site.

Listeners download the free RealPlayer software. Once that's installed all they need to do is click to hear the program.

The end result really is impressive. Close your eyes and the signal is indistinguishable from listening to FM. We have on-air personalities, voiceovers, advertising — everything a regular station has.

Greater possibilities

With regular broadcast radio, you are limited to whatever is going out at the moment. But with streaming media on the Internet, new forms of delivery are possible.

For example, *WABY.COM* has a series of specialty programs in addition to regular on-air programming. These are exhaustive, themed collections of music — like swing or Broadway show tunes, or Cole Porter — of three or more hours.

The listener can start, stop or pause these programs at will. We find that many of our listeners use these programs as background music at the workplace. They can set it running and put it in the background while they work.

The Internet, though, is letting us do much more. The Internet provides a global audience, of course, but much more important is that it is unregulated; unlike broadcast, the FCC has no jurisdiction over Internet radio (long may it last).

Content that would never make it past the FCC is no problem. It is true freedom of speech.

We are taking advantage of this freedom and technical flexibility to create several new ventures that should be available online by the time you read this.

We are creating private-label, custom stations for lifestyle Web sites. The first is for *nerve.com*, an adult site devoted to serious discussions of sex. We are also about to launch one for Maxim magazine, at *maximonline.com*. And shortly, we will have a multifaceted station for *iTurf.com*, a teen-oriented site that will include live on-air personalities and streaming video in addition to the regular tape-delay content.

All of these Internet radio stations will operate much as *WABY.COM* does: RCS Selector, Linker and Master Control NT to drive production, with on-air talent operating from our facilities here in Schenectady.

The future

We are just scratching the surface of Internet broadcasting.

Though the quality and bandwidth needed to deliver a superior experience have arrived, it still suffers somewhat from cumbersome delivery mechanisms. Listeners still need to download, install and operate software to listen to audio or see video. It is a rather operator-intensive system.

The Web itself still is oriented towards text and static graphics. Streaming content is usually presented as button to be pressed, rather than being fully integrated into the Web site. But all these are minor glitches that will disappear. Now that we have the tools to do real, professional broadcasting over the Internet, the future is looking very bright indeed.

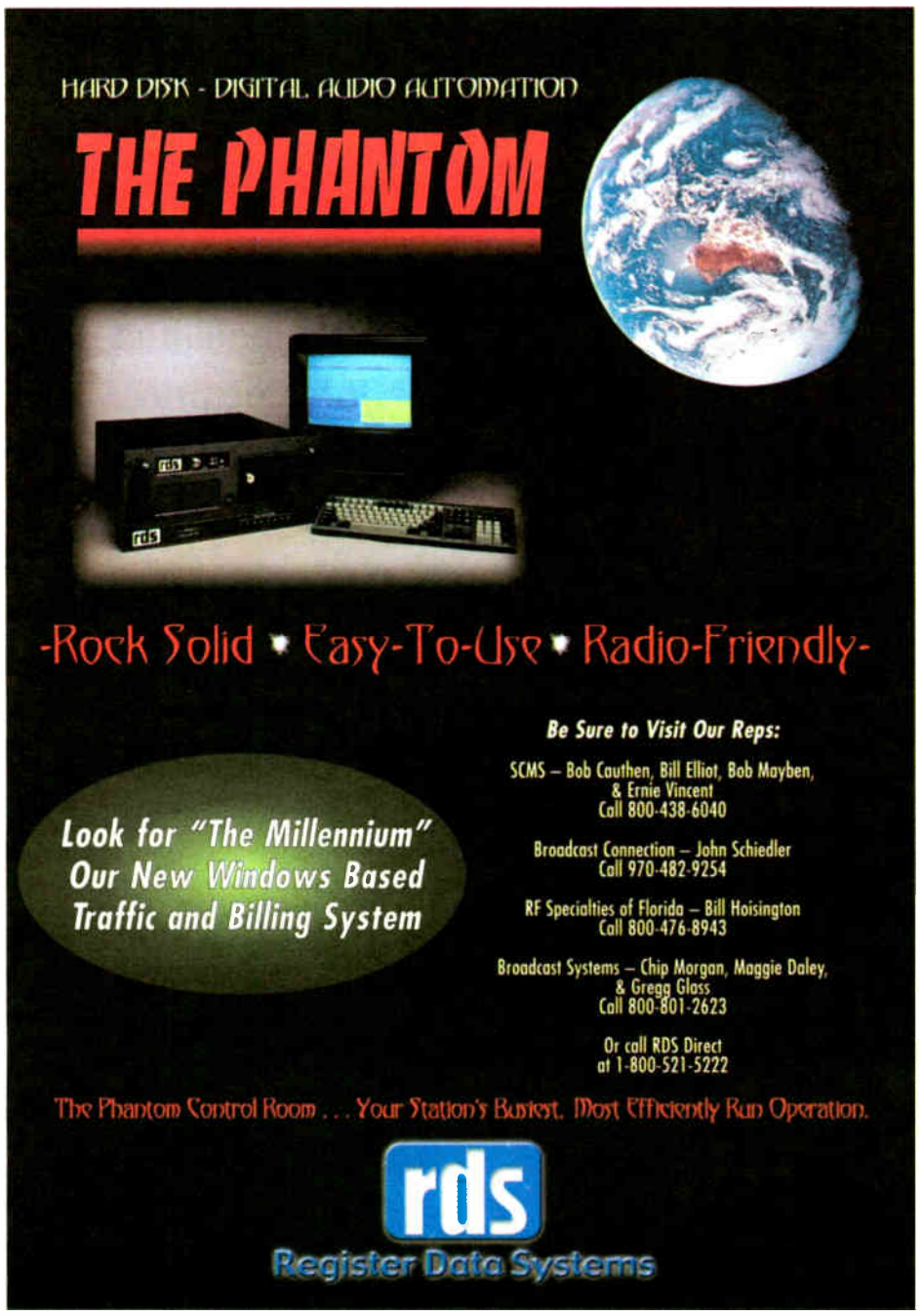
As exciting as the possibility of content-rich, free, unregulated, global broadcasting is, I do not believe that it can supplant local broadcasting.

One of the greatest strengths of the Internet — universal access — is also a weakness. I may be able to use the Internet to tune into a broadcast from Australia, but that does not serve my needs as a resident of a small city in upstate New York.

Broadcast radio plays an important role in serving the community; while I feel that the Internet has its place in broadcasting, it can never replace the traditional radio station.

Paul Bendat is the owner and founder of WABY.com. He can be reached at paul@waby.com *or visit the Web site at* www.WABY.com

For more information contact RCS in New York at (914) 428-4600, fax (914) 428-5923 or visit the Web site at www.rcsworks.com



World Radio History

USER REPORT

KXRA Happy With SMARTS

by Brett Paradis
Owner/Manager
Paradis Broadcasting, KXRA-AM-FM

ALEXANDRIA, Minn. Over the past eight years, we at Paradis Broadcasting have installed three complete digital automation systems from **Smarts Broadcasting** and have been pleased with each system's performance.

We are running multiple stations on one central, networked, storage system from Smarts. We like the flexibility this system offers us, especially its ability to handle unattended recordings and playbacks, including the way it automatically routes the switching of various networks.

A smart understanding

The system combines a Windows NT-based server with Smartcaster so that we can maximize storage on a minimum number of hard drives. All the audio is stored in the central server but can play through any Smartcaster on any station. That means we only record a file one time and it is instantly available for airplay anywhere.

SMARTS Broadcast Systems

Features like this save us a great deal of time and certainly cut back on the number of personnel needed, while still giving is a seamless flow of audio to all three of our stations.

Also, we enjoy the way the entire system operates in a network hub system — from traffic and billing, to music scheduling, to production rooms and control rooms. There is no need for floppies and maintenance of the entire system is quite easy. We are also pleased with the way we are able to interface our digital editors into the Smartcaster System.

The concept of using different computer platforms that are optimized for specific tasks makes it easier to handle different needs — and our three stations have very different needs.

We are running multiple stations on one central, networked, storage system from Smarts.

One station focuses on a news/talk format with a great deal of locally produced programming, along with network talk shows. The Smartcaster unit, handling that station, automates the switching of network signals as well as the playback of local audio and automates any recording that is needed.

Another station is a network music format. The Smartcaster smoothly integrates the network music with the local material from the hard drive.

The third station is a mostly "live" classic rock format, airing all of its audio off the Smartcaster server hard drive system.

In short, we continue to be pleased with the performance of our Smartcaster and the way its abilities have grown to fit our needs over the years.

For more information contact Smarts Broadcast Systems in Iowa at (800) 747-6278, fax (712) 852-5030 or visit the Web site at www.smartsbroadcast.com

TECH UPDATE

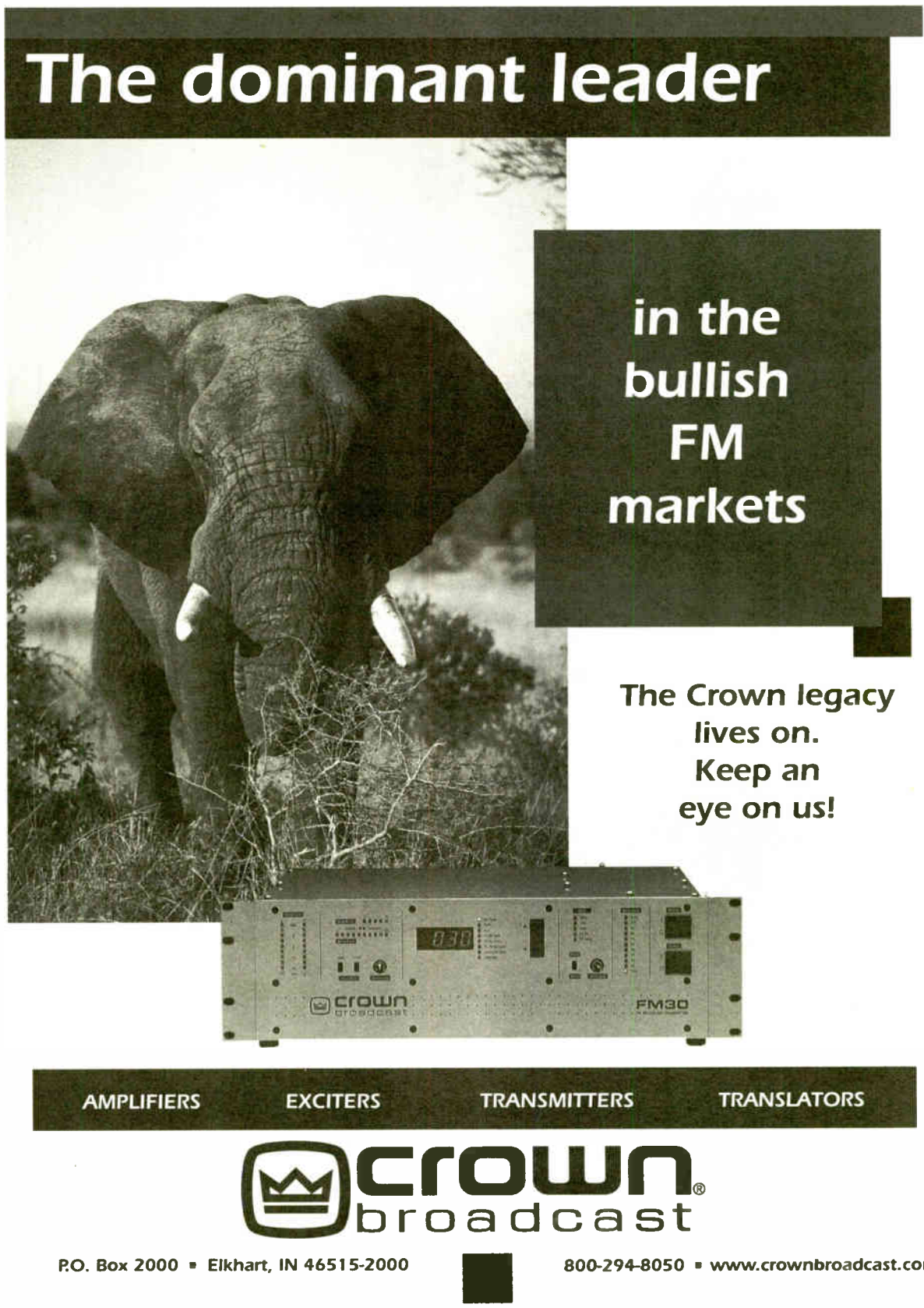
Arrakis DL4-AUTO Software

The **Arrakis** DL4-AUTO software comes with the DL4-STD-2 and DL4-STD-3 system packages and is designed for live assist, hard disk automation, manual cart control, satellite automation, ISO-MPEG-II audio editing, voice tracking, extensive scheduling and reporting.

Its open architecture allows DL4 to work with a customer-provided, compatible PC running Windows 95/98 or NT. No audio is stored in the controlling PC. Audio is stored in the DL4 hardware where it's protected against viruses or worms.

The DL4-AUTO software suite includes Live Assist. Additional DL4-SCHED software is designed for production room audio recording, voice tracking, audition, audio directory access and schedule maintenance. DL4 SCHED software works with many MP2 multitrack production editors, for digital audio imports.

For information contact Arrakis Systems at (970) 224-2248, fax (970) 493-1076 or visit www.arrakis.com



World Radio History

USER REPORT

Delivering Messages Automatically

Illinois Radio Engineer Uses Auto-Mate System To Run Messages on FM Translator

by Kurt Tuckerman
Engineer
WEIU(FM)

CHARLESTON, Ill. "Use the right tool for the right job."

I hear that all the time. But what if the tool you need hasn't been invented yet? Such was the case when I needed a high-quality local announcement insertion device for an FM translator.

Previously I have used cart machines, ham radio repeater announcement circuits and digital telephone answering machines for this purpose. When connected to a timer that would fire them every hour, the local announcement would just pre-empt the primary station for 30 seconds.

Whoops

Of course, stepping all over program material with lo-fi audio is unprofessional and not a strong point to potential sponsors of your translator.

If you are looking for the cheapest way out, a digital answering machine isn't bad, as it combines an auto-answerer, password protection, message recorder and playback unit in one box, accessible by DTMF commands, for less then $100.

I wanted more, however.

I wanted hi-fi audio, true scheduling capabilities, multiple sound file storage, password protection and remote dial-up access. Also, I wanted the spots to be seamlessly inserted into the primary station's format, not barging in on top of it.

Advertised as an inexpensive automation alternative for satellite-formatted systems or live-assist, this software could certainly do all I had in mind. Plus, it was DOS-based. When I need a system that doesn't need rebooting or require a human babysitter, I still prefer DOS.

A call to John Zolkoske, the owner of Auto-Mate, got me started.

Game port

He told me his software could be run on any IBM or clone with DOS and had a SoundBlaster sound card and a game port. The game port is used for contact closures to activate various functions such as playback. An optional relay card can be used for outgoing closures if necessary.

I tried to install all the software in the old 386. Soon I reached my maximum frustration level and shipped the whole mess to Auto-Mate.

It had to be reliable, as this translator is 250 miles from my home. My total bankroll for the project was $1,000.

Looking through my files I found a flyer for the **Auto-Mate System** automation software.

John made the suggestion that I buy a copy of PC Anywhere. I also bought a cheap 386 IBM clone, a SoundBlaster sound card, a copy of Auto-Mate "Simple-Sat" and a DOS-capable modem.

I tried to install all the software in the old 386 during my limited spare time. Soon I reached my maximum frustration level (low) and shipped the whole mess to Auto-Mate.

Starting out with an ancient 386 was my biggest mistake and John found a slightly less ancient 586, which he got to work. There is an issue with PC Anywhere that requires you to make a number of unusual moves to download files between your Windows computer and the DOS computer.

There are fixes available on the Symantec technical Web site. I understand if you are using Auto-Mate for what it was originally intended, that installation is easy and can be done by anyone familiar with computers.

Ready to roll

Now that I had my translator computer back, I hooked it to my second phone line and called it from my home computer. I paged through all of the Auto-Mate menus and found it to be a full-function automation system, either for live-assist or full satellite control.

It has a template section where you schedule daily advertising, which in my case is only one per hour. It also has sections for the "magic calls," liners and station IDs that are typical of automated satellite formats.

There were all the other features you would expect, like automatic clock correction from an external source. I familiarized myself with the logging functions so I could keep track of the spots that would run. In typical DOS fashion, it was almost impossible to make the unit lock up, even if my cat was walking on the keyboard.

First, I created an ad on my home computer using Sound Forge. Of course, Auto-Mate has a spot recording program as well, but I was already familiar with Sound Forge.

Then, I transferred it into the Auto-Mate program, which I also have loaded on my home computer. This creates a data file, which is partnered to the sound file.

I autodialed the translator computer, entered my password and started transferring files. The transferred files are scheduled into daily templates in Auto-Mate, awaiting a contact closure.

To trigger the spots, I purchased a Dayton Industrial mono FM receiver, whose output went to the CircuitWerkes DTMF decoder. The decoder output closure was connected to the game port of the Auto-Mate computer and also to a 30-second timed relay coupled to a SPDT BNC coaxial relay.

Repeater station

The primary station (the station I repeat) plays a low-level short-duration dual DTMF sequence before a 30-second PSA, which they don't mind if I pre-empt.

The tone fires my DTMF decoder which in turn fires the appropriate cut in the Auto-Mate computer program, the audio output of which is connected to an old Optimod processor. The tone also fires the 30-second timed relay, which switches the coaxial relay between the normal program composite audio, and the composite audio from the Optimod providing the local announcement.

The audio exits the relay and goes to the transmitter. My local announcement plays on the air and after 30 seconds, the timed relay releases. The primary station is then back on the air and starts playing another ad right on time.

I have operated this system for months now without an error. This may all sound a little complicated but in use it is quite simple.

I would recommend Auto-Mate Systems as a robust, straightforward and flexible computer audio storage system for cart replacement or full satellite automation.

Prices start at an amazing $220! The manual is quite extensive and surprisingly readable. Support is included for 30 days and is reasonable after that. I understand that Auto-Mate is finishing up a Windows version of this software for people who like nice and should be available by September of this year and will retail for $219.95.

Kurt Tuckerman is a broadcast engineer at WEIU-FM-TV at Eastern Illinois University in Charleston, Ill., and owner of FM translator W294AH in Columbus, Ohio.

For more information contact Auto-Mate Systems in Oregon at (503) 769-2886, fax (503) 769-2866 or visit the Web site at www.wvi.com/~automate

Radio's Most Wanted

PROFILE: John Caracciolo

Vice President, General Manager
WLIR / WDRE / WXXP Long Island,
Jarad Broadcasting, Garden City, N.Y.
Radio World reader for 14 years

Hometown: East Northport, N.Y.

School: NY Institute of Technology (Bachelor's Degree)

Favorite color: Black

Coffee: Milk and sugar

Favorite radio format: Modern Rock

Favorite section in Radio World: GM Journal

Favorite piece of equipment: My new Harris Platinum Z transmitter

Best thing about your job: Getting paid to do my hobby

Hobbies (other than radio): Reading, keeping up with my four-year-old daughter Noelle

Proudest moment: Rebuilding WLIR as the chief engineer, then taking over as GM and rebuilding the business to the best year in its history

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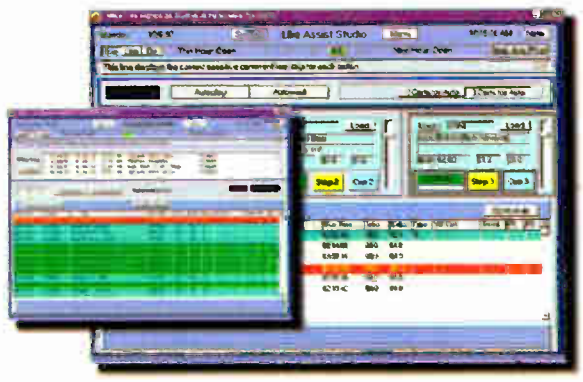

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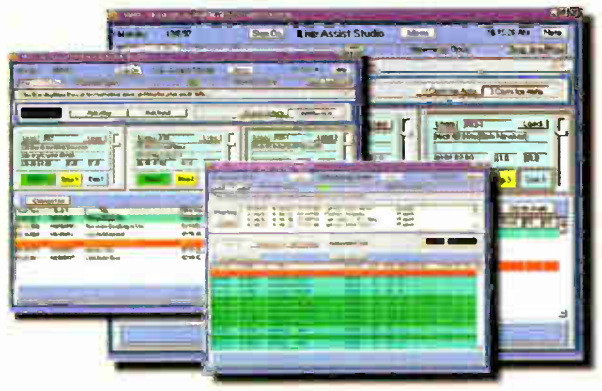

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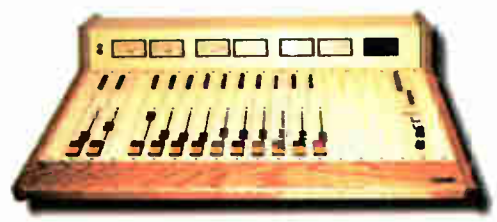

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World Radio History

USER REPORT

Henry Provides Solution at KPWR

Engineer Koza Uses DigiStor II as a Rotating Message System for Callers on Hold

by Tom Koza
Chief Engineer
KPWR(FM)

LOS ANGELES For many years, KPWR(FM) has used the "message-on-hold" feature of our phone system to play promotional messages to callers while on hold.

Because most of the callers to our business lines are advertisers or other business-related callers, our on-hold messages usually promote the station or its programming.

Until recently, we had been using an inexpensive on-hold player to feed this audio into the phone system. There were two drawbacks: The audio quality was marginal and the system could store only one message.

The production department wanted a system that could accept several message segments, then play them back sequentially down the phone line. This would allow us to change a segment of the message without having to reproduce the entire message, saving considerable studio time.

DigiStor II can be used to auto-answer the line and play a message to the caller, so it can be used as a 'listener information service.'

A new product from **Henry Engineering**, the DigiStor II, was the ideal product for this application.

The DigiStor II is a standalone digital audio recorder/player that doesn't require a PC or other hardware. As the "II" designation suggests, it is an updated and improved version of the older DigiStor units that Henry has been producing since the early '90s. This unit includes many of the functions of the older DigiStor and DigiCord products.

DigiStor II can store up to 16 minutes of monaural audio, with a bandwidth of almost 7 kHz. Although not CD-quality, this is usable for general-purpose audio storage.

I measured the unit's dynamic range at a respectable 70 dB, quite acceptable for on-air use.

Application notes from Henry Engineering note a common use for the DigiStor II is to record a network newscast for delayed on-air playback. It would sound just fine in this application. I measured distortion at about 1 percent at 1 kHz. The unit uses nonvolatile flash-memory, so it won't lose memory even if power is disconnected.

The unit functions like a tape recorder with conventional Play/Stop, Record and Message Select buttons and analog audio input and output.

DigiStor II can store up to eight different messages, and eight LEDs indicate the status of the eight message positions.

Operation is simple and straightforward. Messages can be recorded and played using either the buttons on the unit itself, or via remote contact closures.

It doesn't matter how long each message is, as long as the total time limit of 16 minutes is not exceeded. An eight-minute version is also available.

Fitting the facets

What makes DigiStor II versatile is its numerous playback modes.

Eight DIPswitches are used to set the various operational modes. The unit can be programmed to play a message (or group of messages) once or continuously and can play messages sequentially or in a pre-programmed order.

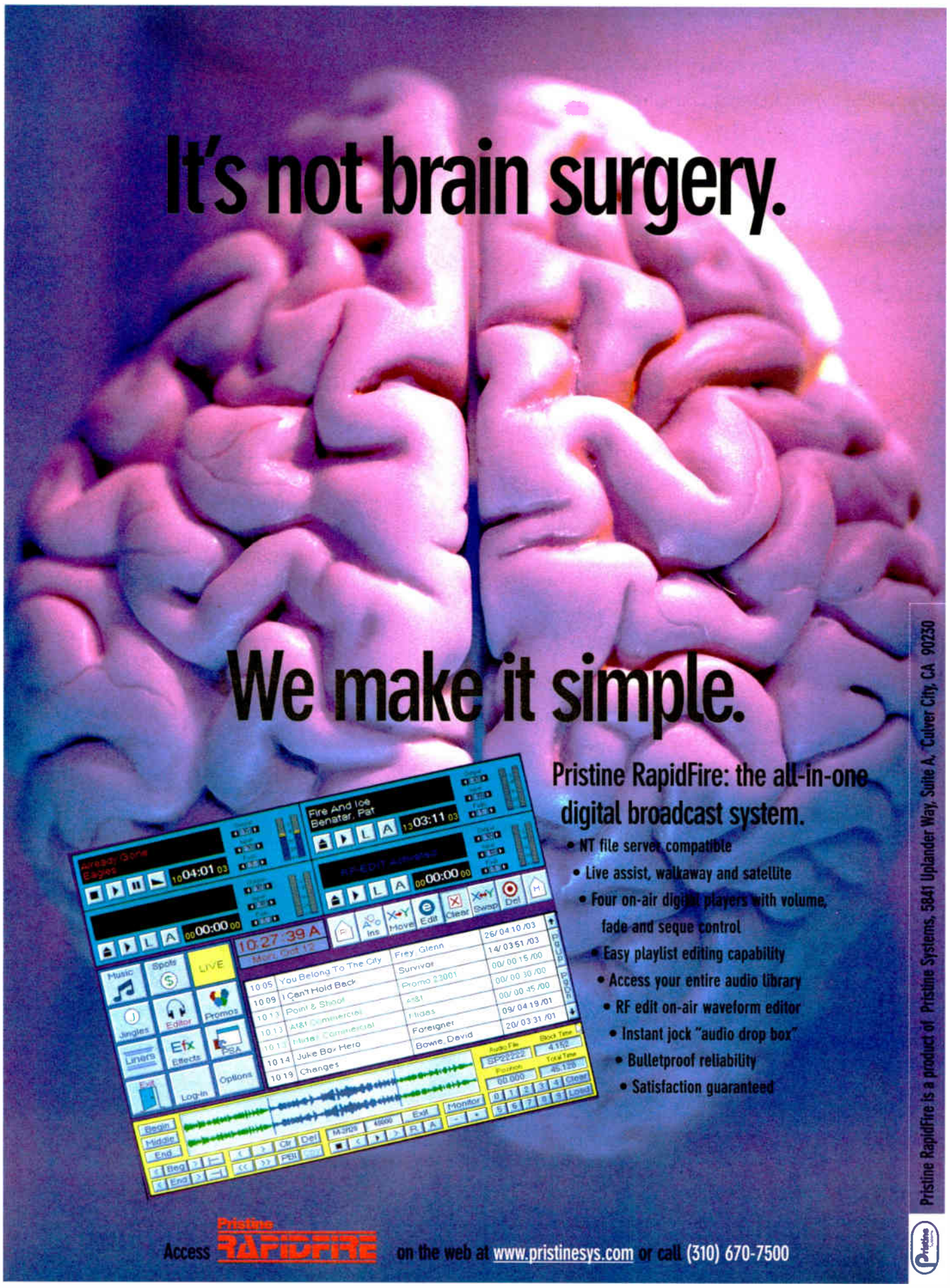
It can be set so it plays a message sequence then stops, or continues to play a sequence continuously (loop mode). Or users can utilize the Rotation Play feature, where it plays messages in sequence, stopping after each message finishes play.

This mode essentially emulates a cart machine, with several messages recorded in rotation on the cart.

Speaking of cart-machine emulation, DigiStor II includes a Status Relay, that can be programmed to close momentarily when message playback stops to mimic the function of a secondary tone on a cart deck. This function could be used to trigger the next program event in an automation system; for example, after DigiStor II finished playing a newscast or station ID.

At KPWR radio, we recorded several message segments of our new on-hold

See HENRY, page 69 ▶



World Radio History

Clear Channel Jackson Installs CartWorks

▶ CARTWORKS, continued from page 62

voice tracks sound less canned and virtually live now.

A nice feature about Vtrax is that voice tracks don't have to be cut on the workstation that will be playing them. They may be recorded from any workstation on the network. This frees up studios for other work, and more than one jock can be cutting voice tracks for the same station simultaneously.

Everything gets backed up to a mirrored drive that automatically takes over if the main drive ever fails. We think of it as cheap insurance against a potential expensive problem.

I also looked at the touchscreen option. It is nice, but not really necessary. When operating live assist, the majority of the time you're only dealing with a single pushbutton anyway. And because we use regular monitors we have the option of placing them wherever we want.

Everything gets backed up to a drive that takes over if the main drive ever fails.

Another handy feature is Instant Access. Each jock has available their own customized group of up to 48 buttons with beds, drops, sound effects and show music they frequently use.

Clicking on one of the buttons immediately plays what is loaded in it. Instant Access has its own console pot, so mixing is easy. We added the external box with pushbuttons so Instant Access can be minimized to an icon and run entirely from the button box.

It's like having one of those hotkey players, only better. It plays normal CartWorks files (which can be just about any format) so we have great flexibility without additional recording.

Automatic backup

To protect our valuable music and commercial libraries, we ordered the RAID Mirrored Hard Drive option.

I do want to mention the free audio browser utility that can be installed on any computer on the LAN network. The GM, sales manager or anyone can audition any recording without leaving their desk.

On the few occasions we've needed it, tech support provided quick response and seemed to be as serious as we were about correcting the problem. I certainly can't say that about our previous system's manufacturer.

Overall, I would have to say CartWorks has been a great choice. It's stable, easy to use, fast and powerful enough to handle everything we've thrown at it.

For more information contact CartWorks in Mississippi at (800) 795-7234, fax (601) 853-9976 or visit the Web site at www.cartworks.com

▶ HENRY, continued from page 68

promotional message into DigiStor II. I then set it for continuous sequential play and started the unit playing. It plays the different segments in order, with a smooth transition between each recording.

The unit functions like a tape recorder with Play/Stop, Record and Message Select buttons.

If we need to change anything, we can re-record any segment without disturbing the others. It sounds great on the phone line.

DigiStor II is a good gadget to have in a station's bag of tricks.

The unit includes an automatic phone coupler to interface to a phone line. With the coupler, DigiStor II can be used to auto-answer the line and play a message or messages to the caller, so it can be used as a "listener information service."

With its numerous modes of operation, DigiStor II could be the solution to problems that haven't even been thought of yet.

Tom Koza can be reached at (818) 567-6237.

For more information contact Henry Engineering in California at (626) 355-3656, fax (626) 355-0077 or visit the company Web site at www.henryeng.com

TECH UPDATES

Prophet Goes NexGen

Prophet Systems' NexGen Digital Broadcast automation system features WANcasting, voice-track recording concurrent with programming, scalability of up to 128 stations, and mix and match compressed and uncompressed audio.

Other features include customized default configuration and high-speed digital audio extraction.

Enhancements to Prophet Systems' WANcasting include "heads and tails" audio, allowing users to specify smaller beginnings and endings, resulting in less data to transfer and TCP/IP Network Protocol.

The VoiceTRAC enhancement includes the toggle fade feature, allowing users to adjust the fade out or up and the ability to export voice-tracking into a four-track editor. A separate segue editor lets users tweak upcoming segues in the log.

The CD/Extractor runs as an integrated component on NexGen Digital and AudioWizard or as a standalone version. The CD/Extractor Pro, which extracts audio from multiple approved CD-ROMs consecutively, can support multiple SCSI drives. All versions are certified by CDDB.

For more information contact Prophet Systems in Nebraska at (800) 658-4403, fax (308) 284-4181 or visit the Web site at www.prophetsys.com

Halland Lets Stations Pick Hits

HitPick is a program that lets stations custom-design a music format (playlist) by picking songs from **Halland Broadcast**'s master inventory of music.

There are approximately 5,000 songs to choose from, including Oldies, 70s Gold, A/C, Hot A/C, Classic Rock and Country.

Users can scroll through the database, which is listed in alphabetical order by artist, and "check off" the songs the station wants to include in its format.

Halland recently updated the HitPick software, adding features that let users automatically pick songs according to the artist name and/or date.

For example, a station could quickly pick all songs by The Beatles, or pick all songs between 1964 and 1969. It is also possible to pick all songs by The Rolling Stones between 1968 and 1975, using both the artist and date as qualifiers.

Once the format is created in HitPick, the playlist data is copied to a floppy disk. The user can now send the hard drive and the floppy disks to Halland and the company can load the selected songs to the drive. Songs are loaded as MPEG WAV files, at a sample rate of 32 k.

Halland Broadcast offers one-day service and can load a typical 1,200-song library in a few hours. Music libraries are also available on compact disc. Software is available as a free download from the Web site.

For more information contact Halland Broadcast Services Inc. in California at (800) 425-5263, fax (626) 963-2070 or visit the Web site at www.h-b-s.com

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TECH UPDATES

Simon Says Go Modular

The Simon OnAir Broadcast Studio 3.0 from **Management Data** is designed to offer a modular, scalable, open-architecture solution for automation and networks.

Features that are key components of Simon OnAir Broadcast Studio 3.0 include Mediatheque, which allows the user to produce products in multiple file formats, media types and at various storage locations; ContentNavigator, which is a tool for accessing the central audio material database; OnAirAssist, a live assist tool; and CartAssist, which displays four cart-wall stacks of audio material that can be played intuitively. Other features include CDAssist, Live Record and WebPublisher.

For more information contact Management Data Media Systems Inc. in Virginia at (540) 341-8550, fax (540) 341-8565 or visit www.mdmsus.com

MediaStation Assists Small Stations

MediaStation, from **mediatron**, is a live assist and automation system designed for smaller radio stations.

MediaStation concept is based on plug-in technology. With this technology the system can later be expanded and upgraded at any time, reducing overall cost.

Up until now, the technology was only slated for use with the mediatron AirControl NT system. The MediaStation runs with the plug-in technology under a Windows 32-bit desktop operations system, such as Windows NT 4.0 or Windows 2000 Professional.

It is designed to be intuitive so on-air talent can use the system at first glance.

The system also can be connected with the Net and digital radio stations, as well as utilize any multimedia services connected with them by installing the corresponding mediatron WebShow or DAB plug-in module.

For information contact mediatron at (49) 8131-8305-0, fax (49) 8131-8305-25 or visit www.mediatron.com

Music Director II Is Improved

Broadcast Data Consultants has upgraded its Music Director II scheduling software from DOS to Windows. Beta testing is ending and the product will be released formally at the NAB Radio Show in September.

Pre-release copies will be available at a substantial discount. These copies will come on a 60-day evaluation basis.

Music Director II is a music scheduling software program. Rather than using a set of pre-defined "decks," it continuously weighs and ranks each piece based upon a series of preferences and rules set up by the PD.

An alteration of these preferences can produce either subtle or major differences in the way the music is picked. A brief tour of the program is available on Broadcast Data's Web site.

After the free evaluation period, the cost for the basic system is $495. This includes six months of support.

For more information contact Broadcast Data Consultants in Florida at (800) 275-6204 or visit the Web site at www.broadcastdata.com

CBSI Goes Universal

Digital Universe from CBSI, a division of Wicks Broadcasting Solutions, is a second-generation digital studio system designed for broadcasters to deliver CD-quality audio. The DU operates in an NT environment. It uses software to deliver simultaneous channel capacity, which was previously accomplished with increased use of hardware in first-generation systems.

Digital Universe uses Microsoft "Plug and Play" by accessing other 32-bit applications.

For information contact CBSI at (800) 547- 3930, fax (541) 271-5721 or visit www.digitaluniverse.org

Netia Assists With Browser

The cornerstone of the Radio Assist software product line by **Netia** is the Database Browser, which allows access to any audio file in the system at any time, even if it is still being recorded.

Each user has the database browser on-screen, along with the particular software module(s), which she needs to do her work. Running on the Windows NT operating system, each user can be configured by the administrator to be presented with the software module, which fits the work description based on the log on profile.

Because the various modules are presented as tabs across the top of the page, a user could conceivably have a dozen or more modules available on-screen for voice-tracking, recording, CD/MD import, satellite feed capture, monotrack and multitrack production, cart stack preparation and playlist preparation.

For more information contact Netia North America in Texas at (877) 699-9151, fax (877) 699-9152 or visit the Web site at www.netia.net

Dalet Adds On-Air Now

Dalet has developed an add-on module for its Dalet5.1 Digital Automation System called On-Air Now that enables broadcasters to create and stream on-line content automatically.

On-Air Now also takes advantage of Dalet5.1's multimedia content warehouse to synchronize multimedia information related to the song being played, such as album art, song title, editorials and e-commerce links. On-Air Now can be configured to provide Internet-only Webcasts or to simulcast on-air programming on-line.

For multi-channel Webcasters, On-Air Now and Dalet5.1 offer Dalet5.1 architecture, which allows up to eight simultaneous multiple streams (depending on the configuration) to be generated from one workstation.

For more information contact Dalet Digital Media Systems USA in New York at (212) 825-3322, fax (212) 825-0182 or visit the Web site at www.dalet.com

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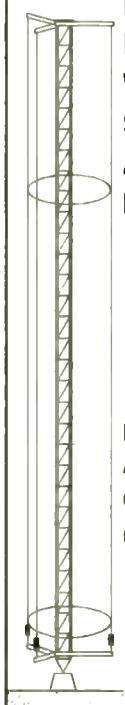

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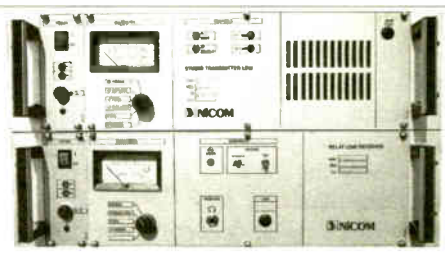

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Phelps-Dodge 4 bay FM w/heaters, 98-101 MHz, gd cond, $1500; Shively 3 bay FM w/radomes, 99-100.5 MHz, very gd cond, $1100; Mark 9A72GN, 6', 940-960 MHz, like new w/mounting hardware, $700. Al Fromm, Jalco Comm, POB 3334, Bartlesville OK 74006. 918-335-5093.

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Urei 565 Little Dipper EQ, $700; ADC Propatch 1/4" punchblock patchbays, new, $600 (many); 1.4" TRS patch cords like new, $15; ADC TT 144 point patch bays, recond, $149-229. W Gunn, 760-320-0728.

Want to Buy

Need Yamaha BP-2 bass pedals/gen schematic, would prefer electronics, but will be happy w/owner's manual & schematic. B Meuse, Muse Audio Arts, 191 E El Camino Rea #209, Mtn View CA 94040. 650-969-2433.

AUTOMATION EQUIPMENT

Want to Sell

Arrakis Digilink Multiplay 8 output CD controller, mdl DL-CD-85C, 8 PD-TM3 Pioneer 3 CD magazine players, 10 PD-M501 Pioneer single CD magazine players, all for $1400. Melvin Gollub, WMJS, POB 547, Prince Frederick MD 20678. 410-257-3465.

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.

CART MACHINES

Want to Sell

(2) DL-RM Audio Series recorder/reproducer, $500 ea. Gerald Edwards, Florida's French Broadcasting Network, 4431 SW 64th Ave #14, Davie FL 33314. 954-587-0008 or 954-384-7422.

Gates Criterion cart decks (2), mono, one has stereo record chassis, working cond, BO; IGM mono 48 tray Instacarts, one works, other for parts, BO. Chuck Gennaro, WJMS, 222 S Lawrence St, Ironwood MI 49938. 906-932-2411, chuckg@broadcast.net.

ITC Omega 1987 vintage stereo PB, recently refurbished w/new audio card & heads, used very little afterwards, good cosmetics, BO; BE 2100RPS 1983 mdl stereo R/P in very gd cond, w/manual, recently recapped & aligned, BO; ITC 3D mono triple deck cart machine, parts only, missing a card or two, call for details on cond, BO; ITC WP mono PB cart deck, needs some work, or for parts BO. Joe Vilkie, Great Circle Broadcasting, POB 397, Meadville PA 16335. 814-724-1111 ext 238.

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.

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CONSOLES

Want to Sell

Ampex AM10-6x2, excel cond, $295. J Price, 214-321-6576.

Autogram AC-8 1980 vintage, partially refurbished in 1995, works, buyer must pick up or pay shpg, BO. Joe Vilkie, Great Circle Bdctg, POB 397, Meadville PA 16335. 814-784-1111 ext 238.

Ramko Research DC5RA rack mount 5 chnl mixing console in gd cosmetic cond, may need some work, BO; Autogram AC-8 8 chnl stereo console w/mono sum output, power supply, monitor amp inside cabinet, refurbished in 1995, several spare modules included, buyer must pick up or pay shpg, BO. Joe Vilkie, Great Circle Broadcasting, POB 397, Meadville PA 16335. 814-724-1111 ext 238.

Tascam M2600 24CH/8 subs w/PS (2), gd cond, $1200 ea. Eric Eshbaugh, WJYJ, POB 905, Spotsylvania VA 22553. 540-582-5371 ext 3.

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.

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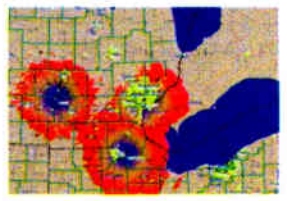
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Rockwell-Autogram IC10A stereo 10 pot console in gd cond, but needs cue module, $1400. Howard Espravnik, Magnum Comm, 915 North Water, Gallatin TN 37066. 615-452-3983 (h); 615-230-3618 (w).

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.

Autogram 20 mixer stereo console. Continental Communications. 800-664-4497.

Soundcraft 600, 24x8, $3900; JL Cooper 16 trk automation, $1200. W Gunn, 760-320-0728.

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 Buy

University T50 horn driver or complete horn wanted. Ed Davison, CPBE, 217-793-0400.

LIMITERS

Want to Sell

Inovonics 214 mono limiter, gd cond, BO. Chuck Gennaro, WJMS, 222 S Lawrence St, Ironwood MI 49938. 906-932-2411, chuckg@broadcast.net.

Altec 1612B mono limiter, works, BO. J Vilkie, Great Circle Bdctg, Box 397, Meadville PA 16335. 814-724-1111 ext 238.

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.

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Kintronics LTU-1B, 1 kW AM antenna tuning unit (ATU), currently on 1030 kHz, 240' tower, removed from service 1998, includes lighting choke, 13 yrs old, you pick up, $100. Bob Savage, WYSL, 5620 South Lima Rd, Avon NY 14414. 716-346-3000.

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Otari r-r mdl MX505B3-2, new, never used, $1200/BO/Trade; Timeline Lynx time code controller, new, never used, $300/BO/Trade. John Workman, WWJ-TV, 300 River Pl, Detroit MI 48207. 313-259-4102 or workmaj@wwjtv.cbs.com.

Yamaha Rev 7 xlr I/O's, gd cond, $150; Aphex 106 Easyrider 4CH compressor (2), gd cond, $85 ea. Eric Eshbaugh, WJYJ, POB 905, Spotsylvania VA 22553. 540-582-5371 ext 3.

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Want to Sell

Telex xmtr & mic WT-50, $125; Telex xmtr & mic WT-200, $125. J Price, 214-321-6576.

EV 635L mics, $95; Altec salt shaker mics, $295/ea. W Gunn, 760-320-0728.

Want to Buy

RCA 19" rack tran (BR-22B) & guide assemblies for BA-31/C microphone preamps, need 4 guides. Randy Fuelle, Hit Single Recording, 1935C Friendship Dr, El Cajun CA 92020. 619-258-1080, fax 619-258-1558 or email: hitsingle@earthlink.net.

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.

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Roland Jupiter six synth, $700; Yamaha CS01 synth, $150; Yamaha DX7 synth, $500. Art Polhemus, Excalibur Studio, 750 8th Ave, New York NY 10036. 212-302-9101.

UTC LS34 30W line transformers, new in orig boxes, $50 ea. Ed Davison, CPBE, 217-793-0400.

Want to Buy

CBS or NBC original call-letter plate for RCA 44. Michael Harrington, M Harrington & Assoc, POB 250995, Little Rock AR 72225. radcmex@aol.com.

Operator & service manual for chip, burner model storey system P-240-chip, burner for EPROM-S 2716-M CI wanted; processor board PCA 2500-0611. J Price, 214-321-6576.

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 Recdgs, 228 East 10th, NYNY 10003. 212-674-3060.

MONITORS

Want to Sell

Belar RFA-1, FMM-1, FMS-1 RF amp, FM mod monitor, FM stereo monitor system on 100.3 MHz, works, should be calibrated, BO. Joe Vilkie, Great Circle Bdctg, POB 397, Meadville PA 16335. 814-784-1111 ext 238.

Used Mod Monitors, McMartin & Belar. Many to choose from, tuned & calibrated on your frequency, full guaranteed. Goodrich Ent. 402-493-1886.

Yamaha NS10Ms, $295. W Gunn, 760-320-0728.

RECEIVERS/ TRANSCEIVERS

Want to Sell

McMartin FMR-1 FM mono rack mount rcvr tuned to 103.7 FM in gd working order w/above average cosmetics, BO. Joe Vilkie, Great Circle Broadcasting, POB 397, Meadville PA 16335. 814-724-1111 ext 238.

Erko T-4A SCA-FM tuner, new, 67KC & 92KC, $75. Ed Davison, CPBE, 217-793-0400.

Want to Buy

Automatic antenna tuner to use w/Kenwood 440 amateur transceiver for a blind ham. Ed Davison, CPBE, 217-793-0400.

RECORDERS

Want to Sell

Ampex 351 transports, decks, etc, BO; Ampex 440 stereo w/Ampex AM 6x2 mixer, $750; Ampex 440C in console, 3.75-30 ips, $995; set of new Ampex 8 trk 1" heads, $750; set of new Ampex 16 trk 2" heads, $350 ea; MCI JH 110 stereo in console, $750; MCI stereo electr B-C, $150; MCI power supplies, $150; Ruslang recorder console, $200. J Price, 214-321-6576.

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Otari MX5050 MKIII 8 trk, (5) dbx 150x 2 chnl Type I NR. S Bulman, First Take Recdg, 16128 Orchard Grove Rd, Gaithersburg MD 20878. 301-963-7758.

Scully 280 1/4", roll around rack, above meter bridge, $180; (2) Tanberg 15-21 Series 15 r-r, $120/pr; Viking TD-235 w/rack ears, $20; Wollensak 3M 5000, $60; 3M M-79 2 trk w/manual, $750. Will Dougherty Jr, WLD Recording, Rt 1, Mill Spring MO 63952. 573-998-3117 or email: wldrec@hotmail.com.

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Tascam DA30MKII DAT in gd cond, needs pinch roller, $450; Tascam DA-30 (3), $300 ea. Eric Eshbaugh, WJYJ, POB 905, Spotsylvania VA 22553. 540-582-5371 ext 3.

New MCI 110C-2s, $1800; Scully 8 trk, $1500; new short MRL test tapes, $229 for 2", $79 for 1/4", all formats avail; Otari MX5050 Mk III-8, $3k; Otari CB110 remote, $300; CB116 locator, $550 (all for $3.5k); Tascam 85-16 w/locator, remote, dbx, $1800; MCI JH110B 8 trk w/locator, $2900; Akai ADAM new, digital 12 trk, $3500; Ampex ATR102 rebuilt 1/4", $4900, 1/2", $6400; Technics RS1500 isoloop recorders, $695; Otari 5050 2 trk, $695. W Gunn, 760-320-0728.

Want to Buy

ITC 3-D stereo triple deck PB, needs capstan shaft & top bearing, BO; Audicord DL mono cart recorder, nice cond, BO; Audicord A series mono cart players, fair cond, BO; Henry Telestor digital R/P units, new in box, BO; CBS Volumax 4000A, BO; CBS Audimax 4440A, BO. Chuck Gennaro, WJMS, 222 S Lawrence St, Ironwood MI 49938. 906-932-2411, chuckg@broadcast.net.

Otari rolling rack for MX5050B11. Michael Harrington, M Harrington & Assoc, POB 250995, Little Rock AR 72225. radcmex@aol.com.

Sony APR-5000 JH-110's A, B, C, working or not, JH-45 autolock. John Bordes, Handbasket Prod, 2909 So Logan Ave, Milwaukee WI 53207. 414-482-8954.

Ampex ATR100 tape recorders for parts. Circuit cards, heads, motors, machine parts, or electronic parts. Call 818-907-5161.

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Want to Sell

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Scientific Atlanta AD4595 SEDAT rcvr, excel cond, $1500. Eroc Eshbaugh, WJYJ, POB 905, Spotsylvania VA 22553. 540-582-5371 ext 3.

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Want to Sell

10.5 music reels; Drake Chenault radio mts, contemporary/basic library reels, 70's or 80's. Chuck, 570-434-2609.

Tascam BR20 r-r w/roll racks (2), rarely used, $450 ea; Tascam 42B r-r in gd cond, $300. Eric Eshbaugh, WJYJ, POB 905, Spotsylvania VA 22553. 540-582-5371 ext 3.

TEST EQUIPMENT

Want to Sell

HP 201-C tone gen, continuously variable, tube type, needs work, BO. Joe Vilkie, Great Circle Broadcasting, POB 397, Meadville PA 16335. 814-724-1111 ext 238.

Tektronix digital multimeter DM 501A, $150; Tektronix digital multimeter DM 502A, $150; BK Precision Dyna-Jet 707 tube tester, $195; Eico 150 solid state signal tracer, $100; HP 353 100 DB attenuator, $65; HP 5308A counter, BO; HP multimeter 5306A, BO; Nuvistors (assorted), $25. J Price, 214-321-6576.

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

BW25 FM exciter/xmtr, 25W, stand alone unit. 87.9-108, stereo separation 45db, low pass filter, 15 KHz brick-wall, $950 w/S-H. Gene Whittenberger, Whittenberger Studio, POB 396ER, Mexico IN 46958. 765-985-2224.

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Energy-Onix Legend 1000, 1000W FM solid state, tuned to 91.1 FM, very gd cond, $6000. John Wilsbach, WMSS, 214 Race St, Middletown PA 17057. 717-948-9136.

Gates BC5P2, 5 kW xmtr, ready for pick up, just removed from service, great for spare parts, lots of new parts added this past year, can be used as an auxiliary xmtr, BO. Walter May, East Kentucky Bdctg Corp, 1240 Radio Dr, Pikeville KY 41502. 606-437-4051.

Harris MW-50-C 50,000 W AM xmtr, used daytime only at WNWR, 1540 kHz in excel cond & ready to ship immed, $20,000 FOB. B Edwards, New World Radio, 2131 Crimmins Ln, Falls Church VA 22043. 703-532-0400.

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QEI 675 1998, needs work, but complete, BO. Joe Vilkie, Great Circle Bdctg, POB 397, Meadville PA 16335. 814-784-1111 ext 238.

Wilkinson FM20,000F 20 kW xmtr less exciter, $8000/BO. Paul Bossert, KSPK, 516 Main St, Walsenburg CO 81089. 719-738-3636.

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RCA BTF-10D auxiliary 10kW currently in use, to be retired late June 2000. Good cond, Collins 310Z-2 exciter, spare tubes, manuals, pick up in Columbus OH, $2500/BO. John Marocchi, WVKO/WSNY, Carriage Hill Lane, Columbus OH 43220. 614-451-2191.

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World Radio History

◆READER'S FORUM◆

All-traffic radio

Dear **RW**,

I read with great interest Randy Stine's story on WTMC(AM), the Delaware all-traffic station ("Delaware Hits the Road With New Traffic Station," **RW**, May 24).

Although this station is non-commercial, it is not the first of its kind when it comes to all-traffic. In 1998, Saul Levine's Mt. Wilson Broadcasting launched KKTR (K-Traffic) in Los Angeles.

Saul employed my company, AirWatch America, a national traffic reporting service owned by Clear Channel Communications, to provide all of the programming. K-Traffic kicked off on June 1, 1998, providing traffic reports 24 hours a day, seven days a week.

Programming included tips on driving in fog, snow and rain as well as changing tires and what to do if your car breaks down.

Listeners were never more than 60 seconds from an updated three-minute traffic report. Promoted properly, this could be a strong format in many U. S. cities.

K-Traffic remained in operation until March 17, 1999. In the end it was a lack of advertising dollars and promotion that ended K-Traffic's run.

I applaud the state of Delaware for continuing the tradition of K-Traffic. I wish them great success, but it is not the first of its kind, it is the continuation of a radio format whose time has come.

Don Bastida
Director of Operations — Los Angeles
AirWatch America
Santa Ana, Calif.

Randy Stine replies: Thank you for your letter. One main point of the article was that WTMC is the first state-owned *all-traffic station.*

Fair coverage

Dear **RW**,

After 20 years in broadcasting, I finally feel complete. I applaud **Radio World** and Bob Rusk for presenting the article about Lyle Henry and the organization he founded, the National Association of Gay & Lesbian Broadcasters (NAGLB), in such a positive way. ("Group Reaches Out to Gays," **RW**, May 24.) I was caught completely off guard to see an article on this subject in a national trade rag.

I know several gay broadcast engineers in my immediate geographical area and have met some online across the United States, too. Some prefer to be closeted professionally about their sexual orientation. Others, like myself, let it be known to others. Whether we chose to be open about it or not, it has never affected the work of others or myself. As a matter of fact, it is a non-issue to those who work around me.

To the several thousand gay and lesbian engineers and technicians who work in the broadcast industry, we should be proud of the organization that Lyle Henry has founded. To Lyle, our hats are off to you for bringing to the forefront that gay and lesbian engineers exist and are an asset to the industry.

John Arndt
Director of Engineering
Clear Channel Broadcasting Inc.
Reading, Pa.

Christian radio networks

Dear **RW**,

I enjoyed reading the Steve Sullivan article about Christian radio in the November 10, 1999 issue ("Word of God Is Booming on Radio").

However, I was surprised that among the Christian networks mentioned, Family Stations Inc., based in Oakland, Calif., was not mentioned.

That network, of which WFRS(FM) is a part, owns and operates 40 domestic AM and FM radio stations, two TV stations and a shortwave facility in Florida broadcasting in 10 languages over 14 transmitters. The programming on the domestic network is also carried on the Internet at *www.familyradio.com*

What makes us different from Bott Radio Network and Salem Radio Network that were mentioned in the article is that we are completely non-commercial. We don't sell advertising or airtime and we don't even charge our broadcasters for airing their programs.

We are supported entirely by the generous contributions of our listeners and have been that way since our first station, KEAR(FM), went on the air in San Francisco in 1959. I believe we were the first totally listener-supported radio network in the country.

This network, a non-profit ministry, is able to operate on just listener contributions due to the fact that the stations are highly automated with very little local personnel. Also, operations are centralized at the network headquarters, including programming which is satellite-fed to all the stations.

I believe that the aforementioned format and financing makes us sound quite unique on the radio dial.

Bruce W. Clark
Operations Manager, Chief Engineer
WFRS(FM)
Central Islip, N.Y.

Wild and woolly

Dear **RW**,

I just had to write and say thanks for all the great support your staff provided at this year's NAB. I'm afraid that the infrastructure of Las Vegas is becoming a little overwhelmed with it all.

The **Radio World** booth and small army of goodwill ambassadors were the great beacons of sanity in a wild and woolly convention. I don't know what you are doing to motivate people but perhaps you should write a book.

It was apparent to me from observation and conversation that your publication is the most respected source of timely information about our business. Your coverage of the technological and political hurdles ahead will help us all get through some challenging times.

Mike and Kay Dorrough
Owners
Dorrough Electronics
Oregon, Wis.

*Ed. Note: Dorrough is the winner of the NAB Radio Engineering Achievement Award (**RW**, March 29, page 12).*

Cell Phones Are Transmitters too

Back in June, television news magazine shows got caught up in another round of the claimed or perceived health hazards caused by cellular phones and PCS devices.

Researchers displayed piles of CAT scans and X-ray images, pointing out brain tumors allegedly caused by the RF radiation generated by wireless phones.

Manufacturers and marketing people quickly dismissed these findings as premature. In the middle were the get-rich-quick products: foil-lined leather carrying cases and diaphragms that "protect the soft tissue of the ear ducts" by filtering out EMF at the earpiece.

It is easy to get caught up in the hype, no matter what your personal position. But it is also easy to look and ask, "How harmful can these phones be?"

For decades, radio engineers exposed themselves to uncommon amounts of RF energy, whether climbing hot towers today or on duty full-time at high-powered transmitter locations in days gone by.

The rationale becomes "RF energy, beyond the occasional burn, could not be terribly harmful if so many engineers are still alive and doing well." Perhaps, but how simple it is to forget those radio workers who are no longer with us, taken away from us "too young" from health issues caused by factors unknown.

We do not know the end result of personal bad habits coupled with 20 to 30 years of high RF exposure, but it cannot have been beneficial.

Consider secondary sources of RF exposure as well. The STL yagi, mounted low on the roof, the two-way radio in the remote van, the whip antenna on the 40 W RPU in the remote booth mere feet from the air talent's head.

Taken individually, each poses little or no threat. Taken together with a cell phone stirred into the mix, it may give one pause.

Don't fall for the hype from either side. If you need a cell phone, use one. But practice common RF sense around any transmitting device, no matter how benign-looking. Until experts know more about the additive effects, the optional use of extension mic/headsets, external antennas and limited telephone time certainly are not beyond reason.

Portable telephones keep us in touch and they look cute and colorful. But they are radio-transmitting devices nonetheless, and, when used so close to our brains, perhaps they deserve the respect of their more high-powered counterparts.

—**RW**

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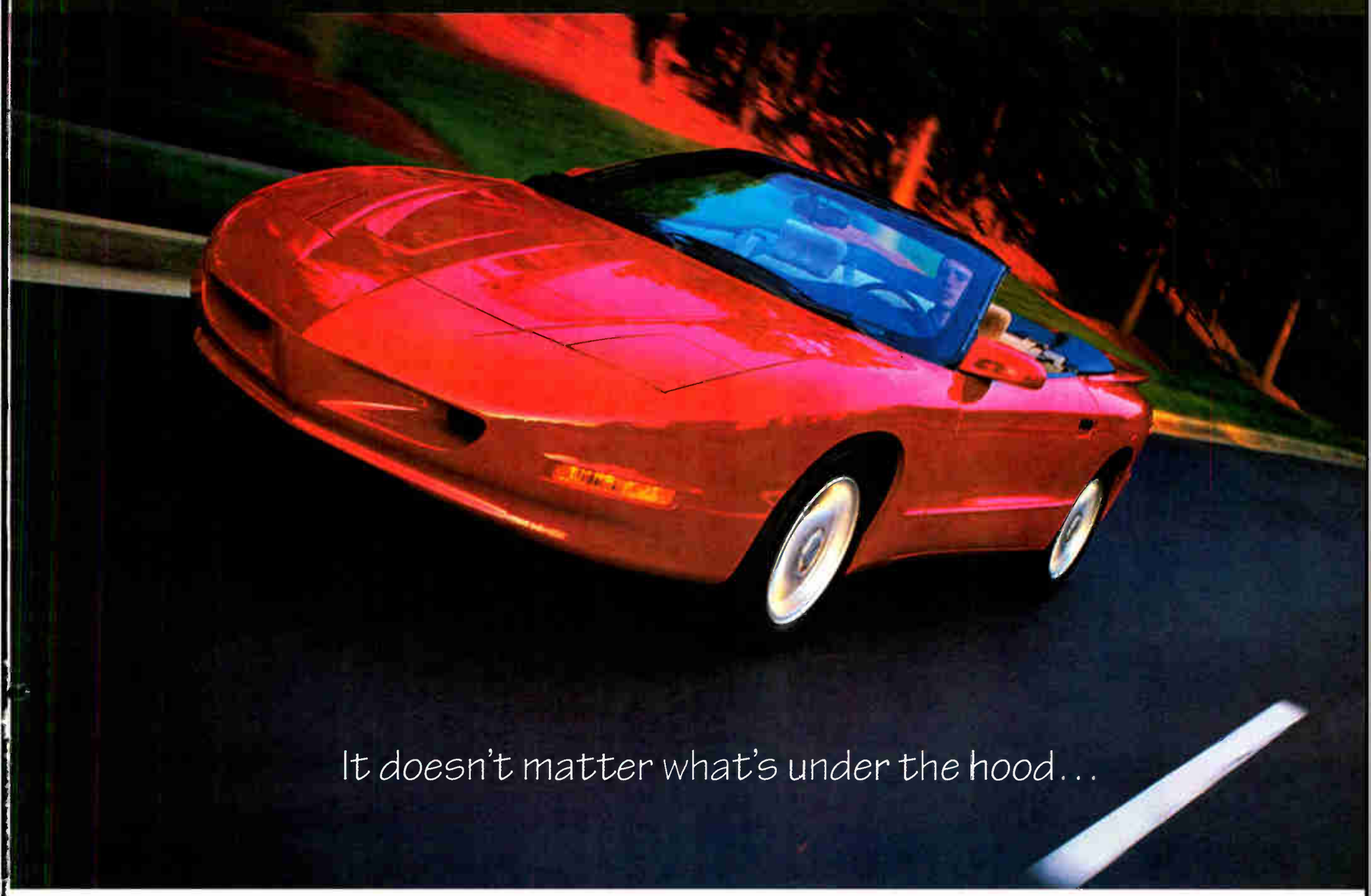

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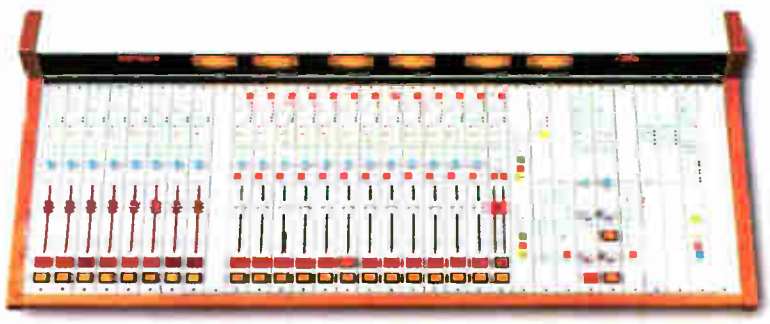

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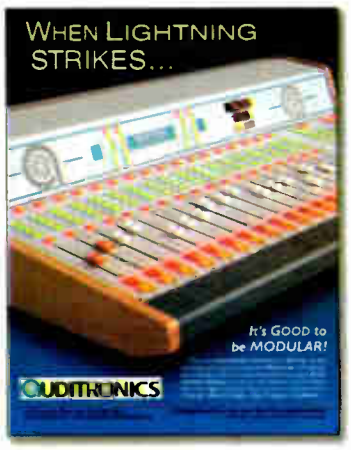

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