

# Radio World



**Internet Services  
for Radio**  
See Page 21

Vol 22, No 5

Radio's Best Read Newspaper

March 4, 1998

## NRSC Group Meets New DAB Player

by Leslie Stimson

**ARLINGTON, Va.** Digital Radio Express, hoping to become the preferred supplier of an in-band, on-channel digital audio broadcasting system for U.S. radio stations, described its AM and FM IBOC prototype systems to a gathering of industry leaders here last month. Representatives of DRE made their presentation to the DAB Subcommittee of the National Radio Systems Committee. DRE President Norman Miller asked committee members for support in testing the DRE IBOC systems.

The DAB subcommittee recently was reactivated by the NRSC joint sponsors: NAB and the Electronic Industries Association.

Approximately 34 people attended the meeting, including engineers from Heritage Media Corp., Susquehanna Radio Corp. and National Public Radio. Also in attendance were four

See IBOC, page 8 ▶

## Mixed Radio Blessings in Cuba

by Lynn Meadows

**HAVANA** Pope John Paul II visited Cuba in late January accompanied by about 4,000 journalists. As he celebrated Mass in Revolution Square across from the image of Che Gueverra, radio networks tried to capture the color and ironies of the island nation and its outspoken leader.

How these radio networks solved the technical challenges posed by the visit to Cuba reveals just how interwoven the major U.S. networks are today — and how popular the telephone is.

Consider UPI Radio, which used Feature Story Productions for its papal coverage. Feature Story Productions provides radio and TV news coverage for clients, and in some cases serves as a bureau for news organizations.

### Cooperative setup

"They basically provided us with feeds ... and very good feeds, too," said Warren Corbett, managing editor for the UPI Broadcast Division. The feeds included the pope's homilies with simultaneous translation.

In Cuba, Feature Story had a cooperative arrangement involving South African Broadcasting and Global Television of Canada. South African Broadcasting

helped defray the cost of the trip for two correspondents to travel to Cuba.

Feature Story's Catherine Drew filed for about 15 radio clients including South African Broadcasting and UPI Radio.

Drew took Marantz PMD101 and Sony TC-D5M cassette decks, along with her Electro-Voice 635A mic.

"I didn't have any editing equipment, so I just played my packages over the telephone and my inserts as well," Drew said. She used a Gentner coupler to connect her tape machines to the phone.

Drew took a satellite phone, but never used it because landlines were reliable.

CNN Newsource in Havana, where CNN has a bureau on the 21st floor of the Havana Libre hotel, provided the line.

### Radio and TV

CNN Radio relied on another service to get the Cuba story — its own television reporters. CNN sent 110 people to Cuba, none of them a radio-only correspondent.

CNN General Manager Robert Garcia said one of the main goals of CNN radio is "to maximize the company's television assets while staying true to the medium of radio."

See POPE, page 10 ▶

## Boston Is Home to a Growing Radio 'World'

by Joy Plaschko

**BOSTON** In a move to "strengthen editorial cohesion and focus," the daily, hour-long news magazine "The World" is moving five production jobs from London to its home at WGBH Boston, where it has its own newsroom, studios and offices.

Three producers and editors will remain at the BBC Bush House studios, according to outgoing Executive Producer Neil Curry. His replacement, Robert Ferrante, former executive producer of the National Public Radio program "Morning Edition," planned to take his new post Feb. 23. PRI President Steve Salyer said Ferrante was chosen for his vision of

how to make global news come alive for American listeners. Curry, who was based in Boston, will return to the BBC.

Brian Jarman, the senior BBC editor for

"The World," will move to Boston and has been named managing editor.

The show is an unusual joint project of three prominent names in U.S. and British public broadcasting. Public Radio International, WGBH and BBC World



Producers Ken Bader, Traci Tong and Rob Gifford (from left) plan the day's agenda in 'The World' newsroom at WGBH.

Service are co-producers of "The World," which is distributed by PRI. The program, which began in 1996 and has more

See WORLD, page 7 ▶

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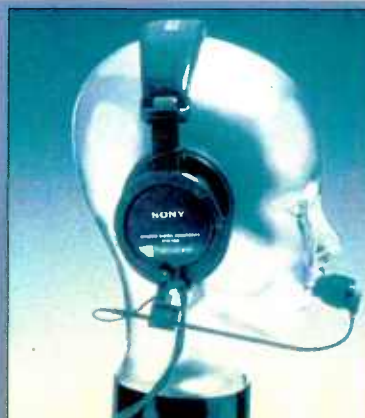
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# NEWSWATCH

## Clinton: More Money for FCC, Free Time for Candidates

**WASHINGTON** In his budget proposal for fiscal 1999, President Clinton earmarked nearly \$213 million for the FCC, an increase of more than \$26 million. The bulk of the increase would go to employee raises and inflationary increases for contract services. It would also cover the anticipated commission move to a new, central office complex.

Also in the increase is \$6.7 million to help the FCC make the computer transition to the year 2000. Although the budget request represents a monetary increase, the

president proposed no increase in FCC jobs, which remain at the equivalent of 2,105 full-time positions.

Separately, the president sent a formal request for free and discounted air time for certain political candidates to FCC Chairman William Kennard.

"Free and discounted time will reduce the need for more campaign money, and will allow candidates to spend less time fundraising and more time addressing the concerns of our country," Clinton wrote.

In response, ranking House Commerce Committee member John Dingell, D-Mich., wrote to Kennard, "I have serious concerns about the wisdom of an unelected body of

federal regulators acting on just one component of what should be a comprehensive campaign finance reform package fully and publicly debated by the Congress." Sens. John McCain, R-Ariz., and Conrad Burns, R-Mont., were prepared to offer an amendment to an unrelated bill to ban the FCC from mandating free time.

## San Juan Pirate Shut Down

**SAN JUAN, P. R.** The FCC shut down a pirate radio station here that was causing interference to air traffic control frequencies at San Juan International Airport.

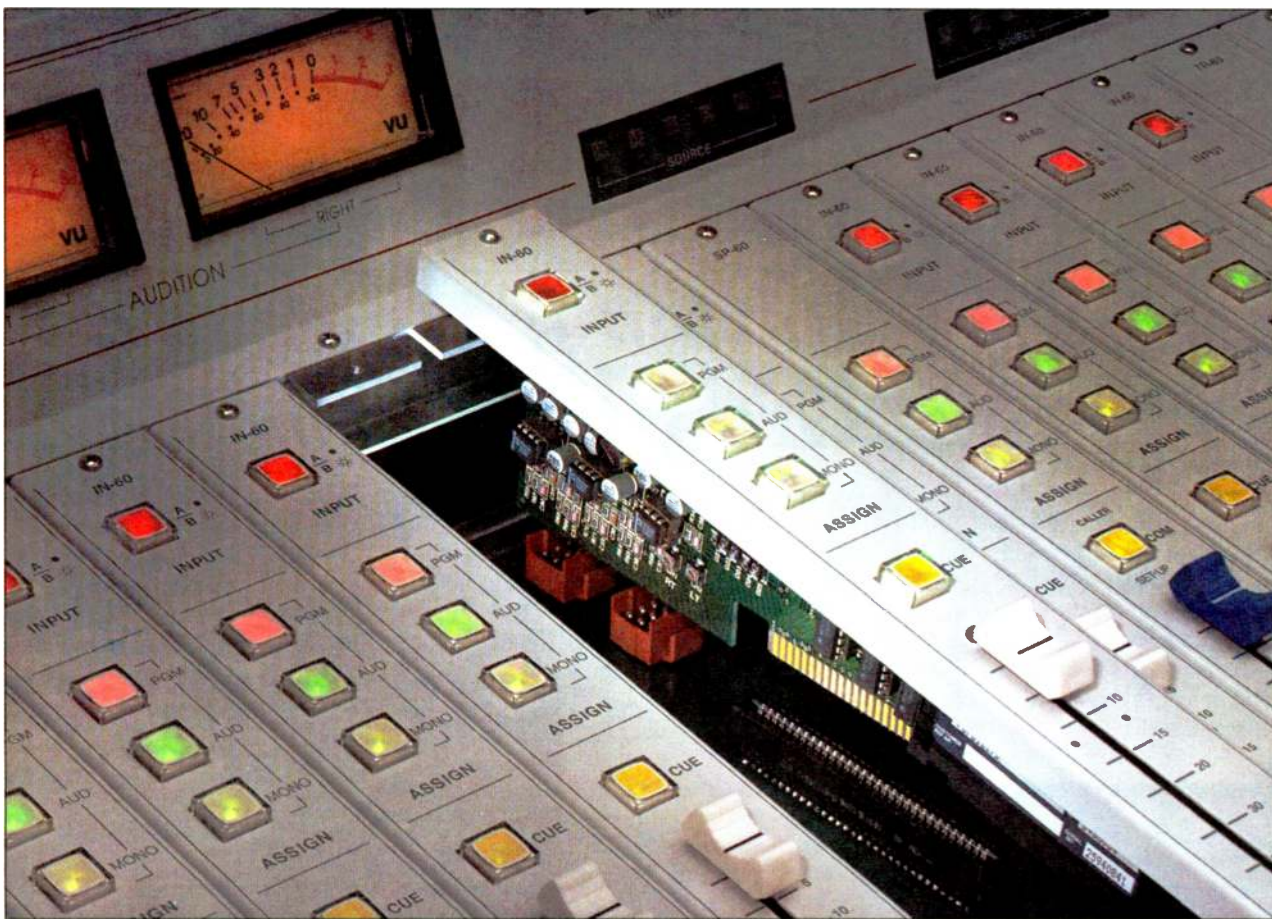
Acting on a complaint from the

Federal Aviation Administration, investigators from the FCC Compliance and Information Bureau located the unlicensed interfering radio signal on 98.1 MHz coming from a private residence. The FCC warned Hector Guerra and requested him to shut down the transmitter. He refused, the commission said, so FCC and FBI enforcement officials confiscated his equipment. He could face a fine of up to \$100,000, a year in prison or both for a first offense.

## Repeal of Cross-Ownership Ban Introduced

**WASHINGTON** House Commerce Telcom Subcommittee member Scott Klug, R-Wisc., introduced a bill to repeal the FCC law that restricts broadcasters from owning newspapers in the same market. The bill is similar to one introduced in the Senate last April by John McCain, R-Ariz. NAB and the Newspaper Association of America support the measures.

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# Exhibitors Heed Call of NRB

by Paul J. McLane and Chris Hamaker

**WASHINGTON** Several dozen equipment makers and distributors were among the 200 exhibitors at this year's conference for the National Religious Broadcasters, eager to reach a specialized slice of the broadcast marketplace.

Michael Bach of Scala Electronic Corp. said orders from religious broadcasting groups such as Calvary Satellite Network and Pensacola Christian College have been "going great guns," driven by demand for antennas for FM translator systems. He said other traditional consumers of such products, including the public radio sector, have experienced funding fluctuations. But within the religious sector, he said, demand has been strong.

The type of visitor to the NRB is different than at other shows, according to John Lackness of dealer Crouse Kimzey. Profit may be a motive for them, he said, but it is not the primary one. "These people are out first to spread the word of God," he said.

Several exhibitors said floor traffic at the NRB is lighter than at other shows, but the average buyer is more serious. Attendees represent a mix of domestic and international broadcasters, who use AM and FM radio, shortwave, TV and the Internet to broadcast their message.

"Buyers are looking for efficiency,"

said Eric Briggs of Broadcast Electronics, which demonstrated its audio management system. "They're interested in retasking the on-air personality to do community work, laying down voice



The NRB has outgrown the Washington Sheraton; a spokeswoman said the show would not return there.

tracks ahead of the air shift."

Still, managers of religious stations have many of the same concerns as other broadcasters.

"These people are pretty much looking for the same kind of things as everyone else," said Don Taylor, domestic sales manager, radio, for Harris Corp. "Their needs are the same ... They're doing facility upgrades

and shopping for quality products."

Companies tend not to introduce new products here, preferring to save those announcements for the large NAB convention in the spring. But some use the NRB to sound out clients or tease them about equipment to come. Larry Keene of CBSI said the company comes to NRB more to hear from its clients about what is and isn't working with its traffic and billing products. "The show for us is not to sell products. It's time for our 'annual ... check-up,'" he said.

Joe Rohrer of Shively Labs said, "It's been a real success for us. ... We didn't come here to sell a lot, but to make our presence known."

## FCC session

Equal employment requirements and the potential impact of upcoming FCC frequency auctions were hot topics at an FCC panel at the show.

One attendee claimed EEO hiring and reporting requirements may be well-intentioned, but the rules place an undue burden on smaller stations. "Candidly, we feel sometimes that we comprise our hiring process so that we look good to you," the attendee said.

Mass Media Bureau Chief Roy Stewart acknowledged he had heard that complaint before, but shifted the discussion to his particular concern: Which stations have to meet which requirements?

In its pending rule making, the FCC is looking at raising the EEO paperwork

## NRB'98

**Final attendance figure:** 4,650  
**Number of Exhibits:** More than 200  
**Location for NRB'99:** Opryland, Nashville

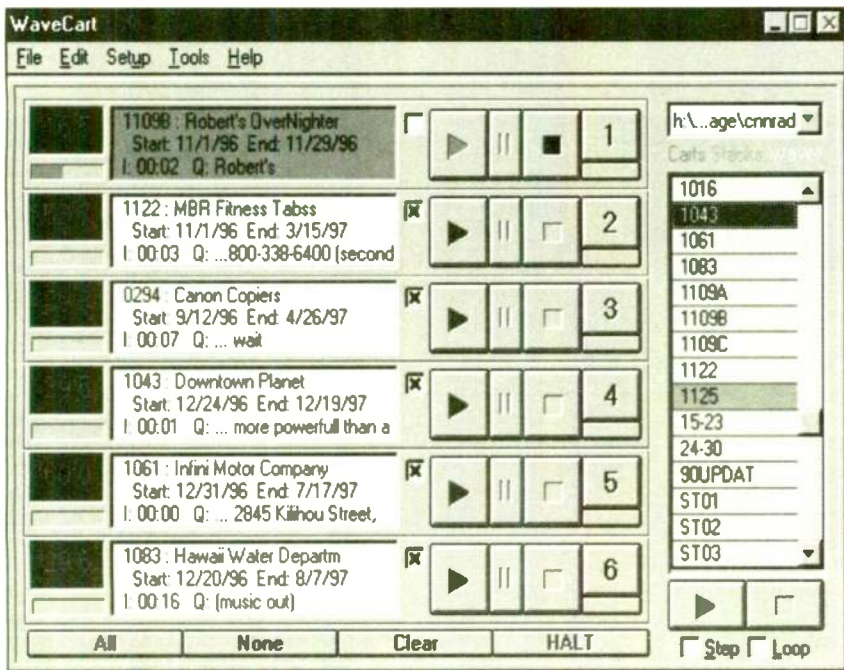
threshold for small stations to ease paperwork burdens. Now, stations with five or fewer employees are exempt from filing much of the required paperwork, although the stations still must conform to EEO requirements when hiring.

Charles Kelley, Chief, FCC Enforcement Division, said, "If you're making a good effort ... attracting women and minority candidates to your hiring pool, then, theoretically at least, from time to time you're going to hire some women and minority people to work for your station. We do have to look at whether or not you're successful, and if you're not, there is a requirement that you go back and examine the procedures you're using and maybe look for some other sources of women and minority candidates."

One broadcaster asked about upcoming FCC auctions. "What do you expect the outcome will be for noncommercial frequencies? Will it be auction, or will it be a lottery kind of setup? I would like to see the noncommercial exempt from the auction process," he said.

Stewart said, "I think that issue has been set up in the proceeding and I think we're going to look at the comments ... and it's hard to predict what the answer is going to be."

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# It's Time to Pass Along the Editing Pen

**WASHINGTON** Things are really heating up in the radio business, particularly those things that are technical and have to do with the shape of radio in the coming decades.

I mean DAB. I mean Internet-related issues. I mean digital recording equip-

years before you could sell it. I remember some trade-press type dubbing that era the "go-go eighties."

Docket 80-90 still affects the radio business today.

Those were just two little bits of FCC regulation that set the industry on its ear.

Now we have an FCC chairman who is willing to consider looking at licensing low-power broadcast-

I understand that the chairman has some concerns about the plurality of

operating in the red, and the benefits of efficiencies of scale, etc.

Obviously you want to protect and cultivate minority ownership of broadcast facilities. Obviously, you want a band free from interfering signals that could really throw a wrench into the IBOC systems broadcasters say they want. Obviously, someone has to sort this out. And obviously, it has to be someone who cares about radio, who cares about executing the charter of the Communications Act of 1934, and who is open to new ideas. Or old ideas.

I guess what I'm trying to arrive at is this: In the 12 years that I have covered this business, I've seen issues wax and wane in importance. In those 12 years, I have always been impressed by the fact that radio was, is and shall remain the medium most frequently used by the average Joe/Jill and that its presence in our lives is that of a utility. You flip a switch and it is there, in your car, in every room in your house, in a million places you might find yourself in the course of a year.

But most importantly, in my role as industry observer, I discovered long ago that radio's most valuable asset is that intangible one: the passion, commitment and creativity of the folks who hitch their wagon to that radio star.

If you're wondering why I am waxing philosophical, I must tell you that this column is the 130<sup>th</sup> Page Four that I have written. Five years ago, my debut column appeared in the March 25, 1993, edition. That one also happened to be the NAB preview issue and was the largest RW ever printed to date: 120 pages.

Our NAB preview issue will bear a March 18, 1998, cover date, and Current RW Editor, Paul McLane will take on the responsibility of filling this page. I



am moving on to a new job opportunity in a field unrelated to broadcasting and I am retiring the Page Four logo. I will miss all the wonderful folks I have come to know through this job, but I am confident that I am leaving you in some very capable hands.

## I am moving on to a new job opportunity in a field unrelated to broadcasting and I am retiring the Page Four logo.

Paul McLane cares about the business, and cares as much about RW as I do.

I want to simply thank all of you who have offered me your support and constructive criticism over the years. You have been a truly interactive readership: as generous with your praise as you were with ideas for making the paper better. And if you ever wondered about those little comments you made on the renewal cards, yes, I read each and every one of those cards every year, just to make sure I knew what you thought about the job we were doing. Thanks for your input and please keep it coming. I know Paul will rely on your feedback as much as I did.

Other than thanks, I want to say: Keep fighting for your rights as broadcasters who serve the public. Keep the heat on elected officials to keep AM top of mind with DAB. Don't just let things happen to your industry ... go out and make the right things happen for your industry. No one else will.

**Radio World**  
Buyers Guide: Automation Equipment and Software pp. 84-111

**Sony Digital Gear Targeted to Radio**

by Frank Beacham

**NEW YORK** Sony's most recent digital tape recorder is making a name for itself among radio stations. The TCM-1000 is a compact, portable, professional-quality digital recorder designed for radio use.

After initial reviews, several New York radio stations have purchased digital tape recorders. The TCM-1000 is a compact, portable, professional-quality digital recorder designed for radio use. It features a built-in cassette deck, a built-in cassette deck, and a built-in cassette deck.

Available in stereo and mono, the TCM-1000 is a compact, portable, professional-quality digital recorder designed for radio use.

**Radio World**  
Buyers Guide: Mics & Headphones Page 60

**EAS Group Sets 1998 Agenda**

by Leslie Stinson

**WASHINGTON** As the 1998 year gets underway, the EAS Group is setting a course for the year ahead. The group's agenda for 1998 includes several key initiatives.

The group's agenda for 1998 includes several key initiatives. The group's agenda for 1998 includes several key initiatives.

ment. Well ... you know what I mean.

In the 12 years that I have been covering the radio business, I've seen a lot of different issues take center stage. In the late 1980s, money was flowing freely and stations were trading for multiples of forward cash flow that would make a banker blush. Free-wheeling folks who had no real interest in radio bought and swapped stations like demented junk-bond traders. The FCC had just done away with that quaint little rule that said you had to own a station for three

**Radio World**  
Buyers Guide: Automation Equipment and Software pp. 84-111

**Freinwald: A Model Engineer**

by [Name]

**WASHINGTON** Robert Freinwald, president of the National Association of Broadcasters, was named the 1993 SBE Engineer of the Year.

Robert Freinwald, president of the National Association of Broadcasters, was named the 1993 SBE Engineer of the Year.

I've worked for and on RW for six years, five of these at the editorial helm. It has been a good evolution for us.

voices in the marketplace — what with consolidation compressing the ownership numbers in the business. But ... but ... broadcasters predicated their push for consolidation on the fact that there were too many stations, and too many stations

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If you have comments for Radio World, call us at (800)336-3045 or send a letter to Readers Forum (Radio World, P.O. Box 1214, Falls Church, VA 22041 or e-mail radioworld@imaspub.com). All letters received become the property of Radio World, to be used at our discretion and as space permits.

## Console commitment

Dear RW,

Given that Logitek is the first and only broadcast console manufacturer to totally commit to digital consoles, it is with great interest that I read your editorial comments in the Jan. 7 issue ("Time for a Digital Board?").

I think you are right with your points on the positives of going digital, with perhaps the exception that I believe that most want their stations to sound as good as possible and better than their competitors *now* (as opposed to waiting for DAB) ... and digital consoles can help improve a station's sound today.

On the negatives, I suggest that you could use the same arguments against replacing cart machines, turntables,

vacuum tubes ... and abacus!

As an industry, if we look at what is happening in the prospering segments, we can see that Intel, Microsoft (and others) are busy replacing their current technology with new and better ones. Maybe there is something to be learned here.



Digital consoles should meet the needs of today's broadcasters ... and the studios being built today are not at all like they were 10 years ago.

Digital consoles can and should be more than analog consoles with a bunch of DSPs. Just as the hard-disk systems allowed us to think in a broader way than just cart replacement, the digital consoles will enable us to think differently and we will have different expectations.

I strongly agree with your concluding comments. As manufacturers we have an obligation to help inform. As I write this, I am on the road, presenting the Logitek digital consoles to SBE meetings and trade shows. I look forward to going anywhere there is a group willing to have me.

*Richard Byrne  
Marketing Director  
Logitek*

## The other half

Dear RW,

It may be strange getting a letter from the wife of a radio engineer, but here it is! I really appreciated the article by Peter Zollman titled "Job Hunting? Check the Internet!" (RW, Feb. 4). It was very informative. I usually never read **Radio World**, as it is so full of technical stuff I don't understand, but the cover page said "Focus on Your Job," and I found the article and read it before my husband got home.

**Write to Us**

**RADIO WORLD  
READERS FORUM**

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Radio is a tough business to be in, as you know. I grumble and have often asked my husband who started the idea that engineers, radio announcers, DJs and program directors can be working one day, and *poof*, their job is no more the next! Radio has no courtesy at all. My husband laughs at me when I say, "I am going to give broadcasters a piece of my mind someday. I will teach them manners, and teach them to have a little heart and be more sensitive to family situations

## Blum's Unwavering Commitment

There are few true pioneers left in our business, but Maury Blum qualifies. Apparently the Society of Broadcast Engineers agrees. It is honoring Blum for nearly seven decades in broadcasting with its Lifetime Achievement Award.

We told you about Blum last September, in a front-page article commemorating his 50 years of service at WANN(AM), Annapolis, Md.

"This is a tremendous honor," Blum said of the latest accolade from the SBE. "My love has always been engineering."

Blum was but a boy when radio tweaked his interest.

"It was in the 1920s," he said. "A bunch of us kids got involved in something called wireless ... we built a two-slider tuner with crystal detector. But our parents wouldn't let us bring it into the house because they were afraid it would draw lightning. We finally snuck it into one kid's bathroom and went crazy when we first heard a human voice over the thing. We learned (Morse) code, and that was just the beginning."

Blum sailed with the Merchant Marine in 1931 out of Baltimore. With the start of World War II, he joined the FCC Radio Intelligence division, working with the mission: "Detection, location and suppression of subversive activities using radio to communicate with the enemy."

Blum served in the U.S. Navy through the end of the war. He was released to inactive duty as a lieutenant commander. After the war, his focus turned back to radio with the launch of WANN in 1947.

"The idea for (the station) was born in the Mediterranean on the way to the invasion of Salerno in World War II," he told RW last year. "I said, 'If I live through this one, I'm going after radio.'"

He certainly did that, with gusto. Blum spent the next 50 years serving as owner, president, general manager and technical director of WANN. He has since sold the station, and is no longer involved in day-to-day operations. But his work to support broadcasting continues. He has been Maryland State Chair of EAS and its forerunner EBS for 35-plus years.

RW salutes Maury Blum for his unwavering commitment to radio, and adds our voice to those honoring him. The award will be presented at NAB'98 during the SBE Membership Meeting April 7 in Las Vegas.

Kudos, Maury!

— RW

and what happens when a family goes through unexpected financial loss."

Someone has just bought the station where my husband works and they have not told him if he still has his job or not. I have been online searching job possibilities and now have a little hope in my heart.

I think it is very important for me to support my husband as he lives on the edge, not knowing his future. We are in this together and I want to thank you for helping me to help my husband.

*Nancy Ernewein  
Savage, Minn.*

## Time sensitive

Dear RW,

The story "Festival Draws Radio Royalty" (RW, Dec. 10, 1997) reports that the WINS(AM) program director of the 50s and 60s "... read the FCC regulations carefully and found ... stations did not have to provide a 5-minute newscast each hour, just an average of 3 minutes of news per hour." Surely this is erroneous.

Verbatim from a 1960 FCC report discussing various program elements including news: "The elements set out above are neither all-embracing nor constant. We re-emphasize that they do not serve and have never been intended as a rigid mold or fixed formula for station operation. The ascertainment of the needed elements of the broadcast matter to be provided by a particular licensee for the audience he is obligated to serve remains primarily the function of the licensee." As quoted in the 1967 "Broadcasting Yearbook," "While not mandating specific requirements, the commission certainly expected stations to adhere to their own programming promises put forth in their license applications."

I was in radio and some TV from 1947 to 1973, and worked in some stations

(and heard many others) that didn't (don't) average 3 minutes per hour. And certainly in the heyday of network radio, most hours were news-free.



In the era in question, I believe the NAB program standards regarding commercial and public service proportions still were practiced by most NAB members, but these were not FCC mandates. Perhaps this "3-minutes-per-hour" canard was one of those specious assumptions that gain popular acceptance, like the old but unfounded belief that AM broadcast audio modulation was/is limited by regulation to 5 kHz.

On another note, it's good to read that Barry Farber still is holding forth on radio. The article doesn't note that after the late Long John Nebel (not Neville) moved his all-night talkfest from WOR to (then) WNBC, Farber himself became an all-night talker on WOR opposite Nebel. Their legacy lives today through Art Bell on some 400 stations.

*R.H. Coddington*

## Note

The telephone number for Salant Broadcast Consulting ("Jobs, Jocks and Production Rats," Feb. 4) has changed to (757) 631-0092.

**Radio World**

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**Next Issue of Radio World  
March 18, 1998**

# NPR Staff Says Yes to NABET

by S. D. Yana Davis

**WASHINGTON** Engineering and technical employees at National Public Radio narrowly approved affiliation with the National Association of Broadcast Employees and Technicians.

NABET has about 12,000 members, most are broadcast engineers and technicians.

## Four options

The National Labor Relations Board supervised the certification election, held at NPR headquarters in Washington. The voting group had several options. They could choose representation by NABET/CWA; they could opt for a Public Radio Technical Employees Association, or PRTEA, a proposed in-house union; they could vote for Engineering Information Technical/Distribution (EIT/DIST), a set of informal work rule agreements with NPR management that had been in place since 1971; or vote "No Union."

A total of 78 employees were eligible



to vote in the election. NPR announced the results Feb. 5 as follows:

NABET/CWA	39
PRTEA	27
EIT/DIST	8
No Union	2

One person did not vote; one vote was challenged by NPR management. NABET was certified because it received a majority of votes.

The tallies also included mail-in ballots from employees in New York, Chicago and Los Angeles.

NPR President/CEO Delano Lewis said the company respected its employees' right to choose representation and pledged to work in good faith with NABET. Lewis cited the relationship of management with the American Federation of Television and Radio Artists, which already represents 210 non-supervisory production and editorial employees at NPR, as a model of the relationship he hoped would develop with NABET.

One NABET official charged that NPR management had run an underhanded campaign to defeat attempts to certify NABET.

While he was delighted with the out-

come of the vote, Ken Moffett, assistant to the president of NABET in Washington, claimed NPR managers openly campaigned against NABET prior to the vote.

## Derogatory or fair?

"It began about Jan. 14. They said some really derogatory things about the union" in memoranda distributed to affected NPR staff, Moffett said.

An NPR spokeswoman said there was no anti-NABET effort.

"Management has no idea what Mr. Moffett is talking about," said Jaya Greene, NPR director of corporate communications. She said NPR managers had "communicated with our employees for several weeks about the vote coming up," but she characterized management's position in the election as even-handed.

But an NPR source who spoke with **RW** on condition of anonymity alleged that NPR management had tried to defeat NABET.

"They spent an amazing amount of time saying" why employees should not vote for NABET, the source said, claiming that NPR management "posted bulletins everywhere, even in elevators,"

and "filled our mailboxes with material" urging votes against NABET.

Moffett said several NPR employees came to NABET last November seeking an election to affiliate with his labor group.

"They had no rights, no voice, no grievance procedures" under the informal agreements that had governed the technical staff's relationship to management, he said.

Moffett said signatures were gathered on petitions to the NLRB requesting a certification election in the following weeks, with a delay so that the proposed in-house employee union could be added to the options. NLRB rules require that 30 percent of affected employees sign petitions before a certification election can be called, a requirement met late last year.

NABET certification may not be a done deal. At press time it was unclear whether NPR would challenge the outcome. NABET won certification by a majority of only one vote, so a challenge might be forthcoming. If NPR could successfully challenge one pro-NABET vote, a run-off election between NABET and PRTEA would be held.

Greene would not say whether NPR would challenge the vote. But she said "there seem to be some irregularities with mail-in ballots" which could prompt a legal challenge.

## GUEST COMMENTARY

# Engineering: 'Whatmoredayawant?'

by Jeff Johnson  
X-Star Radio Network

**CINCINNATI** What is a broadcast engineer? Should we be licensed? Can we have had other professions during our lives?

I have a degree in Industrial Design from the University of Cincinnati School of Design, Architecture, Art, and Planning, which is still the second-best design school after Parsons. I am three years older than the transistor and 10 years older than rock 'n' roll. I have built

a hundred Heathkits and a great many goodies from scratch.

So can I be a broadcast engineer? License no longer required. Jim Wagner, a Cincinnati-based independent broadcast engineering contractor, told me a few years ago that the only thing that matters is if you can fix everything. And that is the crux. A love and talent for this work is the thing.

Why be licensed? By whom? The owner of the station license has the most to lose, so it should be up to that owner to determine whom to trust with his

assets. We cannot affect public safety that much. Towers still need structural engineers. Shock hazards are only to us, beyond basic electrical code considerations. The responsibilities of compliance mostly are clerical in nature. I should know, being the designated chief operator of our eight stations.

Importance in the organization? At our station and network, our department has executive committee rank. Our chief engineer, Jay Crawford, sits on the four-person high pow-wow. Dr. Jim King,

director of radio for Xavier University, has been able to build our network due to his first-rate leadership abilities and Jay's world-class talent as a chief engineer. Jay literally built everything, with Doc, and holds the highest esteem in the organization. I was invited to join the team in part on the strength of my EAS work as former chair of the local area in which two of our stations are located. Jay does the bulk of the work at the network stations, and I do a good deal of the logs, record keeping, network technical communication, and studio equipment maintenance (DATS cause blindness). I am also the person insured to climb the towers, and am the oldest guy around the place.

Money? Sure computer network skills would pay better, but how boring.

Job security? Job pleasure? Who knows how to fix everything anymore? I've replaced the compressor in the pop machine, oiled squeaky air chair casters, hung on various towers for the view, prayed on my knees in front of the FieldFone for line quality to hold up long enough to get through another hockey broadcast, (FieldFone's line quality gauge is a great feature), left banners behind at a remote, am on call day and night, have at-will access to NPR/PRI brain food, and talk cats with our administrator, Vickie. After a long day and night fighting Zeus and Thor (the FM-40K system I stroked in the past), driving 125 miles home listening to your handiwork ain't bad. Whatmoredayawant?

I'd say we can call ourselves "engineers" because we are better at more things than any profession I can think of. And we love doing it.

■ ■ ■

The author is network engineer for the X-Star Radio Network, owned by Xavier University in Cincinnati; its flagship station is WVXU(FM).

This article first appeared as part of a discussion in the "Broadcast" mailing list on Broadcast.net. We reprint it with permission. Reach the author via e-mail at [jjohnson@goodnews.net](mailto:jjohnson@goodnews.net)

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# Boston and 'The World'

Staffers of "The World" in Boston use the following equipment, according to Chief Engineer Robert O'Connell.

Broadcast Electronics AudioVAULT System, networked  
Wheatstone SP-48 Mixer  
SADiE Digital Audio Workstations (2)

RE Electronics 660/661 ISDN Codecs (2)  
Comrex DX200 Codecs (2)  
Comrex DXP.1 Portable Codec  
Telos Zephyr Codecs (Planned)  
Telos ONE plus ONE Phone Hybrid

Panasonic SV-4100 DAT machines (3)  
Otari MX-5050-B Reel-to-reels (3)  
Tascam 122 MKIII Cassette Decks (2)  
Denon 961FA CD Players (2)

Quested Studio Monitors  
Leitch Router  
TRS IFB system (intercom)  
Satellite Telephone: Nera Saturn B, via Comrex DXP.1 Codec (G.722 protocol), Inmarsat B satellite

Software (Networked via 10-Base-T over 30 DEC Venturis terminals):  
Windows 95  
Internet Explorer  
Fast Eddie audio recording/editing software

International Network:  
Fractional T-1, backed up via Controlware "Taxi" system in Boston and in London  
Bonded 128k (2 x 64k circuits) program line  
64k ASCII Newsroom computers circuit  
64k MUX for London Telephony/intercom

Newsroom System:  
Avid NetStation System

The ring main feed described in the story is an internal 24-point communication system available throughout the BBC, which allows correspondents around the world to file reports. According to Linda Harriet, Information Officer, BBC World Service, a correspondent calls the foreign traffic area of the newsroom at Broadcasting House, who allocates a channel to dial up on the ring main. This is announced via the intercom system in all buildings. For example, if Richard Miron files from Jerusalem, the production team in "The World" offices would hear, "Richard Miron filing for 'The World' on line 9." The producer could listen to the report as it is fed into the BBC and recorded in the newsroom.

The "Dave 2000" Digital Audio Voice Editor, an in-house project of the BBC, is an actuality database on a network of computers, each connected to its own speaker and tape deck, allowing BBC staff to access sound material 24 hours a day. Harriet said users at a workstation can key in the code for a sound bite, preview, edit and dub the material to tape. "Dave" holds up to 40 hours of material, from sound effects and the current top 10 chart singles to famous speeches such as George Bush's "Read my lips."

► WORLD, continued from page 1  
than 100 affiliates, reaches an estimated 1 million U.S. listeners.

London staffers were invited to fill the Boston posts. Those who chose not to go will be reassigned within the BBC, spokeswoman Jennifer McCauley said.

### Ring main feed

The additions to "The World" in Boston bring its staff to about 17, a growth spurt not drastic enough to require immediate additional space. Meanwhile, the London staff of "The World" will move from the second floor of the northwest wing of the BBC Bush

House, to a space closer to the BBC World Service newsroom in the southeast wing.

"The World" staff can pull on substantial resources and equipment, including a ring main feed/ring main selector system that will be extended to Boston. This feed allows producers to monitor 100 outputs of BBC regional transmissions. The ring main feed will be sent via the fractional T1 fiber optic system that runs between the BBC and WGBH. An intercom system will be added at WGBH to allow announcements notifying producers when and where correspondents are filing.

### Getting connected

The T1 connection between WGBH and London also will be reconfigured to better accommodate changing program-

ming needs, said Robert O'Connell, chief engineer of "The World."

It will manage "all of our systems: telephones, studio link, etc.," Curry said. "This umbilical link will be to the BBC computer system and digital archives in the Dave 2000 system (see box). 'Dave' will have an interface with a personal computer in Boston. Then we can instruct a PC in London to send an audio file," Curry said.

Meanwhile, the BBC will open a bureau at WGBH. Jerry Timmins, Head of the Americas for the BBC World Service, said, "Boston has become a city of considerable importance to the BBC. Having a major presence there will enhance our U.S. newsgathering operation, while also greatly benefiting 'The World' and our listeners around the globe."

**IS DELAY RUINING YOUR ISDN REMOTES?**

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Now, let's check in with Pete, the Party Animal at the FIJI Block Party in sunny Ft. Lauderdale. Tell me Pete, are the beauties bathing?

Uh, Pete...are you there? I was wondering how the party is? Are you there?

Hi there studio! This party's amaz... What? Did you say something?

...Uh, Yeah, I just asked how the party was.

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# More Tests to Come?

► IBOC, continued from page 1  
FCC employees; a representative of CD Radio, one of the two companies developing a satellite DAB system; and a group from USA Digital Radio.

NAB Senior Engineer David Layer said, "Our goal is to evaluate IBOC technology and determine whether it's viable or not."

To do so, the subcommittee formed two working groups, one to develop goals, headed by Charles Morgan of Susquehanna, and the other to develop testing criteria, headed by Andy Laird of Heritage.

Uncertain is who would pay for such tests and what those tests would actually cover. According to EIA spokeswoman Lisa Fasold, the group will examine

"questions like, how can this system overcome the problems we've seen with the USADR system in lab tests?"

Fasold expected that DRE would have answers at the subcommittee's next meeting, planned for April 4 in Las Vegas.

### Separate testing

The other active IBOC proponent, USA Digital Radio, declined to participate in tests with DRE, preferring to stick to its own previously announced schedule. That timetable calls for over-the-air tests by the fall of this year and the beginning of industry rollout by summer of 1999.

Glynn Walden, the director of engineering for CBS Radio who is working

closely with the USADR team, said, "We have our plans underway and are not interested in changing them. ... We have a well-developed plan to develop digital radio and not just have over-the-air tests. It's more complex than that."

USADR is a partnership of CBS Corp. and Gannett Co. It has a joint development agreement with Lucent Technologies, which is providing the PAC audio algorithm used by USADR.

If the various proponents hold to their current arguments, USADR and DRE would advance on separate testing tracks. Such dual-track testing, said one source who attended the meeting said, "leaves the door open for further interpretation."

DRE has prototype FM DAB transmitter and receiver units. Miller expects to complete internal lab tests of that system by the second quarter, and similar tests for its

prototype AM system by the end of 1998.

DRE has an alliance with semiconductor maker TriTech Microelectronics. Miller has said this alliance will allow the FM transmitter design to be transferred rapidly into a production-ready format. DRE also has been in discussions with manufacturer Telos Systems, about an alliance under which Telos would make the DRE exciter unit and provide a compression algorithm. According to several participants, the algorithm would be MPEG-2 Advanced Audio Coding, or AAC. A staff member for AT&T Research, which participated in its development, called AAC the highest performance compression algorithm of all the MPEG standards.

Miller of DRE said his company has been working on its IBOC prototypes for about two years. "We didn't want to go public in announcing our systems until we had hardware and lab data that gave us a high probability for success."

DRE states that its IBOC technologies include trellis coded multiple carrier modulation with time and frequency diversity, fault-tolerant multipath equalization, fully independent and redundant sideband processing, hierarchical forward error protection and advanced post-detection diversity combining. It promises near-CD quality stereo audio on FM at rates up to 128 kbps, and expects to apply these designs for use in AM IBOC at data rates of up to 48 kbps.

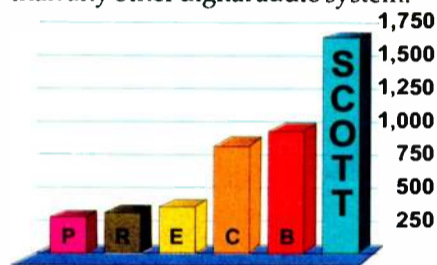
The DRE system was designed under the technical direction of Vice President of Engineering Derek Kumar. As reported in RW Feb. 18, Kumar worked previously for Electronic Decisions Inc., which had been a subcontractor to USADR, sources there said. The latter organization then purchased the EDI intellectual broadcast property, and scrapped the FM IBOC system Kumar had designed.

DRE stated that its system uses "patent-pending proprietary IBOC technology which addresses the known deficiencies of previously demonstrated or described IBOC systems."

DRE and USADR both plan to exhibit at NAB'98 in April.

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### CEMA report

Meanwhile, the Consumer Electronics Manufacturers Association, a sector of EIA, filed its final report with the FCC on its evaluation of several digital audio radio systems.

CEMA engineers looked at nine proposed digital systems over six years. The engineers concluded that only the Eureka-147 DAB system offered "signal robustness" that they consider good enough for the next generation of radio listeners. That system has found a toehold in other countries that are moving toward DAB, but has met resistance in the United States, where the necessary spectrum is unavailable and where broadcasters prefer an in-band solution.

"Significant problems" were cited by CEMA engineers in other digital systems tested. They wrote, "The IBOC systems as presented and tested are not feasible at this time due to deficient performance in audio quality, channel impairments and RF compatibility." Also, they stated, "The in-band, adjacent-channel system cannot be deployed due to interference with the current spectrum occupancy of the FM band."

The only satellite-delivered system tested, Voice of America/Jet Propulsion Labs, at S-band, was found to have "continuous and/or repeated outages due to blockage," said the report.

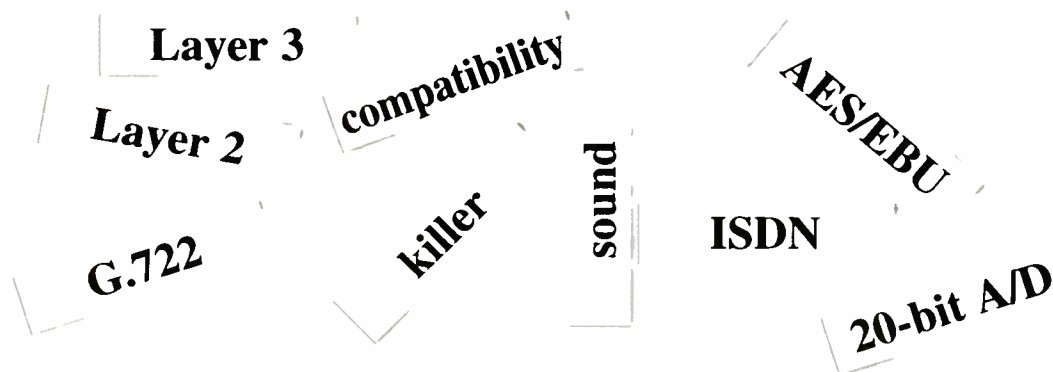
The tests predated Digital Radio Express and the alliance of USADR with Lucent. It is available from the FCC and on the CEMA Web site at www.cemacity.org/works/pubs/dar.htm



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World Radio History

# Nets Work the Phones in Cuba

► POPE, continued from page 1

Garcia wanted one of the CNN Radio correspondents to travel to Havana, but he ran into "some major visa problems." As fate would have it, CNN Radio then was fully staffed in Washington when the Clinton sex scandal broke.

CNN Radio has approximately 42 TV correspondents who file regularly for radio.

Some feeds came via satellite when there was a window of opportunity between television feeds. The rest came via "straight old-fashioned telephone," said Garcia. "The telephone quality from Cuba was outstanding. I was really surprised."

Several CNN affiliates used the Havana Bureau to transfer stories back

home. Luis Ramirez of KFWB(AM) in Los Angeles took vacation time to go to Cuba. While there, he filed news reports from the CNN bureau via the telephone.

satellite dish, Berry said ABC used a combination of a Comrex HotLine POTS codec and an Inmarsat satellite that downlinked to New Jersey and then fed New York on an ISDN line.



The View From the ABC Radio Work Space in Havana

"The way they were trying to split their phone lines out," said Berry, "we really weren't able to achieve as high of a baud rate as we even got in Calcutta where we used a Comrex HotLine for the funeral of Mother Teresa."

On average, ABC staff discovered the Cuban telephone lines had a two-second delay. In trying to incorporate the reporters in Havana in the live news coverage, they had to rehearse to

"This is the easiest remote I've ever had to do," Richard Rudman, director of engineering for KFWB, said.

Coverage of the pope in Cuba points up the interdependency of broadcast organizations. CBS-owned KFWB has a close relationship with CNN. Westwood One owns the Mutual Broadcasting System and the NBC Radio Network. It also distributes the CBS and CNN radio networks.

## Third World

ABC deployed four correspondents to Cuba, including Tim Scheld, Karen Chase, Jim Hickey and ABC News Radio's London Bureau Chief Linda Albin. Producer Rusty Lutz and engineer Chris Tobin also traveled to Havana.

"One of the biggest challenges for all of the networks was the fact that this is effectively still a Third World country when it comes to telecommunications," said Chris Berry, general manager of radio operations for ABC News. Because the Cuban government charged tremendous fees to turn on a

compensate for the delay.

Albin, who also used a cellular phone in Cuba, noted that, at the end of the day, "The radio reporter's best reporting tool is still a telephone."

In one early morning moment, Albin walked backward in front of a priest leading marchers to Revolution Square, holding up a phone.

"It was immediate and it was great," she said. She also carried two Marantz tape recorders, a mixer and a hand-held EV mic. In Cuba, she mostly used a shotgun mic to get a good mix between her voice and the background noise.

National Public Radio sent reporters Tom Gjelten and Phillip Davis to handle its Cuba coverage.

NPR had the Cuban telephone company install a new phone line in Gjelten's Havana hotel room as well as in the three cities where the pope celebrated Mass. The Cuban phone company also set up phone banks in each of the three cities with new lines for anyone who did not

have their own line.

The other option, said Gjelten, was ISDN service. However, because ISDN lines are not available there, he would have had to bring a satellite phone with ISDN capability, as NPR did in Bosnia.

Under NPR engineering jurisdictional agreements, an NPR audio engineer must operate the satellite equipment. The expense of sending an engineer to Cuba was prohibitive.

Gjelten said the fee to bring a regular satellite phone into Cuba was \$1,500. He watched in Santa Clara as officials prowled the area with a power meter to identify power sources and find news organizations using satellite phones without a license.

"Television was far, far worse," he said. "They were paying upwards of \$100,000 for permission to send video back on satellite."

## Cassettes and MDs

Gjelten used Sony TC-D5 and D-6 cassette recorders to dub off cuts he wanted to use in his piece. To send stories, he used a feed phone connected to the tape player by a mini-to-mini cable.

Bart Tessler, vice president of news for Westwood One, said the Cuba visit was a good example of a partnership between the networks. NBC and Mutual sent correspondent Bob Fuss to Havana.

Fuss carried a MiniDisc recorder as well as analog recorders. He filed via satellite, set up by CBS.

## Cuban officials charged substantial fees to allow satellite phones into the country.

Tony Brunton, director of Radio Special Events for CBS, helped arrange the technical aspects of the coverage along with technician Stanley Cobb. The networks used two full-time dedicated ISDN channels via satellite, with CDQ Primas at either end. Brunton also said they used the audio subcarrier on some of the television channels for another feed.

As a backup, CBS carried an Inmarsat set-up. The charge for that license was \$1,000.

Because of the difficult logistics, NBC and Mutual partnered with CBS.

"This way the CBS radio network as well as Mutual, NBC and a number of affiliates who went down there all were able to feed on ISDN lines," Tessler said.

Brunton said the Cubans were "very strict." His AMSC laptop with a telephone was impounded in customs because Cuba has no arrangement with American Mobile Satellite.

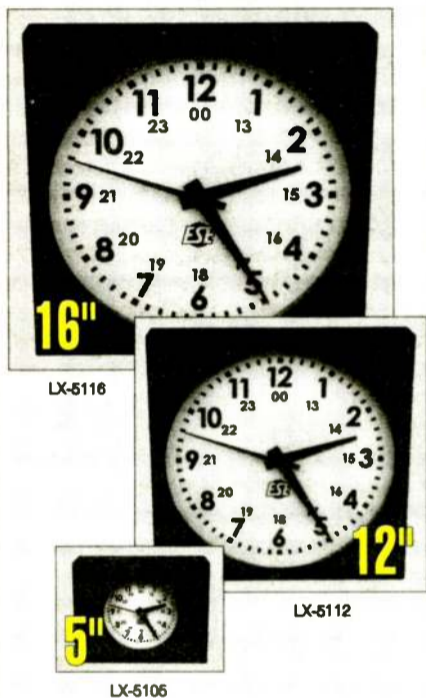
The CBS reporters in Cuba, Dan Raviv and Adrienne Bard, used MiniDisc recorders and Sony TCM-5000 cassette decks in the field, as well as the Comrex HotLine POTS codec, which worked for them in some areas of Cuba but would not get out of the country.

The hardest part, said Brunton, was making sure they brought everything they needed. CBS took 25 small cases of equipment.

"You can't turn around and say I'm going to RadioShack," Brunton said. "We even took a small gasoline generator to run things in case the power went down."

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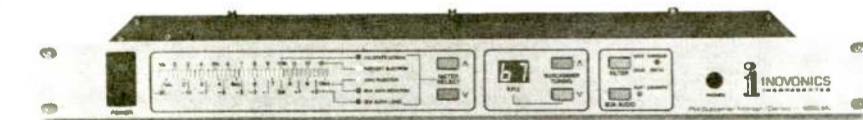


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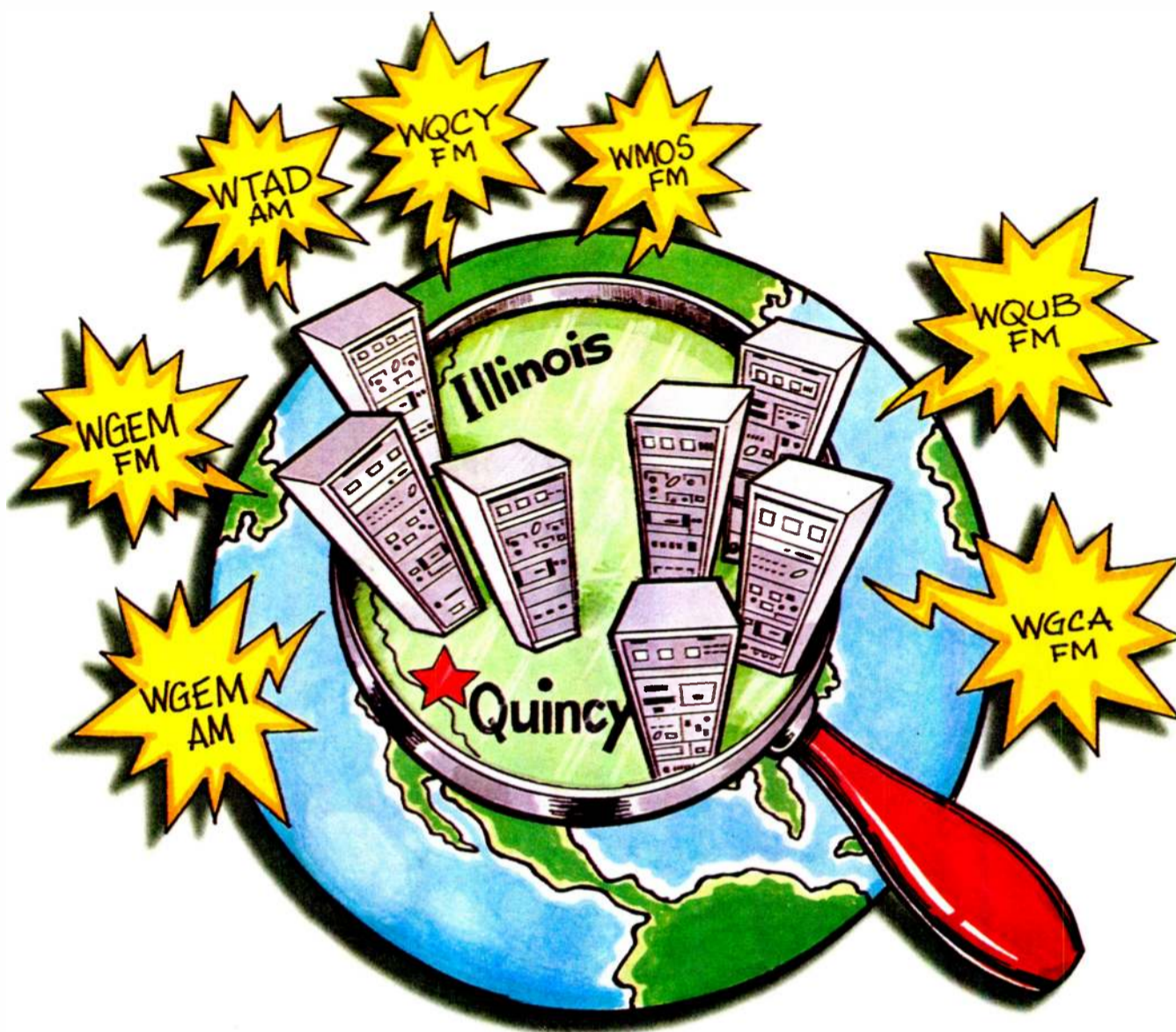
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# Predict Coverage With LRStudy

Alan R. Peterson

If you are planning a new transmitter site or an upgrade to an existing one, V-Soft Communications of Cedar Rapids, Iowa, has a Windows 95 software package to help make propagation prediction remarkably precise and quite easy.

LRStudy calculates and displays detailed coverage analysis for FM broadcast signals, VHF communication and both NTSC and digital TV. It does so by plotting more than 265,000 individual points on a geographical contour map for determining a station's "real world" coverage characteristics.

The "LR" in LRStudy stands for

Longley-Rice Model, a computer routine based on a propagation treatise authored in the mid-1960s and now employed by the FCC to determine new DTV allocations. The Longley-Rice Model takes numerous variables into account, including atmospheric absorption by water vapor and oxygen, loss from sky-noise temperature and rain attenuation.

All of this, along with terrain roughness, power fading and forward scatter are calculated into a Longley-Rice Model analysis and displayed by LRStudy.

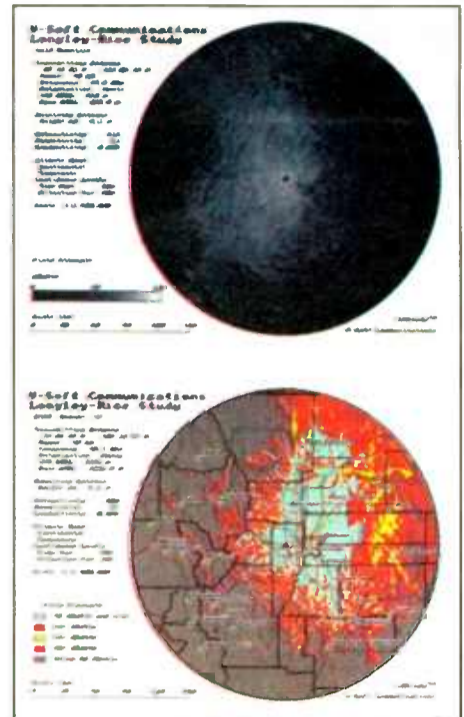
LRStudy gives the user multiple options, including a choice between grayscale or multicolor analysis. A normal coverage prediction map (displayed

in 600 x 800 resolution) shows signal coverage in grayscale mode. This method uses varying degrees of white to indicate the presence of signal.

The white regions appear as light striking the terrain, but actually indicate signal emanating from the transmitter site. Signal shadowing caused by mountains can clearly be seen on the grayscale rendering. This helps the user understand what is happening with the signal of a given transmitter.

The color rendering of signal strength presents a lot of new information. State and county line overlay features are available, as is the instantaneous addition of cities and other political boundaries.

With a keystroke, the LRStudy viewer allows an instant view of the signal levels of choice. It is possible to toggle between preset contours to observe signal variations, or use the contrast feature to see which site of two given sites, power levels or antenna heights works best for a planned facility.



Sample V-Soft Coverage Maps

The LRStudy imager can acquire a signal level down to one-half of a dB at any given coordinate set. All signal renderings can be saved as full-screen bitmaps for inclusion in word processors or for printing into reports.

For information about LRStudy or any of the products in the company line, contact V-Soft Communications in Iowa at (800) 743-3684; fax (319) 266-9212; at [www.v-soft.com](http://www.v-soft.com) on the World Wide Web or circle Reader Service 85.

## It's A Natural...

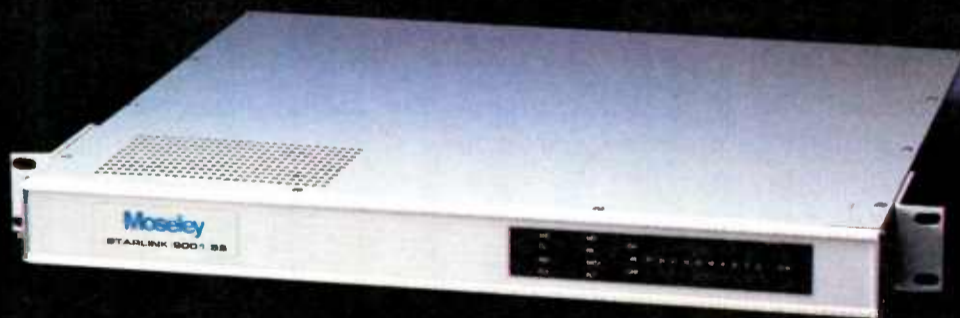
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HE **DARED** TO GO THERE.



# Workbench

Radio World, March 4, 1998

## Pause Now, Sleep Better Tonight

John Bisset

★★★

It seems like it's not only Jon Banks, DOE for Moss Entertainment, or yours truly who have been plagued with those 2 a.m. calls from the Sine Systems remote control alerting you to a momentary power dip. Keith Stokes' solution to the middle-of-the-night calls was to program a few long pauses in the programming of his Sine Systems remote control.

For example, with no delay, the unit will call the studio when a fault occurs. Keith programmed the remote control to wait five minutes and then page him.

Because the Sine Systems will poll the inputs every few seconds, adding the delay will mean no further calls should the problem be momentary in nature. Because the alarm is cleared before getting to Keith's pager number, he gets more uninterrupted sleep!

For the exact programming sequence, contact him at [www.cyberview.net/kstokes\\_surf.to/keithstokes](http://www.cyberview.net/kstokes_surf.to/keithstokes)

For Burk ARC-16 owners, George Marshall, the CE at WJJB-FM in Lincroft, N.J., solved the problem using both the CDL and AutoPilot software

Using the Burk AutoPilot program to monitor critical levels and limits, George programmed a few of its 60 possible mini-programs to monitor plate voltage, plate current, VSWR, power output and AC line voltage.

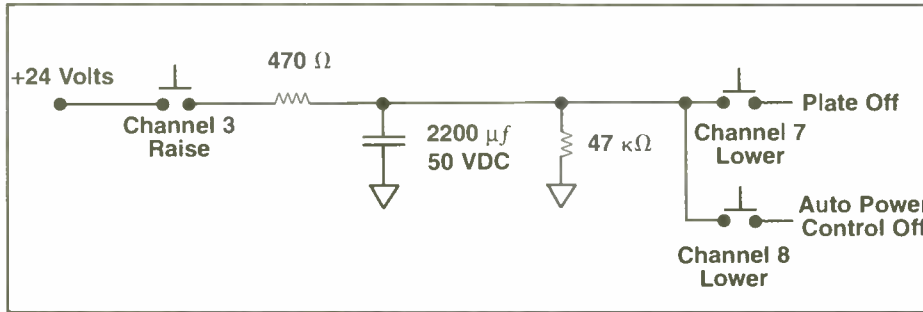


Figure 1: Using a charged capacitor to drive control relays eliminates accidental selection of seldom-used functions.

from Burk. First, set the "limits" (both upper and lower) on the ARC-16 to near meltdown/shutdown levels. This will eliminate most of the "momentary" alarms due to power hits.

When any of the critical items goes beyond the tolerances chosen by George, one of the Burk relays fires, turning on a warning light in the studio and displaying a warning message on the control screen so the studio operator can take corrective action (if needed). If the condition doesn't clear in a programmed amount of time (George has set his for five minutes), another relay fires. This relay turns on a status alarm on the ARC-16 which then pages George in response to the status alarm.

George can then dial in and find out what's wrong. Because WJJB operates unattended overnight, this system has worked quite well. George has even added a log line printed whenever there is any deviation from normal. This way, even if

there is no 2 a.m. call, the overnight operation can be checked the next day.

★★★

At the beginning of this column, I mentioned Jon Banks of Moss Entertainment in Colorado. Jon sent a neat circuit that he added to his remote control systems to prevent accidental triggering, like Plate OFF or Automatic Power OFF.

Wire your remote control so that one control channel will charge a 2200 (F capacitor through a 470-ohm resistor. Then, use the charged capacitor to drive the other control channels you want to protect. To activate those channels, use Channel 3 RAISE to charge the cap for 10 seconds. Then, immediately use Channel 7 LOWER for PLATE OFF. The capacitor should be good for one or two pulses of control voltage.

A 47-kohm resistor across the capacitor bleeds off the charge after a moment, and PLATE OFF will not do anything if the cap has been discharged. You may need to modify the circuit slightly to fit the configuration of your remote control's common line. The best part: It all fits on the barrier strip block on the back of the remote control (see Figure 1). Jon's work number at Moss Entertainment is (970) 945-8564.

■■■

John Bisset is a principal with Multiphase, a technical services company. Reach him at (703) 323-7180. Printed submissions qualify for SBE recertification credit. Fax submissions to (703) 764-0751, or send them via e-mail to [wrwbench@aol.com](mailto:wrwbench@aol.com)

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Circle (210) On Reader Service Card  
World Radio History

# Tower Guying Systems Explained

**Troy Conner**

In this and upcoming articles, we will revisit the subject of tower guying systems, a topic of paramount importance. Almost invariably, if any portion of a guy system fails, the tower is subject to collapse. Like the proverbial chain, a guy system is only as strong as its weakest link.

First, some history. Later, I will jump into some basic conceptual physics. I cannot cover a fraction of the engineering involved in even a simple system. I hope, however, to provide enough of an

overview of the subject so readers can at least communicate intelligently with both tower workers and structural engineers.

Tower guy systems undoubtedly were inspired by the rope stays used to (laterally) support the masts of sailing ships from past to present. Communications towers have utilized guy wires from their beginnings. We can trace the evolution of catenary-type tower guy systems from the era of Marconi to the present.

Interestingly, a photograph of one of Marconi's early towers after its collapse appears to indicate a guy-related failure. Modern tower guy systems

probably are more analogous to suspension bridges than they are to ships' masts, in terms of the current level of engineering sophistication.

The principles behind the need for guying systems are pretty simple. I ask that you pardon my various absurd analogies and odd comparisons, but I hope they assist your understanding of some engineering concepts. Picture a tall, slender object standing on level ground, perhaps a stack of children's blocks or, even better, an NBA basketball player who stands 7 feet tall.

To give an object any real degree of horizontal stability, we must widen its footprint, as is done in the design of a

self-supporting structure, thus creating a naturally more stable triangle. The proportion between *how wide* vs. *how tall* defines how stable the object will be. How, then, do we balance a tall object without widening its base, and still resist the forces of the wind?

Back to our basketball player, only now he stands in a 40-knot wind. In order to remain upright, he instinctively widens his stance and leans into the wind. This effectively changes his center of gravity, or CG, and prevents his toppling. He essentially has become a "self-supporting tower." This won't do at all.

## Hitting the highway

So let's be mean and tie his feet together; even better, bolt his shoes down in the bed of a pickup truck and head off down the highway. Unless we tie him down, it is unlikely he will be able to remain upright at highway speeds, so lash a rope from around his waist to the front of the bed.

Our rope prevents him from tipping backwards as he is buffeted by the breeze. To make our analogy more accurate, add two more ropes from his waist to the back corners of the bed. Ideally, the three should

**Tower guy systems probably are more analogous to suspension bridges than they are to ships' masts.**

be spaced equally, 120 degrees apart.

If we added another three ropes from his knees to our three equally spaced anchors, our analogy becomes that of a guyed tower with two guy levels and three wires at each level. Still, if you follow my example, our tall ball player is only half-supported. His upper body still is cantilevered above the ropes at his waist.

To complete my awkward example, we probably need to add a third set of ropes around his chest to horizontally support (or *guy*) our NBA player. Quickly looking at proportion, what would happen if we were to replace the three sets of rope with, say, dental floss? I seriously doubt that our new, smaller "guy wires" would support our "tower," the wind load being greater than the carrying capacity of the "guy wires."

## Oversized guy wires

What if, on the other hand, we replaced the smaller ropes with 3-inch tug-boat tow rope? Sure, it would horizontally support our "structure," but what about the added weight? It's a bit of overkill, wouldn't you say?

So each individual tower has a range of optimal size cables, and number of guy wire levels or heights.

Let's get more realistic and mentally picture a 500-foot guyed tower. For this example we will employ four levels, or elevations, of guy wires spaced at 100, 200, 300, 400 and 500 feet, for a total of 12 guy wires.

In this case our maximum unsupported span (height) between guy levels is 100 feet. If we hit this structure with an 80-mile-per-hour wind, first the whole tower will lean a bit, then the tower sections between the guy levels will attempt to

See WIRE, page 17 ▶



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► WIRE, continued from page 16  
 bow. As long as the tower is engineered properly, no problem.

If we keep increasing the wind, eventually we reach a point of failure. If the horizontal bending momentum exerted by the wind exceeds the strength of the tower components, a structural failure is inevitable. Once a leg buckles, and any one span between guy levels fails, the tower usually is doomed.

**More guy wires**

We could reinforce our imaginary example by adding additional levels of guy wires. What if we put a set of wires at 50 feet and then added sets between

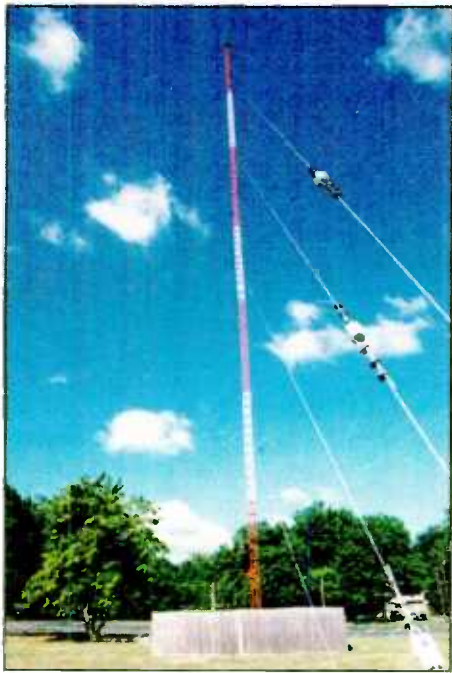


Photo by Alan R. Peterson

Proper guy system design is critical for tower support.

each leg of the existing guy levels? Now our tower has eight guy levels, with 24 total wires, and a maximum unsupported span of 50 feet.

Our tower now has far greater horizontal rigidity, but it also carries more weight bearing down upon it by the additional guy cables. An engineer might refer to this as an increase in the *vertical component* or *vector*. Again, as long as all is designed, engineered, fabricated and erected properly, the tower should be fine, barring any environmental conditions beyond its design parameters.

Instead of additional guy wires, we could strengthen our conceptual tower by reinforcing the legs and beefing up the horizontals and diagonals. Again we have strengthened the tower but at the expense of greater weight, and probably a slight increase in wind-bearing area.

This discussion is highly simplified. If we actually engineered a tower, we would look at the catenary guy system as but one portion in the integrity of the structure. When properly designed, a guyed tower is in a finely tuned state of balance, or equilibrium.

To me, a large guyed structure is art as well as engineering. It is as delicate as possible but still formidably strong.

I will continue this fundamental examination of tower guying systems next time, plunging into the types and descriptions of various guying systems. If you have any questions about these terms and concepts, let me know.



Troy Conner is the owner of Tower Maintenance Specialists. Reach him by phone at (704) 837-3526, via fax at (704) 837-1015 or via e-mail to radioworld@imaspub.com

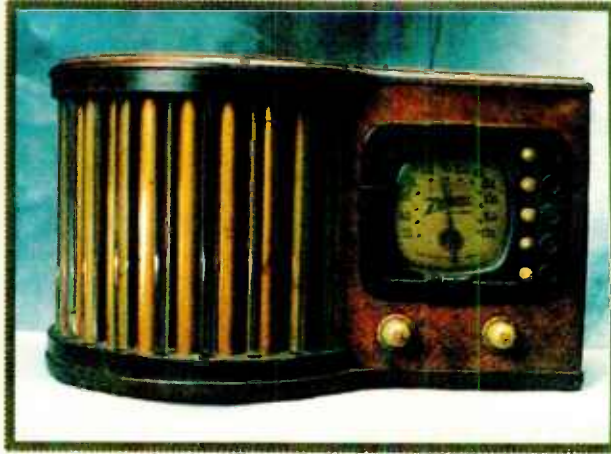
## You Must Remember This



The Zenith 5R317 had a glass rod grill, which accounts for the reflection you see in the photograph. An inner row of metal pipes and an outer row of glass rods gave this radio a unique appearance.

The 1937 model used a five-tube design: types 6A8G, 6Q7G, 6K7G, 6K6G and 6X5G.

The power output of 3.5 W drove a 5-inch speaker.



This is one in a series of photographs in RW featuring classic and less well-known radios. The pictures and descriptions are by collector Bill Overbeck, president of the Delaware Valley Historic Radio Club. Contact him via e-mail at *billoradio@aol.com* or through RW.

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FEED LINE

# Certain Conditions Apply for CP

W.C. Alexander

This is the sixth in a series of articles about building an expanded-band AM facility. The previous part appeared Feb. 18.

Sometimes the FCC places special conditions on construction permits. Such special conditions can be triggered by a number of factors, such as shared use of facilities (diplexing) or close proximity to other AM radiators or directional arrays. The next two installments in this series examine some of the special conditions you can expect when building an expanded-band facility.

## Type acceptance

One special condition likely to appear on virtually every expanded-band construction permit requires either the use of a type-accepted transmitter or the submission of prescribed transmitter data if using a non-type accepted transmitter. The purpose of this condition is to ensure the spectral purity and stability of the transmitter used.

The FCC will want a complete description and circuit diagram of the transmitter, description of the carrier frequency determining circuits, complete operating parameters, and measurement data as would be required for a grant of type acceptance. In submitting this data, you will, in effect, be applying for type acceptance of the transmitter, although

FCC approval will apply only to your transmitter (not every transmitter of that make and model).



One might think that this would only be a problem if the transmitter selected is manufactured overseas, but that is not necessarily the case. Domestic transmitters more than four or five years old may not have been type accepted at expanded-band frequencies. It is important to contact the manufacturer and ask whether the transmitter is type accepted for the expanded band.

A proposed diplexed operation at a new or existing site necessitates another special condition on your construction permit. You must submit measurements showing that filters, traps and other equipment have been installed and adjusted to prevent intermod and spurious products from being generated by the diplexed operation.

Any time two signals are combined, the potential exists for the signals to mix together, producing sum and difference frequencies. Diplexing equipment isolates each station's transmitter from the other's to prevent the occurrence of mixing. Once the installation is complete, you have to make measurements showing

that no undesired products are being radiated in excess of the FCC-prescribed limits (see 47 C.F.R. §73.44).

In making these measurements, you must find a location where the signals from both the regular and expanded-band stations are strong but not so strong as to overload the measuring equipment. If the regular-band station uses a directional array, a location should be chosen in the main lobe of the directional pattern. This location should be relatively close-in, in the neighborhood of 1 km or so.

Using a spectrum analyzer or splatter monitor, measure the occupied bandwidth of each station in the same way as when annual occupied bandwidth measurements are made. Then, using a spectrum analyzer or field intensity meter (FIM), check for intermod products. Check the sum and difference frequencies first, then look for third order products. Note the results of all these measurements.

## Second look

If your intermod products are greater in amplitude than 80 dB below the carrier of either station, check to be sure that the product is not being generated within the spectrum analyzer or FIM. Move to another location where the field strength from both stations is lower and take another look. If the product is still there, turn the carrier of the expanded-band station off. If the product is still there, it is not intermod

and likely is coming from some other source unrelated to the diplexed operation. If using an FIM, you can listen to the demodulated audio of the suspected product and possibly determine its source.

If turning the expanded-band carrier off does away with the suspected product and you are certain that your test equipment is not being overloaded, it may be necessary to take another look at the diplex filters. Something may be misadjusted, or a transmitter may be mistuned in such a way that an intermod product actually is being produced. This problem will have to be dealt with before you can go on.

To satisfy the special condition of the CP, you must draft a statement for submission to the FCC along with the license application/request for program test authority. Include a description of the diplexing equipment (a diagram would be good), a statement describing the procedure used to measure spurious, harmonic and intermod products, and a data table showing the results of the measurements. If you observed no products above the noise floor of the measuring device, so state, including the manufacturer's listed noise floor number for the analyzer or monitor. Conclude your report with a summary statement that the measurements show no spurious, harmonic or intermodulation products in excess of FCC-prescribed limits.

■ ■ ■

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

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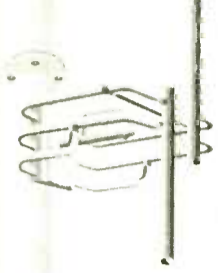


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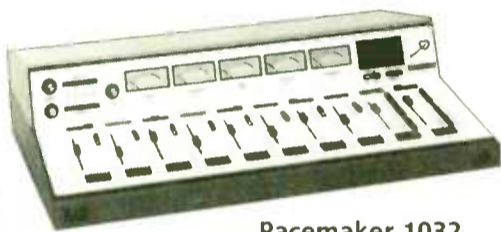
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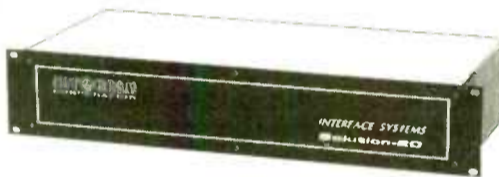
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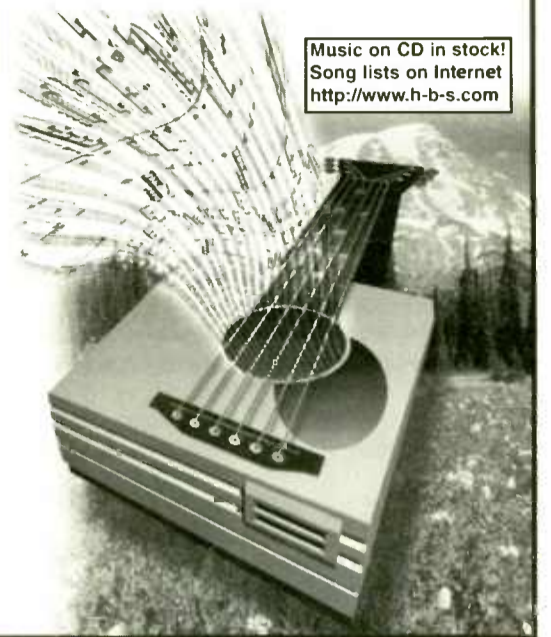
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READER SERVICE NO. 101



# Focus on Internet Services for Radio



## Come on, Money: Internet for Sale

Lynn Meadows

Back in the old days, radio stations often set up Web sites just because. Way back then, Internet revenue often was as intangible as a puff of smoke.

What a difference a year (or two) makes. Today, there are several Internet revenue models to choose from, and companies and services promising to put your Internet operation in the black quickly.

One early Internet revenue model was what Charles Parra, chief information officer of Interep, calls the "build it and hope they'll come" approach: The station sets up a Web site, provides exciting content, builds up traffic and starts to attract advertisers.

Sounds like radio ... except for the payoff. Banner ads typically run \$.025 per impression, or \$25 for every 1,000 visitors. This model works well for heavily trafficked sites like Yahoo and Microsoft, said Parra. Others say it can work for stations — if visitors have a reason to come back. Margaret Shiverick, vice president, corporate development for content provider MJI Broadcasting, said she thinks stations have realized that people will not return to a site unless the content is compelling.

"If you have daily news or daily information served on your site, people will come back many times in a week or a month," said Shiverick. In this model,

more traffic means more money.

One big trend is that consumers' buying patterns are starting to shift toward using the Internet to make purchases. Many stations already sell station-related merchandise on their Web sites, but both Katz Radio Group and Interep have developed programs to move to another level.

Among other components, the I:Merchandise marketing initiative from Interep and the Radio-VillageNet plan from Katz and ElectricVillage provide a gateway from the station to other Internet retailers. The station gets credit for transactions completed by Web users that it refers from its Web site to the Internet retailer.

A station could put its playlist on the Web, suggested Gerry Boehme, director of information services for Katz. When a site visitor clicks on an artist, he or she could be given the opportunity to buy the whole CD and the station would get the credit.

"I think the jury is out on merchandising," said Shiverick. "If you look at the rates that a station will get as a percentage of selling a \$15 CD or \$10 T-shirt or a book from Amazon.com, it is a lot of nickels and dimes and it really depends on how much volume they can generate."

Both Katz and Interep are striving to reach a critical mass of station Web sites in their respective programs. They then will be able to aggregate individual listener visits to the radio Web sites and approach national and regional advertisers.

"An individual station by itself may not be able to generate traffic that would be significant enough to sell the site to an Internet advertiser," Boehme said. But a network of 1,000 stations representing a total of 400,000 or 500,000 page views each month would appeal to those advertisers.

"For the first time, it provides the Internet with the ability to target by local regions or by market," Parra said. And the pool of dollars this model offers is completely separate from the radio advertising business.

### Audio on the 'net

There are many companies like *Audiolounge.com*, AudioNet and RealAudio that can help you broadcast your signal on the Internet. The question is how that makes you money.

One netcaster told Miriam Carey, marketing and media manager for Telos Systems, that he is getting 50 to 150 more listeners every day now that his signal is available on line. Telos partnered with Olympia Online to launch *Audiolounge.com*. Many of his listeners, the broadcaster said, work downtown in glass and steel buildings. His signal does not reach them the old-fashioned way.

Andy Collins, manager of affiliate relations for AudioNet, said Internet broadcasting can both increase time spent listening and drive a lot more people to your Web site. That gives you more interaction with listeners and more opportuni-

ties to make money.

Stations have other options for generating revenue. Omar Saleh, president and CEO of WebcastCenter, a division of SRT Enterprises, said his company hosted a broadcast at the U.S. Senate for a small group who wanted to do a private broadcast to several states at once.

"They paid us money, but if a radio station in Washington, D.C., were working with us, we could have said 'Look, you can resell these services,'" said Saleh. "You'd be amazed at the number of companies, school districts, institutions and the like which can use these services."

WebcastCenter offers both the technology and marketing assistance for selling services like this. And beyond facilitating third-party broadcasts, Saleh said using the multimedia functionality between the interactive environment of being on the air and being on the Internet at the same time can be rewarding.

Radio stations, he suggested, could put a local high school football game online or offer an online remote complete with chat room to a local car dealership.

### What you can do

Say no to "value added" promotions? "Some stations feel they can give them (banner ads) away as value added," said Shiverick. "Those stations, I think, have a harder time converting that to a real sale."

Instead, Boehme suggested using the site as an attachment to a broadcast campaign. Sell a radio ad that gives listeners a reason to visit your Web site, such as getting details on leasing a car.

"The Web ad will be a charge in addition to the broadcast ad, so it's not a value-added free promotion," Boehme said. "All the things that radio has not been able to do, like supply visuals, supply detail, track customer performance, get credit for somebody that heard a spot on the radio and actually went and did something ... The Internet ad can actually do all those things for a radio spot."

Remember, one size does not fit all when it comes to Internet revenue models. A sports station or legendary radio station may want to use the Internet to broadcast to out-of-town fans, while a small local station may see no point to audio on the Web.

As is true in radio, promotion is critical to a Web site's success. Most revenue models depend on high traffic. Promote your station on the air, put the Web address on bumper stickers, T-shirts, key chains and talk about it at local events.

As is also true in radio, creativity separates those whose revenue trickles in and those whose revenue pours in. Shiverick listed several ideas she had seen in action. For instance, many stations sell sponsorship for portions of their Web sites using local advertisers the way they would at a local concert or event.

Radio sites would also be a perfect platform for classified advertising from employment to used musical instruments, Shiverick said. Technology, she said, is available to allow a Web user to download a song and record it. A station could play a new song and send listeners to their Web site to download it.

If you have a concert page on your site, Collins said, think about selling a link to a ticket agency for a certain price each month.

The key, said Saleh, is to look for creative ways to use the technology, like getting the local Rotary Club to pay to do a broadcast online or getting a client to pay for an online remote.



## In This Section

Web sites. Webcasting. Multi-casting. Audio file transfer. Online chat groups.

The Internet allows broadcasters access to an amazing amount of information. *RW* has reported on radio's use of the Internet since our industry first became aware of its immense potential. As we did last year at this time, *RW* again pauses for a look at the state of Internet services for radio.

*RW* Technical Consultant Tom McGinley explores engineering resources available on the Web. Last year he picked out the 10 most useful sites for engineers; this year he updates his list, and adds a few honorable mentions.

Radio managers looking for help to make money from their Web presence can choose from many, many offerings. Lynn Meadows takes a look at trends in Internet revenue resources.

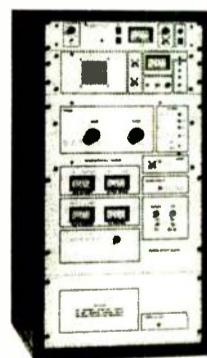
Peter Zollman provides an update on Webcasting, an area of explosive growth even for the Internet arena; and Bob Andorfer has tips on what makes a winning radio station Web site, and identifies some common mistakes.

What's your radio Web strategy? Tell your fellow readers about it. Send e-mail to [radioworld@imaspub.com](mailto:radioworld@imaspub.com) or write to the address on page 5.

— Paul J. McLane, Editor  
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# Use the 'Net to Become a Better Radio Engineer

**Thomas R. McGinley**

The Internet changes rapidly. Last year, we identified the most useful Web sites for radio engineers. Most of these have expanded and refined their offerings. With the help of several dozen other engineers, here are our top 10 sites and some honorable mentions. Sites marked with an asterisk appeared on last year's list.

1. \*[www.broadcast.net](http://www.broadcast.net) Pioneer broadcast Webmaster Dave Biondi has dramatically expanded his "Broadcast Industry Homepage," built around a growing, massive list of links to equipment companies, service suppliers, consultants, societies, associations and more.

"The Learning Center," a relatively new addition linked to [amazon.com](http://amazon.com), offers an electronic bookstore of tapes, videos and books for broadcasting. BNet offers BWare, a large resource of freeware, shareware and demoware for engineers, and BClass for free classified ad listings for used equipment.

BNet also links to [eas.net](http://eas.net), a separate Dave Biondi Web site devoted to EAS information.

2. \*[www.sbe.org](http://www.sbe.org) The Society of Broadcast Engineers site has many valuable resources: the electronic version of the monthly newsletter "Short Circuits," Jobline listings updated weekly, links to local SBE pages and local frequency coordinators, a directory of members, certification information, and a vast number of broadcast links.

3. \*[www.nab.org](http://www.nab.org) The National Association of Broadcasters continues its impressive presence. You can buy items from The NAB Store or check out job listings at the Employment Clearinghouse. The Science and Technology area includes information on technical conferences, standards-setting activities, technical publications, FCC news and rulemakings.

The "Broadcast Engineer's Guide to the FCC" is handy; it lists all relevant FCC departments, staff members and phone numbers. If you work for an NAB member station, you can access the "Members Only" areas, including online copies of "NAB Tech Check."

4. [www.fedele.com](http://www.fedele.com) "Close-up With Joe Fedele" is a lesser-known but well-done offering for broadcast engineers. Fedele is a former WCBS-TV chief engineer, now a consultant and college professor, who has built a site filled with goodies like "Technology News of the

Present and Future." Joe's "Tech Notes" section features FAQs about the Internet, definitions of 'net terminology and acronyms, and useful links to HTML and Web site authoring resources. A jobs area includes links to every known broadcast engineering jobline listing service.

5. \*[www.fcc.gov](http://www.fcc.gov) Like that venerable bureaucracy, [fcc.gov](http://fcc.gov) remains a multilayered maze that can be difficult to navigate, although it is getting easier. The "Finding Info" and "Site Map" tabs will guide you. The Mass Media Bureau Audio Services Division offers AM and FM databases available for downloading. A useful area has recent actions and status reports on pending applications.

The Engineering and Technology section (OET) provides valuable information regarding EMF measurements, the new ANSI guidelines and related hot topics. You'll also find electronic copies of the consumer electronics and telephone interference troubleshooting handbooks, plus the AM/FM Station Self Inspection Check List kits.

A topic of concern to many broadcasters is the FCC freeze on major change applications. Curiously, no information whatsoever regarding the freeze can be found in this Web site as of this writing.



6. \*[www.radiostation.com](http://www.radiostation.com) Mike Elliott Broadcast Services offers a site that has converted the FCC AM and FM station databases into a user-friendly format.

Included with facilities information is a sharp-looking scaleable map of every transmitter site. The daily FCC updates of actions on applications are available here. However, the AM database does not yet include all directional antenna system parameters. What's the hold-up, Mike?

7. \*[www.radioinfo.com](http://www.radioinfo.com) This site aptly calls itself "Radio's Complete Resource Center," now with links and listings of more than 9,000 industry suppliers. A station database is here, plus links to more than 3,300 station Web sites. The site has been reorganized and employs an efficient internal search engine. A broadcast conference area allows postings and responses on any subject. "Links to Other Radio Areas" includes interesting radio sites not found elsewhere. Other additions include broadcast stock quotes, FCC self-inspection lists and a handy daily engineering check list.

8. [www.hallikainen.com](http://www.hallikainen.com) Harold Hallikainen, for years a contributing columnist in

RW, has established one of the most useful and perhaps one of the more important sites for engineers. Hal has been able to provide all FCC rules and regulations as a free online resource. Although the Government Printing Office makes the entire Code of Federal Regulations available on the 'net, finding the rule you need in Part 73 or 74 in readable form will turn you into a rat scrambling through a maze. ([www.access.gpo.gov/nara/cfr/cfr-table-search.html](http://www.access.gpo.gov/nara/cfr/cfr-table-search.html)).

Congratulations on a splendid service, Hal! Now that everyone can easily access the rules for free, maybe more stations will follow them. Also available on this site are archives of the many RW articles Hal has written on FCC rules and remote control issues.

9. [www.airwaves.com](http://www.airwaves.com) Bill Pfeiffer, moderator of the popular Internet radio news group [rec.radio.broadcasting](http://rec.radio.broadcasting), has built a handy Web site including a searchable radio station database, based on the FCC.

Each listing shows facilities info including a map of transmitter sites. "Radio Career Connection" has classified ads of job listings, humor and thought-provoking editorial content.

10. [www.cpiradio.com](http://www.cpiradio.com) International engineering consulting firm Caughill-Palitz Inc. has built a fine Web site for radio engineers. Nice graphics guide you through the site, which includes a useful section of technical reports and papers written by well-known industry authors, columns by tech experts answering questions and a large collection of new and useful links with comments.

## Honorable Mentions

ISDN rapidly has become a heavily used workhorse for remote broadcasting activities. A number of sites have useful information. Three mentioned most often by our engineering brethren are Dan Kegel's ISDN Page ([www.alumni.caltech.edu/~dank/isdn/index.html](http://www.alumni.caltech.edu/~dank/isdn/index.html)); Ian Britton's site ([www.britton2000.com/isdn/index.htm](http://www.britton2000.com/isdn/index.htm)); and Steve Church's page ([www.zephyr.com/tech.htm](http://www.zephyr.com/tech.htm)).

For engineers getting more involved with Web site design and Webcasting activities, check out [www.brsradio.com](http://www.brsradio.com), [www.radiotower.com](http://www.radiotower.com) and [wmb.rmit.edu/stationlist.htm](http://wmb.rmit.edu/stationlist.htm)

Equipment manufacturers and commercial Web sites are good resources. They are too numerous to list fully; check with your equipment dealer or find them via the various Web search engines.

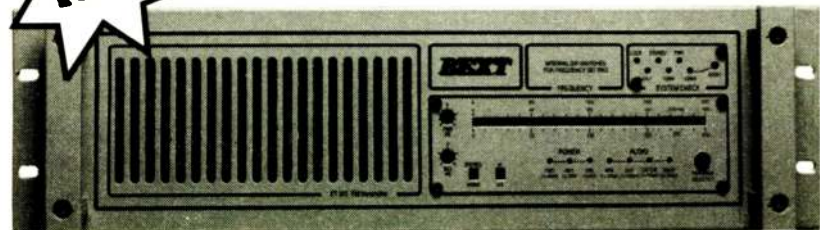
A site of note is [www.onairinc.com](http://www.onairinc.com), which offers a free download of "EzTech," an easy-to-use program for equipment maintenance tracking and record keeping.

Another group of useful sites includes online service providers of resources needed for preparation of FCC applications. Check out Dataworld at [www.dataworld.com](http://www.dataworld.com), Communications Data Services at [www.comm-data.com](http://www.comm-data.com) and Doug Vernier's V-Soft Inc. at [www.v-soft.com](http://www.v-soft.com). All provide numerous software tools for frequency searches, contour predictions, mapping, population counts and other data services on a fee-per-task basis.

■ ■ ■

Thomas R. McGinley is chief engineer of WPGC-FM/WARW(FM) in Washington. He is technical advisor to RW. Reach him via e-mail at [k7qa@aol.com](mailto:k7qa@aol.com)

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# Webcasting: New Developments

**Peter M. Zollman**

Webcasting just keeps getting more sophisticated.

IP Multicast should take off in 1998, industry leaders agree, making Webcasting a much more efficient and viable medium.

"The key technologies and products are in place," said Martin Hall, chief technology officer of Stardust Technologies, and a leader of the IP Multicast Initiative. "What we've needed is the key business drivers from multiple industries to make multicasting take off.

"We're seeing that now. Various content providers have now completed the technology for multicasting. ... It will take off in 1998 and grow through the rest of the century. It's a stark reality that you cannot do everything that people want over the Internet with unicast, but you can with multicasting."

What is multicasting?

Simply put, it is "broadcasting" — one-to-many — over the Internet. Unicasting is one-to-one communication, the current method of most data distribution on the 'net.

And why is multicasting important? Bandwidth.

If 53 people are watching or listening to a single event over the Internet — say, the Super Bowl or another blockbuster program — they suck up the bandwidth of a T1 line (1.5 megabits per second) if they're all receiving it by unicast. With IP Multicasting, they become the equivalent of one user, and hundreds or even thousands of users can receive that signal at the same time. (The term "IP Multicasting," or "Internet Protocol Multicasting," is used to differentiate the technology from the "multicasting" or distribution of several program channels, which some over-the-air broadcasters are discussing as a possible option with their digital signals.)

An IP Multicast summit was held in San Jose, Calif. in February to bring industry leaders together.

For some Webcasters, IP Multicast is a lifeblood. Without it, their multiple users will clog up servers, routers and other Internet infrastructure — and quality will never improve. The IP Multicast group ([www.ipmulticast.com](http://www.ipmulticast.com)) has gathered more than 100 companies to support the technical infrastructure upgrades needed at Internet Service Providers, backbone companies, network hubs and other points on the Internet — from the servers all the way to the home PC users — to make IP Multicast work.

Companies including Microsoft, Netscape, Cisco, Intel, 3Com, Silicon Graphics, Hewlett-Packard, RealNetworks and Hughes Network Systems, along with a number of content providers, have joined the effort.

Microsoft's upgraded NetShow 3.0, the latest version of its networked multimedia software tool and player, was released in beta at the Microsoft Web Tech-Ed conference in Palm Springs, Calif., and demonstrated at Internet Showcase in San Diego.

On the server (or content-provider) side, "This is a significant enhancement in terms of audio and video quality, in addition to tight integration with SiteServer and other solutions for building (Webcasting) businesses," Gary Schare, lead product manager for NetShow, told *RW*.

For the end user, he said, "There's also

a brand-new client architecture that adds a whole lot of functionality for playing audio and video."

As client software, NetShow 3.0 will be renamed "Windows Media Player" and will be integrated into Windows. It will have the capability to play a number of different Web formats, including AVI files, WAV files, QuickTime movies, ASF files and RealAudio and RealVideo.

"The goal is to, right out of the box, let Windows play all these local and remote media types, so end users don't have to deal with different players, and to make sure that content providers don't have to provide it in different formats," Schare said.

The public release of the server-side

software is expected "within the next few months," with the client-side software expected "in the first half of the year," he said.

## Webcasting books due

Two new books on Webcasting, one with a broadcaster's perspective, and the other a more general industry viewpoint, are due out soon.

"Internet Age Broadcaster," by Peggy Miles of Intervox Communications and Dean Sakai of Sakai Interactive, is scheduled for release by the National Association of Broadcasters at its convention and exhibition in Las Vegas. The cost: \$49.95 members, \$79.95 nonmembers.

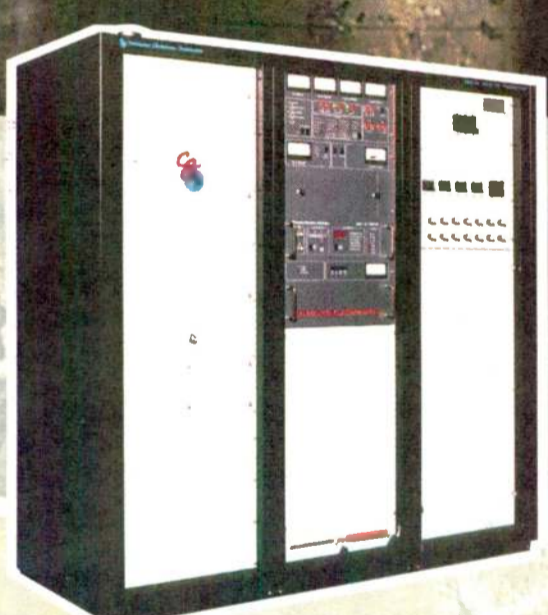
"Mecklermedia Internet World Guide to Webcasting," also by Miles, is due out in time for Internet World starting March 9 in Los Angeles. Published by John Wiley & Sons, it has a foreword by Michael Wheeler, president of MSNBC Business Video. (Paperback, 416 pages, \$29.99, or \$23.99 through [Amazon.com](http://Amazon.com))

"Cost and sound quality have been major detriments to making Internet broadcasting, or Webcasting, a reality until now — to show a return on investment for broadcasters," Miles said. "There are new tools that have become available in the past few months, and more great Webcasting hardware and software will make the difference in '98."

■ ■ ■

*Peter M. Zollman (pzollman@aol.com) is a consultant in interactive services based in Altamonte Springs, Fla.*

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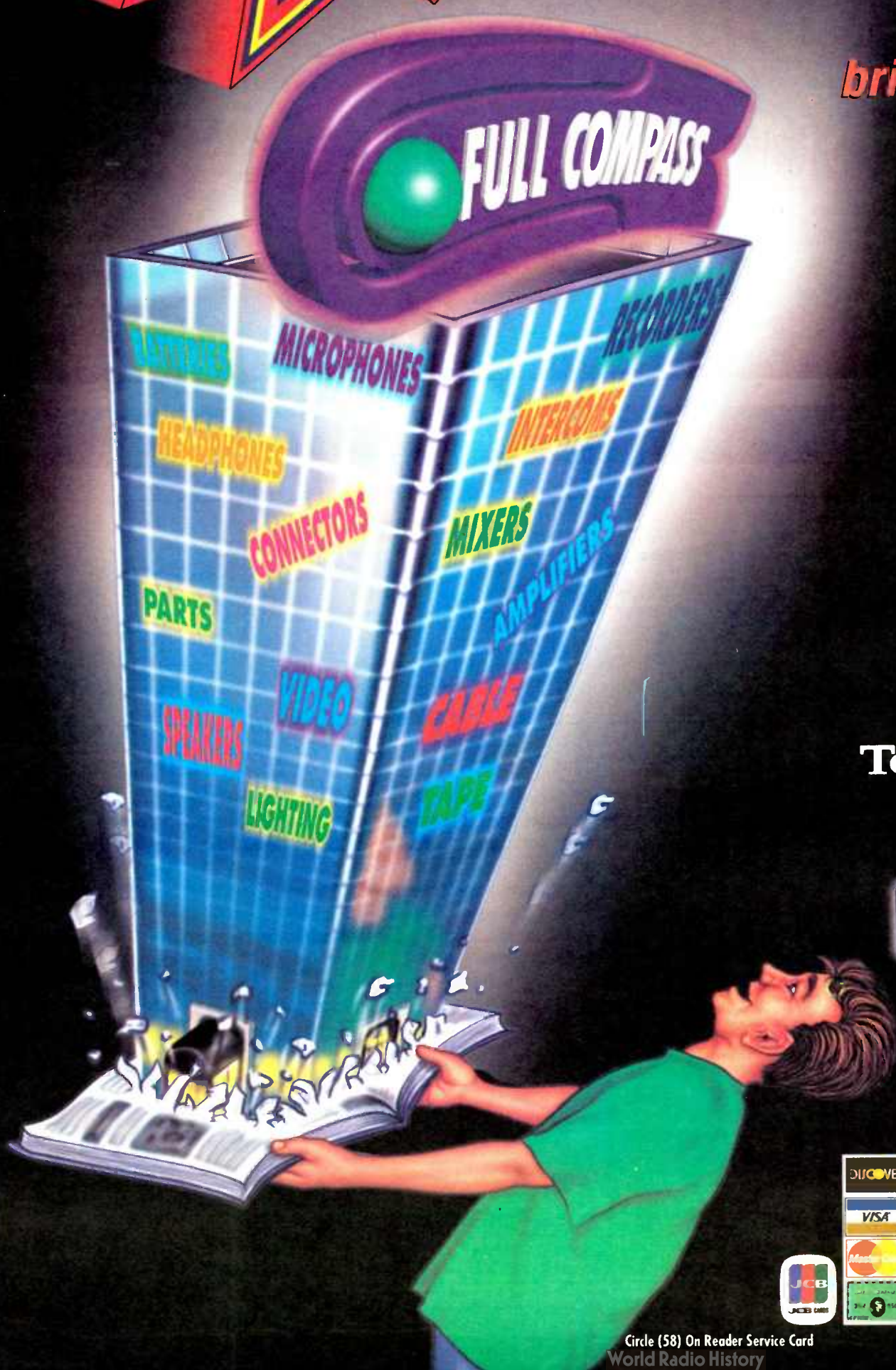


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# How to Make Your Station Site Sizzle

**Bob Andorfer**

What makes a great radio station Web site? Having surfed the Web for a number of years, and having visited dozens if not hundreds of sites, I can tell you that, although each is unique, the good ones share some common denominators.

*Start with an objective.* When you visit a Web site for the first time, you can tell when a great deal of thought has gone into it, and when it is just an afterthought. Regardless of whether you have a site, or are planning one, you must ask yourself the question, "What do I want to accomplish with our Web site?"

According to Jennifer Williams, marketing director of WCSX(FM) near Detroit ([www.wcsx.com](http://www.wcsx.com)), "A successful radio station Web site should reflect exactly what you're doing on the air ... and I don't mean just musically. It

should provide your audience with information that applies to their day-to-day lives and is of interest to them. Our goal is to provide a Web page that serves not only our listeners but also provides opportunities for our clients."

Some stations use their pages to promote their morning show or the entire air staff; while others are a listener resource to numerous artist Web sites. Still others use their sites to keep listeners up-to-date on contests, remotes and other activities at the station.

### Better than a billboard

"Originally, the KOOL 99.3 Web site ([www.kool993.com](http://www.kool993.com)) was intended to be nothing more than an online billboard along the cyber highway," said Webmaster/Air Personality Scooter Alan Fortney of WWKL(FM) in Harrisburg, Pa.

"Then, we realized how valuable the Internet could be, if used wisely. Using the KOOL guestbook (one of the most visited pages at their site) we began building databases of our listeners." The choice is yours, but this is the first, and possibly most important decision you will make toward determining if your site succeeds or fails.

Williams of WCSX is big on using the Web site for contests. "Contesting has been the best tool to get people into the site," she said, "and once we get them in the door, they tend to stay and then keep coming back for more!"



fewer graphics that loads more quickly, or a more complicated version of the site that takes longer to access. If you have doubts about how long it takes for your site to load, ask a friend or neighbor who has a typical home PC set-up to log on and time it. You might be surprised.

*Keep it short.* Great station Web sites can contain a lot of information, they just don't put it all on one page. While it is possible to scroll up and down a large single page of information, the best sites break information down into chunks: for example, one page for contests, one for air personalities, one for artist links and one for additional station information. This chunking also makes it easy to update specific sections of the site, as changes occur.

*Make it easy to contact you.* Good station Web sites make it easy to contact them, by displaying an e-mail link or graphic right on the first page, where it is visible. A good example of this is the Web site of KKUL(FM) in Lincoln, Neb. ([www.kool105.com](http://www.kool105.com)). The first thing you see on their home page is the station mailing address and phone number.

Program Director Doug Jennings, who See SITE, page 31 ▶



*Keep it simple.* While Web sites with a lot of graphics are great to look at, they can be terribly slow to load for the average Web surfer with an older PC, or with slower modem access. If it takes too long to see all those wonderful graphics, a listener might decide to go elsewhere.

One option that WCSX uses is what's called a "front door." The front door is an initial Web page that allows the surfer to choose between a simpler Web site with

## It's Money, But It's Not Easy

"We're making money. It's not easy money. It would be a lot easier to sell radio time."

So said Terry Dean, national sales manager for WKRQ(FM) in Cincinnati and executive director of the online shopping mall, QMall ([www.qmall.com](http://www.qmall.com)).

The station, soon to be owned by CBS, launched the mall in October. The objective was to create a user-friendly Internet marketplace and cut down on Internet address confusion. Local and national advertisers using the site can tell listeners to visit QMall.

There is plenty of variety at the online mall. From QMall, you can shop for groceries, visit Queen City Brewing or enter the M&M contest to win a trip to the 1998 MTV Video Music Awards.

"It has done OK," Dean said, but the station has discovered the site cannot

exist on its own. More entertainment and information is being added. The new goal is to make sure anybody who wants to know anything about Cincinnati can find it at the mall.

For others considering something similar, Dean said go into it with limited expectations and expect a great deal of apathy.

"Sooner or later, everyone will have to cut their teeth on this medium."

Right now, however, the Internet is more of a library of information than a highly developed multimedia medium, he said.

When his general manager asked what they had gotten for all the time, money and work that went into Qmall, Dean's answer was simply, "An education."

— Lynn Meadows

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MP-2-4	4	2,000W	3.3	\$1,820
MP-3-5	5	3,000W	4.1	\$2,270
MP-3-6	6	3,000W	5.2	\$2,740

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GP-4	4	6,000W	3.4	\$2,600
GP-5	5	6,000W	4.3	\$3,150
GP-6	6	6,000W	5.5	\$3,700

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SGP-4	4	10,000W	3.3	\$4,500
SGP-5	5	10,000W	4.1	\$5,300
SGP-6	6	10,000W	5.2	\$6,100

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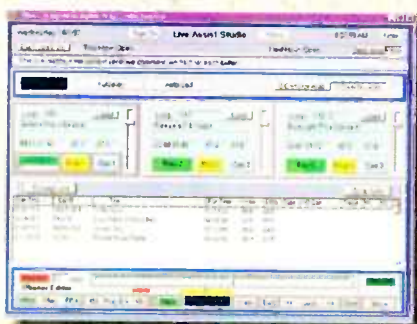
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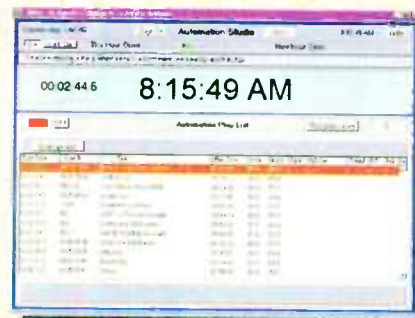
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# Create a Winning Radio Web Site

► *SITE*, continued from page 27  
 designed the KKUL page, said, "My personal objective for the Web site is to have an additional way to communicate directly with our listeners. We also 'pitch' on certain occasions the ability to enter a contest on our Web page by sending us an e-mail."

If you want to get feedback on your site, don't make surfers search through page after page of information to find your e-mail address. The same goes for other station information that you might not ordinarily give out over the air, such as your fax number or directions on how to pick up prizes.

*Keep it current.* A Web site is not like a billboard that you can put up once and forget. If you want listeners to visit again and again, you have to give them something new on a regular basis.

"How many times have you gone to a station's site and it hasn't been updated in months?" Williams asked. "I was at another station's Web site (in January) and they still had a Halloween promotion on their main page."

That doesn't mean, however, that you have to redesign the page completely every few weeks. Consider the KKUL site. The site is simple in design, but is updated almost daily with news and information. Most of it is text-based, which can be typed and posted to the Web server quickly and easily. Great Web sites don't wait six months to

update information about the station. If you hire a new air personality, pull the old information quickly. You also should have someone checking the links from your page on a regular basis. When links from your site result in dead ends, it's like giving someone bad directions.

*Make it easy to navigate.* When

## When links from your site result in dead ends, it's like giving someone bad directions.

someone visits your site for the first time, it should be easy for them to navigate around your site. Cute graphics are a nice addition to any Web site, as long as they do not make it more difficult for surfers to find their way around. The best Web pages have the same navigation devices on every page of your site, and in the same location, usually at the top of the page or along the left side.

*Put someone in charge of it.* It is obvious to me when someone is in charge of a Web site. While you may

have a professional design firm put together your page, someone at the station should keep tabs on it. WCSX has several people on staff who can make minor updates to the page. You might also be surprised to find out the Web expertise that you already have on staff.

One other thing you should know: Great station Web sites are never real-

ly finished. Fortney of WWKL said, "While I'm very satisfied with the direction our Web site has taken, I believe that a good Web site is always under construction. You have to keep coming up with new and exciting ideas to make them come back for more."

■ ■ ■

*Bob Andorfer publishes an e-mailed prep service called "Say Something Funny!" Contact him via e-mail at topfivebob@writeme.com*

### BUSINESS DIGEST

## RealNetworks, AudioNet to Cooperate

**SEATTLE** Touting it as a new alliance, RealNetworks and AudioNet announced a joint agreement to promote programming hosted via the AudioNet distribution network and delivered with RealAudio and RealVideo 5.0.

The deal includes an agreement for AudioNet to use Real Networks RealSystem 5.0 to deliver selected audio and video Webcasts, with RealNetworks working as the marketing and promotion arm for AudioNet programming and corporate Internet broadcasting services.

Live TV news broadcasts from ABC's Dallas affiliate and NHL action are among the first programs to debut under the joint promotion. In addition, AudioNet will be listed on the RealPlayer and RealPlayer Plus sites pull-down menus to provide users with easy access to AudioNet programming.

— Sharon Rae

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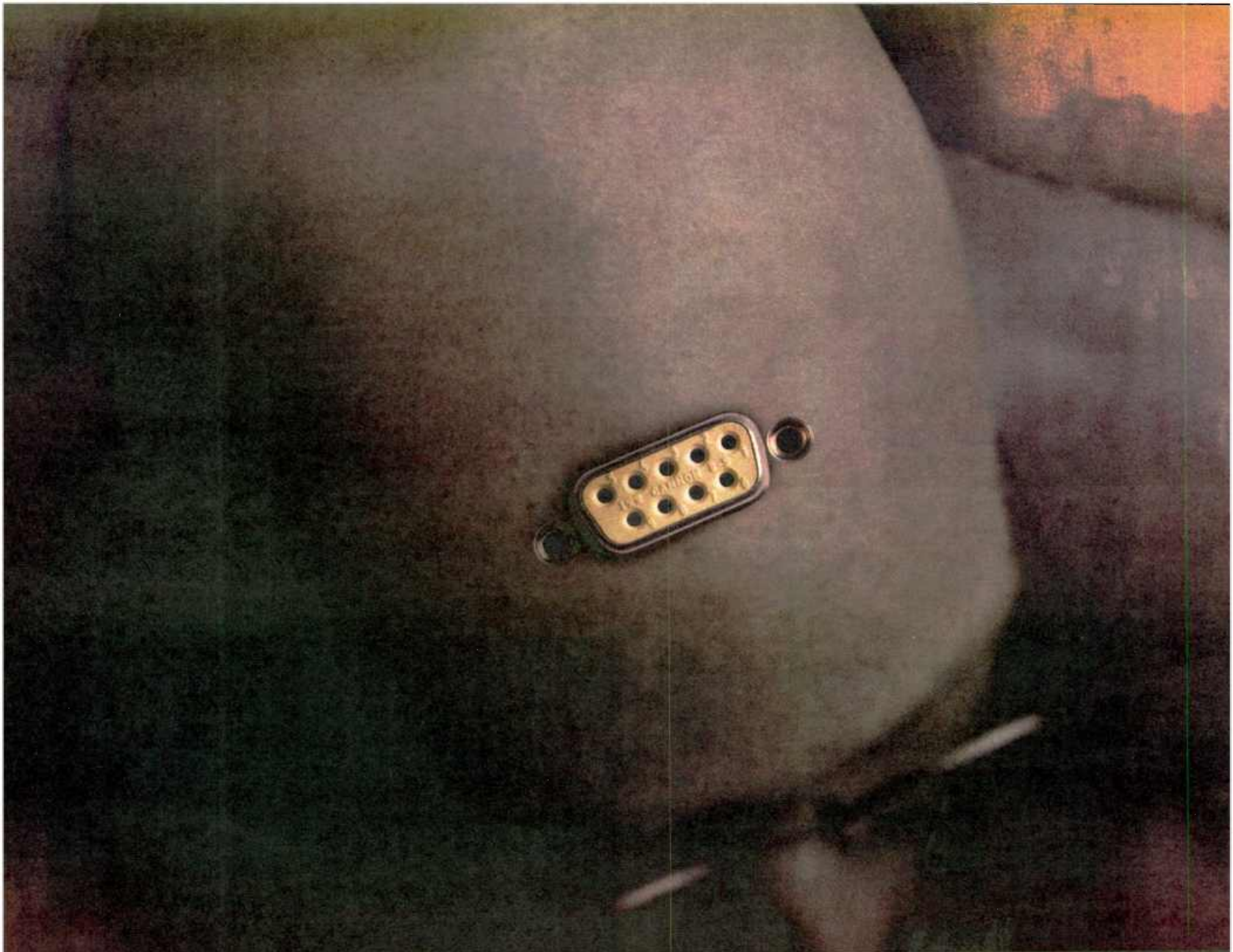


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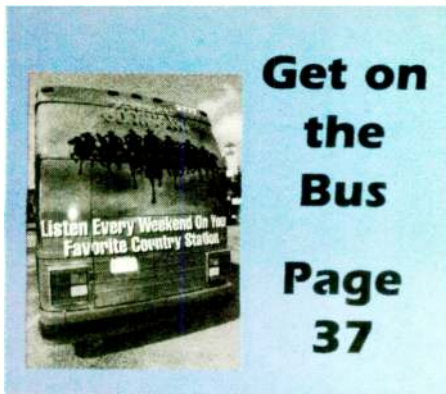
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# Running Radio



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STATE OF THE FORMAT

## Hispanic Radio Comes On Strong

Bob Rusk

**LOS ANGELES** By the year 2005, Hispanic Americans will outnumber African-Americans as the largest minority in the United States, the U.S. Census Bureau projects. Hispanics will then rank as the second-largest population group in the country, behind only non-Hispanic whites.

Growing at a rate nearly nine times faster than the non-ethnic population, there are currently an estimated 30.5-million documented Hispanics in the United States — up from just 6.9-million in 1960.

It comes as no surprise, then, that the number of Hispanic-formatted radio stations is also rapidly increasing. Nationwide the number has more than doubled in the past decade, going from about 250 in 1988 to nearly 500 in 1998, according to Katz Hispanic Media.

In addition to vying for listeners, these

stations are also vying for lucrative advertising dollars. This year, U.S. Hispanic consumer buying power will approach \$300 billion, the U.S. Hispanic Market Strategy Research Corp. has estimated.

One of the most successful Hispanic stations in the country is KLVE-FM in Los Angeles, home to 3.7-million Hispanics.

The station, which features an adult contemporary Spanish music format, scored a 6.0 share in the Summer 1997 Arbitrons (12-plus). It has been number one since the Fall 1995 book, when it replaced English language CHR station KPWR(FM) at the top.

"You'd have to be a fool not to expect that," KLVE program director Pio Ferro said. "Think about it. Thirty-eight percent of the population in L.A. is Hispanic," making it the largest Hispanic market in the country.

The Heftel Broadcasting Corp.-owned

KLVE-FM (known to listeners as "K-LOVE") does have plenty of competition. In addition to sister stations KSCA-FM (ranked third in the market in Summer '97 Arbitron ratings, 12-plus) and KTNQ(AM), six other stations in the market target the Hispanic audience. Three of the stations, including KTNQ, program Spanish news/talk.

Explaining the success of KLVE-FM, Ferro said, "We go to great pains to make sure that the music we play, and everything we do on the air, is what our listeners want. That is the bottom line to the programming. We're very listener intensive. We have our ears to the ground always. We're always trying to find new trends in music, what people are craving to listen to, and give it to them."

The station, which has had a Spanish format for about 20 years, plays popular artists such as Luis Miguel, but does not

See HISPANIC, page 38 ▶



BOOK REVIEW

### Author Sees Failure of Public Broadcast Mission

John Montone

Born of The Great Society, the modern era of public radio and television began on Nov. 7, 1967, when President Lyndon Johnson signed the Public Broadcasting Act into law.

James Ledbetter, author of "Made Possible By... The Death of Public Broadcasting in the United States," argues that the seeds of ruin were sown within the very legislation embraced by Johnson. The system, Ledbetter maintains, became fatally politicized by a provision allowing the president to appoint the 15 members of the Corporation for Public Broadcasting.

Ledbetter's account of the history of



The drawbacks of funding public radio and television are examined in a new book.

See PUBLIC, page 35 ▶

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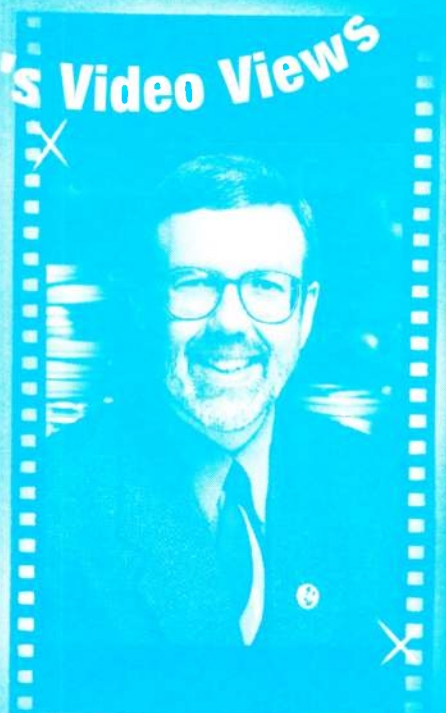
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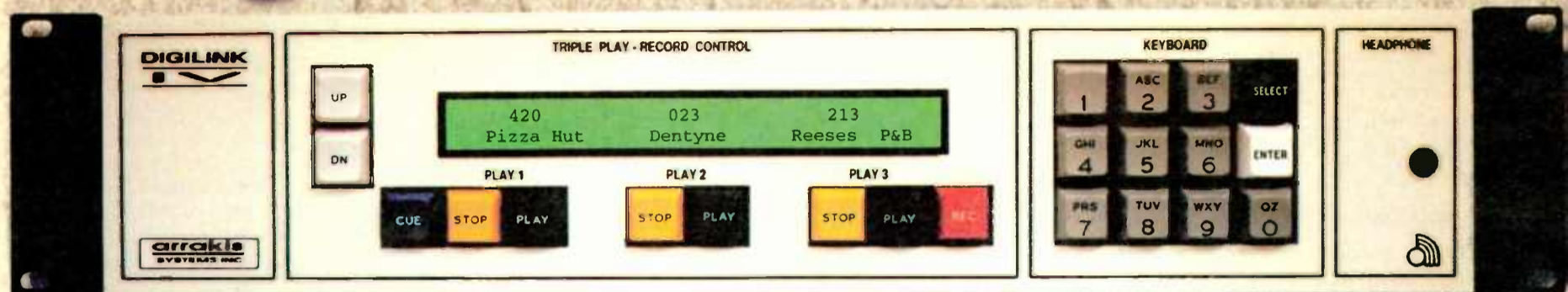
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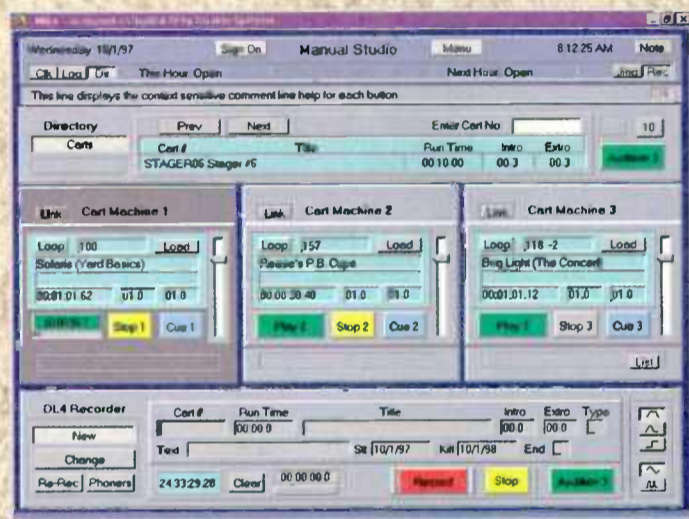
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# The Possible and the Politic

► PUBLIC, continued from page 33  
public broadcasting traces it from its idealistic beginnings to its corporate-influenced present. Along the way he stops to describe internecine battles between its progressive and pragmatic camps, and attacks on its existence launched by the Nixon and Reagan administrations.

Written with a clear and genuine sense of distress for what the author believes to be a lost opportunity, "Made Possible By" also betrays a strong liberal bias. While well thought out and thoroughly researched, it cannot be considered an objective account.

## Turnaround on the Hill

Ledbetter opens by stating, "It is a grand paradox of the Media Age that in the mid-1990s, as the United States stood on the edge of a telecommunications revolution, one of the highest congressional priorities was cutting off federal funds for public broadcasting." (As reported in *RW* in December of 1997, after Ledbetter's book was written, proponents of public broadcasting had succeeded in increasing federal subsidies from \$250 million to \$300 million.)

Ledbetter argues that in a quarter of a century, the nation's leaders had done a complete turnaround. Back in 1967, they believed public television was needed because commercial television was a "vast wasteland." By the 1990s, Ledbetter quotes House Speaker Newt Gingrich as saying, "I don't understand why they call it public broadcasting. As far as I'm concerned, there's nothing public about it; it's an elitist enterprise. Rush Limbaugh is public broadcasting."

To back up his claim that Republican conservatives were intent on killing or at least seriously gutting public broadcasting, Ledbetter says that its federal funding was cut from \$312 million in fiscal 1996 to \$250 million in fiscal 1998. Those funding cuts pushed public television and radio stations and networks to rely more on the corporate underwriting Ledbetter so disdains.

Although he uses the term "public

broadcasting" to cover radio and television, most of his book is about the television side. However, Ledbetter is an admitted NPR addict, and one chapter is devoted to radio, including National Public Radio and Pacifica Radio. He refers to radio as the neglected child of public broadcasting: "There is no question that federal

friendly." To Ledbetter, this is a betrayal of the essence of public broadcasting. He cites a meeting between NPR officials and potential corporate underwriters hosted by Gulf Oil. Ironically, while cozying up to business leaders, NPR almost ran itself into the ground. In 1983 the publicly funded entity was \$6.5 million in the red. Ledbetter believes its sor-

## The author of 'Made Possible By' refers to radio as the neglected child of public broadcasting.

funding and national programming for radio was essentially an afterthought." But he does believe radio has stayed more true to the initial objectives of public broadcasting.

"In several measurable ways," he writes, "public radio comes closer than public television to achieving public broadcasting's loftier goals." There are the popular news programs "All Things Considered" and "Morning Edition" and the call-in show "Talk of the Nation," all of which Ledbetter admires.

## Corporate-friendly NPR

That laudatory statement quickly gives way to some bashing of public radio. He criticizes what he describes as a decades-long identity crisis, brought about by a struggle "between fundamentalists who stress the primacy of programming and pragmatists who see noncommercial airwaves as a great place for commercial activity."

Ledbetter targets Leo Frischknecht, the president of NPR in 1976, charging that there is reason to believe he was "trying to make NPR more corporate-

ry financial state opened the way for an all-out attack from the right. While that is debatable, NPR's big bills and the loss of millions in federal funding ended any chance it had of remaining "commercial-free." Corporate underwriting was here to stay.

Ledbetter's harshest criticism of such underwriting is that NPR began "accepting donations to cover specific topics." He argues convincingly that an individual reporter at a U.S. newspaper or radio station who accepted money for covering a story would likely be fired.

The second part of the chapter on public radio is devoted to Pacifica, which also receives federal funding but has been around much longer than NPR. Pacifica was founded in 1949 by a Quaker pacifist broadcaster named Lew Hill. Its charter promised to "study the causes of philosophical, religious, racial and national antagonisms in the interest of world peace; to disseminate news and analysis that was being suppressed in commercial media; and to foster new art forms."

Ledbetter states that Pacifica seems to operate in a constant state of crisis.

He also believes that its impact has been substantial. For instance, long before C-SPAN, Pacifica stations aired live congressional hearings. Because it has remained dedicated to free speech, including speech some might find dangerous, Ledbetter suggests Pacifica may have "paved the way for the outrages of Howard Stern."

## 'Hate programming'

Today Pacifica continues to struggle financially and to battle with political enemies. In 1993 and '94, Republican Rep. Joel Hefley of Colorado tried to cut federal funding, charging that it helps pay for "the sensationalist hate programming Pacifica is known for." Ledbetter relates how Hefley charged Pacifica with running a claim that "Jewish doctors are injecting black babies with the AIDS virus."

While Pacifica remains outside the main political arena, a position Ledbetter obviously admires, he finds that NPR "came more and more to resemble well-established mainstream news organizations" and a major media player. He also perceives a drift to the right at NPR. In 1986, the journalist Fred Barnes attacked the supposed liberal bias of NPR in a piece called "All Things Distorted." Ledbetter reminds us that, "By the mid-'90s, Barnes had been snapped up as a regular NPR commentator."

## Walk the line

Following the radio chapter, Ledbetter returns to public television and the hated "corporate underwriting." However, a plea from a volunteer at a Pacifica radio station best sums up his entire thesis: "Is it more important to become like commercial radio to gain a larger audience, or is it more important to continue to offer programming that cannot be heard elsewhere, acknowledging that the station may remain small and poor to do so?"

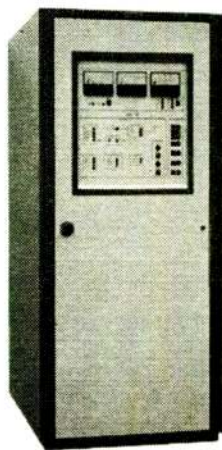
Ledbetter's answer to that question is obvious.

To order a copy of "Made Possible By..." call (800) 233-4830. Retail Price is \$25.00

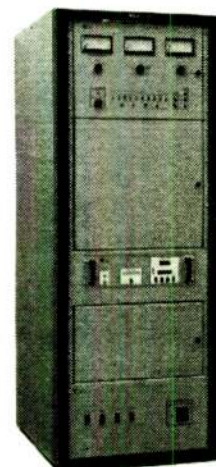


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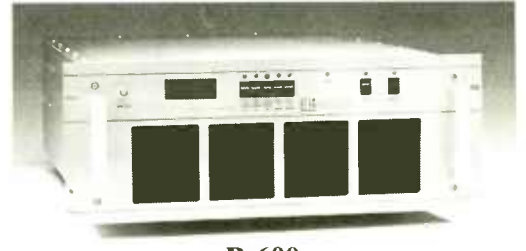
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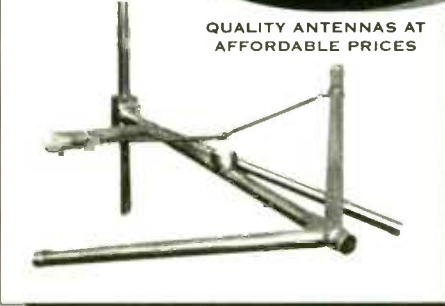
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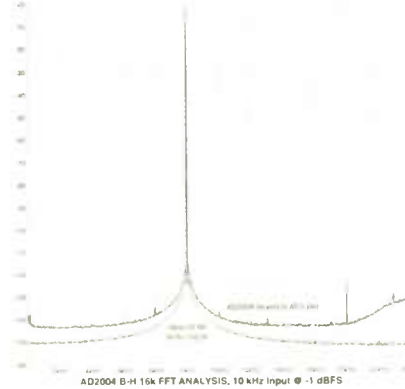

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## PROMO POWER

# Radio Learns a Linking Lesson

Mark Lapidus

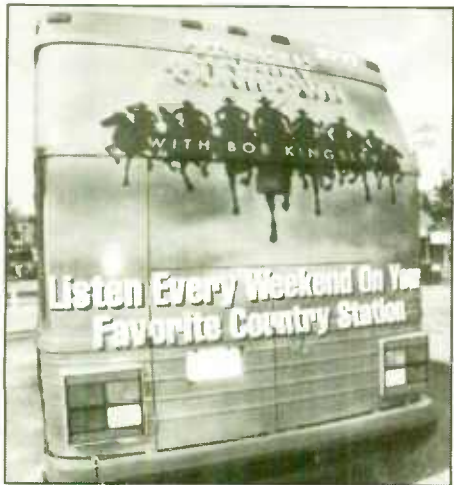
One of the primary means of generating money from Web sites is to post links to other sites. Sometimes these are embedded in advertising banners, sometimes they are simply colored words in a sentence. When a Web site visitor clicks on the link, it takes him to another site.

The more links a site has, the higher the volume of traffic. Naturally, a link from a site that has tremendous traffic is highly desirable. So, what does this have to do with radio?

Plenty! Take this simplistic method of generating audience, apply it to other media, and you can increase come. No, it is not as easy as Internet linking, but the rewards are far greater.

## Cross-promotion

The more media with which you link your station, the more come you will generate. In broadcast terms, I am referring to cross-promotion. Unlike Web linking, you are compensating your partners by bringing them more cus-



Stations as well as networks can take advantage of bus promos. ABC Radio Networks uses buses to promote its varied programming.

Your process of elimination may entail taking advertisers already buying spots on your station off your attack list. After all, you do not want to jeopardize any cash you may already be receiving from them.

Suppose you determine that one of the largest users of direct mail in your market is the local cable company. Ideally, you would set up a meeting for breakfast or lunch to discuss cross-promotional opportunities. A meal requires the other person to engage you in the brainstorming process that may give you a solution and help build your relationship. The cable company probably

will think you are after trade spots, which are fine. But what you really want is an insert each month into the 300,000 bills they send to subscribers.

Naturally, you must have on-air options to offer in return. For cable, how about a promotion each month for one pay-per-view show? This could be as simple as airing :15 liners each month, short commercials for them or a more complex contest on the morning show.

## Rolling along

Transit was the second medium we picked in our example plan for cross-

promotion. When most people think transit advertising, they think big city buses. There are rolling signs out there on cabs, pizza delivery cars and many service industry vehicles. One plumbing company may have 50 vans rolling through the suburbs every day. Suppose one side of each truck was for your use?

What would a plumbing company want with a radio station? Promotion, like any other business! Could this plumbing company receive sponsor credit for a specialty show you air on the weekend and have been unable to sell?

Back to the big city buses for a second: You may be able to find a large advertiser willing to give you half of a "busback" for your logo if you co-sponsor an event with them. For example, if a shopping mall is

See BUS, page 38 ►

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tomers and not paying them in cash. If you could simultaneously link your radio station with television, print, direct mail, the Internet, transit and outdoor, you would deserve a place in the Promotion Hall of Fame.

Unfortunately, because most promotion directors spend so much of their time on events, contests and remotes, they do not have the time to perform what I believe is their primary function: to bring in audience.

## PD to the plate

If your promotion director is too busy, then a program director should step up to the plate and prove his worth as a marketer. It is well accepted that a program director is responsible for increasing time spent listening by using his own airwaves, but few graduate to the big leagues of moving outside their own frequency. This skill set requires persistence, the ability to develop relationships and organization. The process begins by developing a written attack plan.

Let's say you wish to link two media, direct mail and transit, to your station in 1998. To start, you need a target list of the largest direct mail and transit users.

# Hispanic Format Numbers Surge

► HISPANIC, continued from page 33  
play Gloria Estefan.

"She does better in the Anglo market," said Ferro.

Hispanic stations are quick to point out the differences in their formats, based on the heritage of listeners. While the majority of Hispanics in California are of Mexican descent, for example, the picture is much different in New York, where most of the Hispanics are from the Caribbean.

That fact is reflected in the tropical music heard on WSKQ-FM and the Spanish ballads played at WPAT-FM. Both stations are owned by the Spanish Broadcasting System (the largest Spanish owned and operated radio group in the United States).

"What ties the Hispanics together in the United States is only their language," said Carey Davis, vice president and general manager of the stations. "Otherwise they are all very, very different. For example, 65-percent of the entire Hispanic population in the United States is of Mexican derivation. In New York it is only 5 percent, but there is an extremely large Puerto Rican and Dominican population."

Aside from sharing the Spanish language, Davis said, "cultural, musical, and food preferences can be different (among Hispanics). That is important to remember when you're dealing with the Hispanic market. Because of that, you're not likely to have a network running the same programming (on stations) in New York and Los Angeles. There are some similarities, but not one where you could have a Rush Limbaugh or Howard Stern. We're not there yet."

The Z-Spanish Radio Network, however, does air the same programming on its two-dozen owned and operated stations, located in California, Texas, Arizona, and Illinois. Two-dozen additional stations are affiliated with the network, available through Jones Radio Network.

"Most of the appeal is targeted to people of Mexican descent," said John Bustos, Z-Network executive vice presi-

dent. "But we also appeal to people from Central and South America; we play a contemporary blend of regional Mexican (music) that they tend to like. We're very strong in the border states because we do

best known for a controversial morning show that tackles adult-oriented topics. Listeners are warned that the show "has lots of surprises and innuendoes which may be good for a mature audience only."

"It's done for entertainment value," Bustos said. "We have topics like your most embarrassing moment, and, is sex before marriage appropriate. Traditional Spanish radio hasn't been this open before, but the ratings have been phenomenal for this show."

Nationwide, the Hispanic market is attracting more than listeners and advertisers. It is also attracting major investors. Actor Arnold Schwarzenegger and former HBO CEO Michael Fuchs are just two of the big names who have invested in

the Latin Communications Group, which owns EXCL Communications. EXCL has 15 stations — in markets including Los Angeles, San Francisco, and San Jose, California — and plans to buy more.

Another company, Miami-based Cadena Caracol, has a "strategic

alliance" with ABC Radio Networks, said Cadena Caracol President Tony Hernandez. Some ABC programming, translated for Hispanic listeners, is carried on the Cadena Caracol network, which has 82 affiliates in the United States. ABC, in turn, markets some Cadena Caracol programming to the international Hispanic market.

While the heaviest concentration of Hispanic-formatted stations is in California, Texas, New York, Florida, and Illinois — where three-quarters of the U.S. Hispanic population resides — there are a growing number of Hispanic stations in other states.

One of them, KRTA(AM) in Medford, Ore., airs a locally-programmed Mexican regional format. It is "incredibly easy" to sell, said general sales manager Brian Fraser. "It's just a question of educating the advertisers as to the existence and viability of the (Hispanic listeners)."

At Hispanic stations in small and large markets alike, the future has never looked brighter.

The format will continue to experience "big growth," said WSKQ/WPAT general manager Carey Davis.

"There are incredible opportunities in front of us."

■ ■ ■

Bob Rusk is a regular contributor to RW.



The Z-Network 'Morning Show' team; Joaquin Garza, Taly Vazquez and Doña Mela

have a regional Mexican format."

Bustos said, "The Mexican regional format is very strong from Chicago to the west. East of Chicago, you tend to get more of the Caribbean-tropical influence."

Z-Network, which plays current hits by artists such as Enrique Iglesias, is perhaps

## Transit Tie-Ins Drive Listening

► BUS, continued from page 37  
doing a fashion event, maybe your logo can go on their busbacks if you also promote this event on-air.

Keep two elements in mind to generate listening. One is the frequency; the other is the message. You want as much frequency as you can get. In our examples, this would mean monthly insertion and lots of trucks.

The message you use to generate listening should be as specific as possible. One month you could do a contest: "You are already entered to win \$106 from 96 Rock. Listen every morning

this month at 7:20 a.m. for your name." The cable company supplies you with a winning name each day. The next month you could do a Garth Brooks Weekend every weekend, putting Garth's face on the trucks. Generic inserts will have far less impact.

### Time and patience

If you are persistent, you will find partners who want linking opportunities but cannot afford to place spots on your station. This process takes time and patience. Sometimes it takes finding a client who is also a listener. Big

fans of your station can be tremendous supporters. Start now ahead of your competition! Do not be put off by rejection. There are plenty of potential partners out there. In fact, those stations co-owned with television stations in your market are already way ahead of you, but may not even have realized it — yet!

■ ■ ■

Mark Lapidus is president, Lapidus Media, which is now launching "UPCOUNTRY," an uptempo '90s hits niche and an alternative to mainstream country. Call (703) 383-1805 or e-mail: lapidus@erols.com

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# Broadcasters, Start Your Engines!

Dee McVicker

Drive time is often where the rubber meets the road in terms of radio ad sales. How can broadcasters catch up to the mobile set? Not only are these listeners unable to write down their every station switch in an Arbitron diary, they are all over the road as far as what they listen to, and when.

Tapscan Inc. of Birmingham, Ala., is gaining on the problem with an electronic rating system that samples FM receivers in moving vehicles. As cars pass by its roadside electronic measurement units, the units poll FM receivers, record their frequencies, and send the information over cell phone to a centralized computer system for compilation.

After more than a year of testing in Canada, Tapscan is expected to roll out the system, known as MobilTRAK, to U.S. markets shortly. "It's been up and running for 14 months in Toronto. ... We have plans for the U.S. soon," said Lucius Stone, marketing director for Tapscan.

If so, it will be the first system to go the distance in capturing the listening habits of U.S. radio's most pervasive, yet elusive, listener.

## Accuracy

A study by Research Director Inc., of Baltimore showed that the majority of listening by 349,000 Arbitron diary-keepers was done in cars. The study also showed that overall listening correlates directly to in-car listening. When in-car listening goes up or down, a station's cume changes the same amount.

The problem is pinpointing when mobile listeners are tuning in or out, and to what. "Imagine a comedian on stage telling jokes and he doesn't get a response for three months. ... That's how stations have been programmed," Stone said. MobilTRAK, he said, will help solve this problem.

Stone said whereas typical listener polling methods measure a few thousand listeners over three months with a margin of error of 30 percent or more, MobilTRAK yields sample sizes in excess of 100,000 a day in a mid-size market, and

approaches 1 million a day in the larger markets. Given a 150,000 daily metro sample, MobilTRAK accuracy is down to within a fraction of 1 percent.

"The units simply measure signal from the local oscillator of a radio," Stone said.

Local oscillator detection is nothing new. It has been around since the development of the superheterodyne receiver and is used to detect radar detectors in



cars. What is new is MobilTRAK's adaptation of this technology and its use for electronically polling radio receivers.

Steve Everett, director of audience measurement policy research at the National Association of Broadcasters, said he knows of no other service that currently uses oscillator detection technology.

One of the major setbacks of the detection method, and why it had not been used by radio surveyors before, according to Stone, is that lower FM frequencies are easier to measure than higher frequencies. A good portion of research and development was focused on being able to randomly sample the entire FM band, and this development is the basis of MobilTRAK patents.

## Seasonal difficulties

Previously, MobilTRAK was tested in the Phoenix market under the name Trendata; initial development started in 1991. More recently, it was acquired and further developed by Tapscan and tested in Toronto. "We picked Toronto because it had extreme seasons," Stone said. "Detection of radio waves is affected by hot and cold, and leaves on the trees and

leaves off the trees. We wanted to have the system up and running in all the seasons to find out if there were problems, and you know, there were. We had to go back to tweak it to make it work a bit differently in different seasons."

Twenty-one stationary electronic measurement units in the Toronto market are hidden and designed to look like transformers. The units measure more than 100,000 cars a day.

With testing showing favorable, reliable and entirely random results over a 14-month period, MobilTRAK now is a marketable tool for advertisers, radio stations and retailers interested in FM trends.

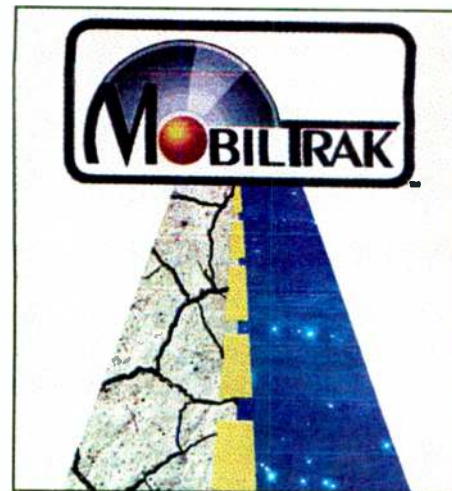
The AM band is excluded for now. Lucius Stone of Tapscan said older AM receivers produce more bounce-back signal from their local oscillators, which means they would be picked up more often than

newer receivers by MobilTRAK. This sensitivity bias would greatly skew the sample, as the age and manufacture of a car indicate station and format preferences. Tapscan is experimenting with attenuating the AM receiver signal as a way to counteract this bias. Stone said Tapscan expects to have a workable AM signal detection system by late 1998.

## Track record

MobilTRAK is being used in the normal course of station business as a way to determine the immediate results of personality, format and play list changes. On Sept. 2, 1997, for example, CILQ-FM in Toronto added Howard Stern's weekday syndicated show to its morning drive time. It rocketed in the morning ratings almost overnight, with the audience carrying over into other dayparts. MobilTRAK immediately pinpointed listener results, not months later, but hours later. "They instantly went to the number-one morning show in Toronto, and the day that happened we were able to watch the data," Stone said.

Second-by-second polling of the listening habits of in-vehicle listeners is compiled by MobilTRAK into varying time segments ranging from 30 seconds to one hour. The information provides broadcasters and others with immediate data on the impact of individual songs or successive song blocks, individual commercials or



commercial patterns, news, comedy breaks, promotions and overall average quarter-hour listenership. "We have plans real soon to release this in real time, minute-by-minute, so a PD can see a spike going up or down. And, with RealAudio they can play a clip of the audio as they see the numbers," Stone said.

Because MobilTRAK monitors mobile listeners at any number of traffic junctures in a city or market, broadcasters also can get their first meaningful look at their market block by block. This could prove valuable in making decisions on station-sponsored or advertiser-sponsored events. More significant, low-power stations, which reach only a small segment of a rated market, can show proof of listenership in their designated areas of license. The local deli or grocery store may even prefer to advertise on these stations, providing MobilTRAK shows favorable local listenership in their area of business.

It would be the first electronic measuring system that offers meaningful in-vehicle listenership habits by geographic grid, one reason advertisers are showing interest. Virtually all of the radio-buying agencies in Toronto indicated they wish to receive MobilTRAK market and zone trends on a regular basis, according to Tapscan.

As exciting as MobilTRAK is for the minute-by-minute operation of a station, what it does not do is replace current rating systems. Tapscan is quick to point out that MobilTRAK does not measure demographics or the tuning habits of at-home or at-work listeners, and that this intelligence is still the domain of traditional polling methods.

■■■

Dee McVicker is a freelance writer and regular contributor to RW. She can be reached at (602) 545-7363, or send e-mail to roots@primenet.com

## A New Look

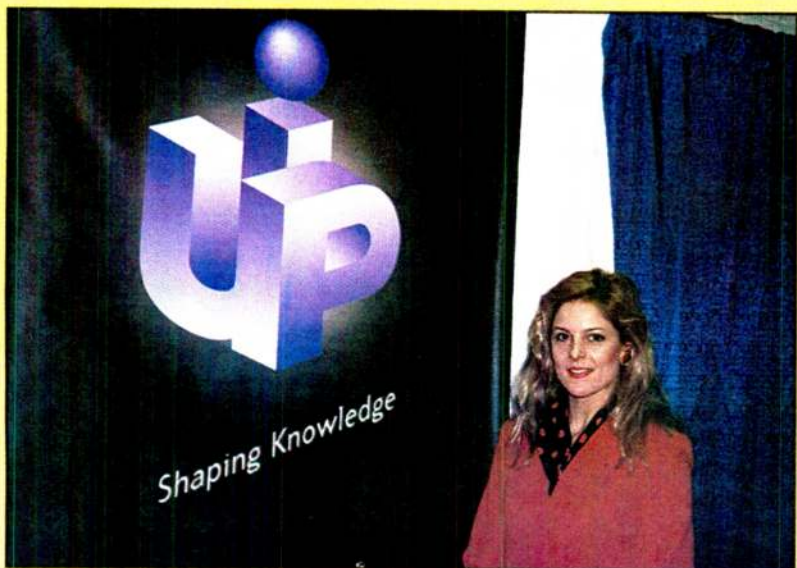


Photo by Paul J. McLane

United Press International showed off its new logo in its booth at the National Religious Broadcasters convention in Washington. Regional account executive

Kathrine Driscoll worked the booth. More than 4,600 attendees and 200 exhibitors took part at the event. For details about the show, see page 3.

## RADIO WRAPS UP 1997 - Estimated Revenue in Millions

Local 1996	\$9,854
Local 1997	\$10,741
National 1996	\$2,093
National 1997	\$2,407
Network 1996	\$465
Network 1997	\$498
Overall 1996	\$12,412
Overall 1997	\$13,646

All four revenue categories saw hearty gains in 1997. National revenue fueled the growth, climbing 15 percent over last year's total, according to RAB figures. Combined local and national revenue was up 10 percent for the year.

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World Radio History



RADIO ADVERTISER

# Bagel Chain Commits to Radio

S.D. Yana Davis

AFC Enterprise Inc., parent company of the Chesapeake Bagel Bakery chain based in Washington, D.C., will commit nearly \$1 million in radio advertising to support the upscale breakfast and lunch eateries. The campaign begins this month and continues through the end of 1998, according to Bob Eck, vice president for marketing at AFC, which is headquartered in Atlanta.

Eck said the radio schedule will be placed exclusively on D.C. market stations. "We just successfully formed a co-

morning drive time," Eck said. While breakfast traffic at stores is good, he said, lunch traffic "needs improvement," and part of the thrust of the campaign will be to boost lunch sales volume.

Eck described those potential customers as "18 to 44 years old, annual income \$55,000 plus, white collar, technical people, skewed toward women, who are willing to pay the price" for Chesapeake's "made-from-scratch" products. "Chesapeake has been on radio in the past," Eck said, "but never in an organized way." He said he sensed genuine excitement among D.C. franchisees for this campaign, and said the company plans to use the campaign to introduce new products.

Eck declined to specify what those new products would be. "That would give our competitors an edge we don't want them to have," he said with a laugh.

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### New brands

However, it's easy to guess what one of those new products might be.

In January, AFC acquired the Seattle Coffee Company, based in Seattle, which roasts and retails coffee under the "Seattle's Best" and "Torrefazione Italia" brand names and operates several dozen coffeehouse-style cafes. The addition of these gourmet coffees to Chesapeake Bagel Bakery menus, timed to coincide with the new radio campaign, might be too good an opportunity to miss.

According to AFC officials, Chesapeake Bagel Bakery posted sales of about \$95 million in 1996. The bagel chain was founded in 1981 in Washington, with a goal of offering consumers a place to find "made-from-scratch" bagels similar to those found in New York City.

According to AFC, the parent company traces its own corporate lineage to the original Church's Fried Chicken restaurant, which opened in 1952 in San Antonio, Texas, across the street from the

## CHESAPEAKE BAGEL BAKERY®

Where: Thirty-two states; owned by AFC Enterprise Inc., Atlanta

Annual Sales: \$95 million in 1996

Goal: "To give customers a place to find made-from-scratch bagels just like the bagels in New York City."

Agency: Williams Whittle Associates, contact Jane Richman at (703) 836-9222

Alamo. The company expanded to become a chain in 1962 and became publicly held in 1969. Church's was purchased in 1989 by New Orleans-based A. Copeland Enterprises Inc., (ACE) which had originated the Popeyes Chicken restaurants in 1972.

Unable to service expansion debt, ACE filed for bankruptcy in 1992 and lost ownership of Church's and Popeyes to AFC, which had just been organized as a privately-held firm. The new company moved its headquarters to Atlanta and embarked on an aggressive expansion campaign for its existing brands, and in acquisitions.

### Awaiting results

Whether the Washington market ad buy for Chesapeake Bagel Bakery points to a larger system-wide commitment to radio by AFC for its expanding restaurant holdings remains unclear. Of the AFC brands, Church's historically has been the heaviest buyer of radio advertising. In any case, the industry will be watching for signs that AFC may consider wider local and national investment in radio advertising, as results from the D.C. effort for Chesapeake Bagel Bakery become clear later this year.

S. D. Yana Davis is a freelance writer and marketing consultant in Knoxville, Tenn. E-mail him at yanajune@aol.com



The Interior of a Chesapeake Bagel Bakery

op with our franchisees in the Washington area and they're very excited about doing radio (advertising)," Eck said. Williams Whittle Associates, an advertising agency with offices in Atlanta and Alexandria, Va., will write and produce the commercials and do the buying for the radio campaign.

"We're in negotiations to buy ads with stations now," Eck said. "We expect to begin flights in mid-to-late March."

While there will be some newspaper advertising to back up the radio buys,

AFC, which also is the parent company of Church's Chicken and Popeyes Chicken & Biscuit restaurants, operates 2,700 restaurant locations in the United States and abroad, with annual revenues of \$1.5 billion in 1996, the latest full year for which figures were available.

What motivated the heavy commitment to radio advertising for Chesapeake Bagel Bakery?

"Radio presents a tremendous opportunity to reach consumers on the way to work. We will run advertising heavily in

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The hot new "DELUX"™ quality built SPACEWISE system!

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BASIC SYSTEM \$1375!  
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**GENERAL FEATURES:** Basic system consists of main counter top and two PC system pedestals ... then you add on what you need from there, such as racks and shelf wings or talk table wings for a full system.

**USER FEATURES:** Two PC system base pedestals ... heavy rack rail systems with easy access standard ... passive ventilation systems throughout ... adjustable shelves ... wiring block backplane ... customizing ... quick installation.

**DURABILITY BUILT IN:** Top counters are two ply 1 1/2" thick with quality name brand laminate with protective 1 1/2" solid wood trim raised on the outside perimeters. Plus ... generous vertical and horizontal solid wood trim and recessed kickboards.

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READER SERVICE NO. 20

PRODUCT EVALUATION

## Crown Headset Mics Redesigned

Rich Rarey

It is a pleasure when a manufacturer listens to and acts on constructive criticism. The marketplace gets a better product, and the manufacturer garners higher respect in the industry.

More than two years ago, we reviewed a pair of Crown headset microphones, the CM-311HS and CM-312HS. At the time, we were critical of their operational characteristics and aural output. Crown has accomplished a complete redesign of these headset mics and reintroduced them as models CM-311AHS and CM-312AHS. Both have been considerably improved, and are worthy of serious consideration because of it.

### BYOH (Bring your own headset)

Both models are based on the premise that the popular Sony MDR-V6 headphones — also sold as the MDR-7506 — make a great mounting platform for a headset mic. The CM-311AHS has the beefier mic element of the two models, suitable, Crown says, for high ambient noise environments such as car races and traffic copters. The CM-312AHS is sleeker and trim, suitable for sports broadcasts and studio announcing.

These headset microphones have a great value to the off-line market, too: in moderately noisy industrial situations, for heavy machinery operations, telemarketing, multimedia design, theatrical productions and so forth.

Both models have a high-impact plastic semicircular ring mount with tabbed grooves that mount around the forked earcup yoke of the Sony phones. The mounts on the previous models had unacceptable play around the headphone yoke. Today, the mic mounts are friction-fitted to the yoke with two miniature hex screws and a slender hex wrench (included).

A standard bolt/washer/nut provided the friction to keep the boom arm from pitching up and down. We missed having a thumbscrew here, as on the previous models. A thumbscrew in the boom assembly tightens the closer/farther and side-to-side movement.

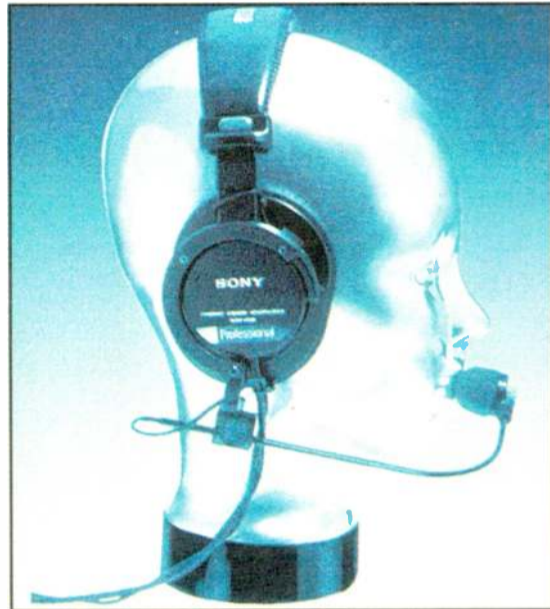
As delivered, the microphones are intended to be mounted on the right earcup yoke, but can easily be changed to left yoke. This change is a must; the Sony headphones we use have the cables coming from the left earcup.

### Improvements

The mic booms have retained their original weight. The CM-312AHS weighs in at 1.8 ounces and the CM-311AHS at 2.3 ounces. A thin 4-foot cable runs from the mic boom to a battery pack, and this is where dramatic improvements have been made.

Gone is the heavy metal box with a belt clip, and in its place is a sturdy

lightweight plastic box with a belt clip. Replacing the dense steel box has dropped the pack's weight by 2 ounces,



Encore Performance: The Crown CM-311AHS (shown) and CM-312AHS Microphone

to 6.1 ounces — noticeably more comfortable to wear on the belt.

Replacing the battery used to be awkward and difficult. Now it's a snap with a sensibly designed slide-out cover over the battery compartment. Crown claims 110 hours of battery life, which is down about 24 hours from the previous models. This is a worthwhile tradeoff, given the

additional features of the mics.

If battery life truly is a factor, use a phantom power source of between 18 to 48 V.

The battery pack incorporates a clever programmable button to control the microphone. By setting an internal slide switch, the top-mounted button can act as an on/off switch, a push-to-talk button or a cough button. A flip-flop circuit, logic inverters and FET-type components implement this feature. A red LED on the top of the battery pack is the "mic on" indicator.

We were pleased to see Crown has moved this button to the top of the battery pack, which is far more convenient than its previous bottom location. Pressing the button on the old mic would lift the box right off your belt.

In actual use, we were pleasantly surprised to hear audible improvements over the previous models. We connected a CM-312AHS to a Benchmark preamp, and mounted the mic assembly on the Sony headphones.

Comparing its sound to the high quality of a Neumann U 87 seemed unfair at first, but to our ears, the Crown mic was able to paint a reasonable facsimile of tonal colors. One could hear the difference, of course; the CM-312AHS was edgier than the U 87, and it could not

capture the nuances of chest cavity/facial cavity resonance, but still its dramatic improvement surprised us.

We had expected the boom placement to be hyper-critical, as on the previous model, but found that correct placement was not as touchy. To be sure, a poorly positioned boom mic will make a person sound like he is pinching his nose. By placing the boom about two inches from the talent's mouth and slightly off to one side, nearly all plosives were eliminated and a fairly natural sound resulted.

In quiet environments, the low-level background hiss of the mic electronics was clearly audible. Muting the microphone at the battery pack did not change the background noise. Crown specifications show the CM-312AHS has an equivalent self-noise figure of 31 dB, and the CM-311AHS slightly noisier at 26 dB.

Once the headset/mic was properly set, the talent found the combination to be quite comfortable.

To use the Crown mics sensibly, one may wish to dedicate a pair of the Sony headphones to mount permanently. Slipping the boom support is easy-on, easy-off, but tweaking the tiny hex screws to affix the boom assembly to the headphones requires the companion hex wrench. Given the low list price of the Sony headphones, it will save time and energy mounting the booms once and tightening periodically.

We found several of the hex screws missing in our evaluation models, but discovered them later in the oversize plastic cases. The nut and bolt securing

See CROWN, page 46 ▶

## Mackie Copycat Claims Are Dismissed

Alan R. Peterson

The patent infringement claim brought by console manufacturer Mackie Designs against German audio product manufacturer Behringer and its American distributors was dismissed in early February.

### Thrown out

A U.S. District Court judge for the Western District of Washington state dismissed the claim brought by Mackie Designs of Woodinville, Wash., against Behringer, Samson Technologies of Syosset, N.Y., and New York-based music store chain Sam Ash Music Corp. The judge also dismissed as "unreliable" the claim Mackie made of intentional wrongdoing.

The patent infringement issue began in late June of 1997, when Mackie Designs alleged there was a similarity between

its 8•Bus mixer and the Behringer Eurodesk MX8000, prompting the company to file a \$327 million suit.



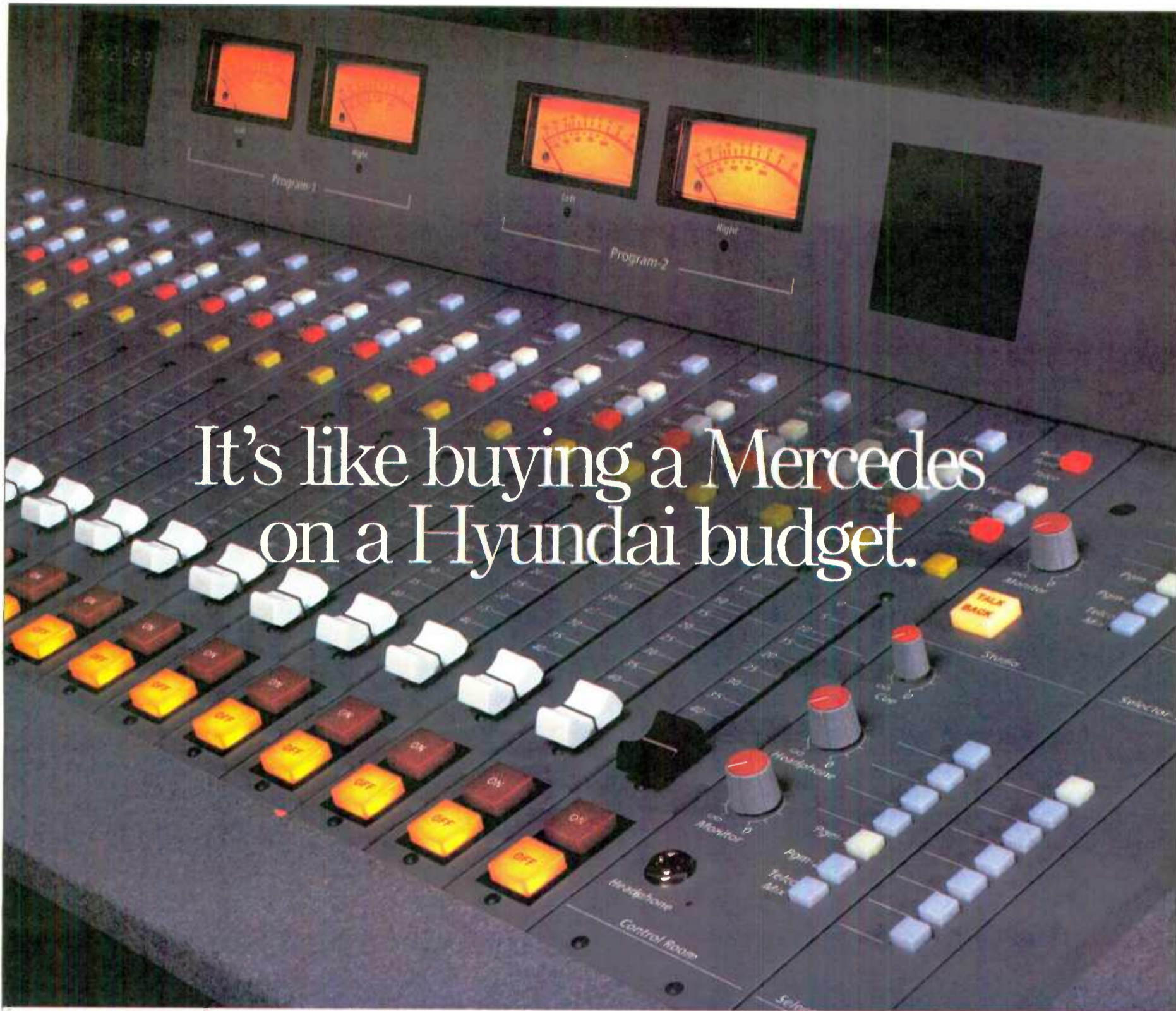
The Mackie 8•Bus Mixer. The company's claims of patent infringement were dismissed.

As reported in RW in July, Mackie COO Roy Wemyss said the products were "inordinately similar, more so than anything else that is readily available."

Mackie complained that components for one product matched the other perfectly, of internal and cosmetic similarities, and of features and accessories fitting both. It said evaluations made by a third party had reached these conclusions.

With the dismissal, the main issue has been laid to rest, but litigation may continue as to other claims. Scott Goodman, CEO of Samson Technologies, stated in a company release, "We are now in the process of preparing with our legal counsel a major countersuit against Mackie for, among other things, slander, libel and defamation."

Repeated calls to Mackie Designs for comment were not returned.



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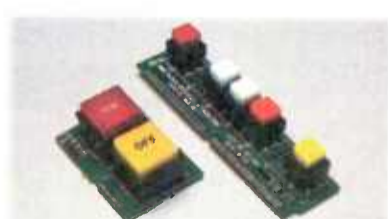
Quick-release latches allow instant tilt-up access for "extenderless" set-up of input modules. Release pins built into the hinges let you easily remove the meter panel completely.



Fool-proof connectors prevent accidental circuit damage. Each input, output and logic connection is separate, so removal of one won't disable other signals and functions.



Our proprietary gate array logic generates both module control and remote control of connected equipment.



Sealed, LED illuminated buttons are designed so you can remove the switch assembly without unsoldering, in case of a coffee spill.

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PACIFIC RESEARCH & ENGINEERING

Circle (84) On Reader Service Card

World Radio History

# PCs and Players in Same Session

Part III of IV

Stephen Wilke

Welcome to the third part of "Where Does Production Music Come From?" This time, a cold, hard look at the studio, but first, a mini-history lesson.

Music recording of all kinds were approached similarly for decades. As soon as there was media to record on, the recording business was invented.

Before long, people were challenged with breaking new boundaries: "If I could use more microphones to cover more musicians, I could control the balances, therefore I could control the sound better." Thus mixers were invented.

At some point, someone thought, "If I could take some audio and put it on one part of the magnetic tape, take some more and record it to another part of the same tape, they could play back at the same time and I could mix them once again."

Presto, multitrack recording was invented. The Beatles and many others did amazing things with four-track machines.

## The toy box

Our inventive minds then created new toys to put more treble and bass into these signals, mix in some ambient reverb and split the sound into two or more speakers for a panoramic effect. We developed an artistry of sound manipulation that contributed to the quality and feel of

a recording that was as important as the musicianship.

The recording engineer became valued



Real Performers vs. MIDI: Balancing Musical Vision With Ad Budget

for being able to interface recording techniques with what the performers wanted to hear. The engineer basically became a highly skilled plumber who could send

signals all around. It took a good set of ears to know how to combine these sounds so that the energy kicked just right.

Techniques for the best way to record the musicians continued to develop as engineers researched ways to record and overdub musicians and acoustics of the rooms in which they recorded.

Today we have computer systems that allow us many more ways of working. We can place and manipulate sound in non-linear ways. This has given us more creative ways to solve our problems and design our music. Synthesizers have given one person the ability to create many textures and timbres, which allows us to be our own mini-orchestra.

These efficiencies reflect on the business side of the industry as people set up new structures that change the services and thus the bottom lines. This means there are many more ways to compete within the industry. The biggest debate is between the use of synthesizers

vs. live musicians.

Synthesizers are putting musicians out of work for three reasons: lower budgets, more money for the sole synthesist/

composer, and control through technology. Most music houses will use a blend of musicians and MIDI instruments to maintain some quality of live musicianship; sometimes there are no sampled sounds within certain instrument groups that can compete with a live musician.

Computers in studios are great tools for structuring and polishing a performance with error-correcting software. The flexibility to design tempo changes, cut-and-splice techniques and key changes allows revisions with little effort.

But there is a dark side. When one person plays all the parts, you do not get the contributions from other performers that have taken years of experience to gain. You also lack the synergy that comes from a group of experienced performers playing off each other. Ultimately, the base of musicianship in the music community is being challenged.

As one works with the computer and accepts what it offers, the careers and incentives for musicians to stay in the business begin to erode. Young players have no incentive to develop their skills and commit to a future with no career at the end of the process. It is getting harder to convince agencies to maintain budgets for live musicians when so many people with computers and synthesizers are competing on price.

Another important change in the recording industry developed when equipment became more affordable. It then made sense for music houses to own their own studios. This allowed

See MUSIC, page 45 ►

## Caveman Art.



► MUSIC, continued from page 44  
them to work on their own schedule and experiment without the pressure of running out of studio time. Because they needed to pay off the equipment, they learned how to charge the client for studio costs and make supplementary income.

Concerning the techniques of recording, most processes that were developed on machinery have been paralleled in computer software. It makes sense. Music remains a linear experience and we still generally track in that same way, except when we cut and paste with our software capabilities.

If you were going to record a full orchestra, you would probably try to hire the musicians all at once and have them play together, but it is not uncommon today to record in sections. Most music house sound rooms do not allow the real estate necessary for full orchestras.

Most rock sessions will begin as a rhythm section followed by vocals and then lead passages, so that each performance can be focused on with an element of control.

Many sessions are worked out on a computer and then re-recorded with live musicians. Many sessions are started on computer with MIDI instruments, with some instruments later replaced by live performers.

Now that sound design is such a popular concept, sound effects and applications with samplers are more common. Composers now must think beyond musical phrasing and structure into textures and

soundscapes that are more about color than rhythm, pitch and harmony.

Even the preparation of scores and manuscripts for musicians can be handled by computers these days. It may not be elegant, but it does look better than chicken-scratched scores.

Some final helpful hints. It is important to prepare a path so that a musician can be comfortable with his or her performance. This means a clean interfacing with the technical process: Have your sheet music worked out before the session. Set good headphone levels. Keep the flow of a session moving along at a nice pace, with clear direction from the composer or producer.

It also means a good working relationship between composer and engineer so that all concerns can be handled with little or no disruption to the session. Positive affirmations and respect will get a better performance from a live player.

I hope this gives a little insight to the depth of skills and the amount of work it takes to record the music that hides behind that commercial that goes between your favorite songs or shows.

Next on the roster: How do you make money as a music house? How do you stay in business? Can't we all just get along? The business side of the experience wraps up our series next time.

■■■

*Stephen Wilke writes music for Open Sky Music Productions and is a sound engineer at Swell, a post-production facility in Chicago. Reach him in care of RW.*

## In the Key of Hype

Ken R.

Professional jingle singers are like soldiers of fortune, in that they will sing almost any score you place on their music stands. As long as the checks clear. For example, our "North Coast Singers" have warbled the praises of toilets, pirate radio stations, nuclear power companies and assorted politicians.

The key to making any jingle believable is that the vocalists must be versatile and understand the various styles. The musical genre — whether pop, rock, country, novelty or whatever — is far more important than the product being shilled.

A country jingle calls for a less-precise vocal style than a basic adult contemporary cut. Slurs, "scoops" (sliding up to hit the right note) and other oral histrionics are appropriate as long as one does not get carried away. Over-the-top vibrato can also be "in the style."

An intense rock jingle must be

orchestrated in the proper key, otherwise the singers cannot get the power they need. If a part is written too low, it bogs down and sounds muddy; too high, and it sounds screechy.

With today's rhythm-heavy music mixes, articulation — or clarity of the words being sung — is always paramount. This way, the listener can "read" the lyrics in spite of booming synthesized bass and other distractions. Remember, a jingle may have 30 or 60 seconds to drive the message home. Today's top-40 tunes have the luxury of hook phrases that repeat



Sing along with Ken R.

over and over. The bottom line when working with singers in the studio: Good singers will know what to do without much coaching. Bad singers will not sound good, no matter what sort of cheer-leading you provide.

■■■

*Ken R. runs the jingle company that bears his name in Toledo, Ohio. Reach him at (419) 243-1000.*

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 **HARRIS**

# A Second Look at Crown Mics

► CROWN, continued from page 42

the boom's pitch adjust had come loose on our CM-311AHS. The mic was useless until we tightened everything down again with pliers and a Phillips screwdriver. One hopes Crown might take a closer look at this joint in their quest for improving the mics further still.

### Got a train to catch

To test the CM-311AHS, we outfitted it with the maximum provided plosive protection: a foam tube over the mic element and a flat-sided foam ball held in place with Velcro.

We connected the mic to a Sony D-7

DAT recorder, and hopped on a commuter train. The noisiest place we found on the trip was in the vestibule between rail cars. Here the ground can be seen whizzing by and the clatter of steel wheels against steel rails can be deafening.

In listening to the playback, the ambient background was pushed far back, and our voice was heard easily. The quality was surprisingly good, given the amount

of attenuated noise underneath. Interestingly, one will tend to raise one's voice to be heard, even though the CM-311AHS made "speaking up" unnecessary. We also stood next to an idling diesel locomotive, its roar unbearable without headphones. The CM-311AHS performed well here too, attenuating all sound except our voice. As we moved to quieter and quieter environments, the background hiss became more

**We were pleasantly surprised to hear improvements.**

### Product Capsule: Crown CM-311AHS and CM-312-AHS Headset Microphones



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- ✓ Improved yoke mounting and ability to switch earcups



**Thumbs Down**

- ✓ Background hiss noticeable
- ✓ Pitch joint fasteners need work

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and more noticeable. Clearly, Crown intends the CM-311AHS to be used out and away from the solitude of a studio.

All in all, we were pleased with these headset microphones. They seem to perform the way Crown had envisioned — they're reliable, easy to use, and have a decent sonic quality. Crown is to be congratulated for making such dramatic improvements to them.

If we had our wish — and Crown apparently listens to its consumers — we would only wish for the background noise to be reduced and pitch-joint fasteners improved. Both would make the CM-311AHS and CM-312AHS still better.

Rich Rarey is the technical director of the NPR program "Talk of the Nation," and author of the series Public Domain in RW.

**SHORT TAKE**

## FD-4: New Multitrack From Fostex

Take a look at the new Fostex FD-4, a four-track digital recorder that allows you to use the media of your choice.



Ports on the back panel connect the FD-4 to nearly any SCSI storage device, including Zip disks, Syquest EZ Flyers or MO drives. An internal 2.5-inch EIDE drive can also be installed.

Full Cut, Copy, Move and Paste functions are included. A four-channel mixer, XLR mic connectors and two Aux sends/receives round out the physical features of the FD-4.

For information, contact Fostex in California at (562) 921-1112 or circle **Reader Service 17.**

— Alan R. Peterson

# Windows NT: Moving Up from '95

Carl Lindemann

Computers used in radio audio storage and digital production made the shift from Windows 3.x over to Windows 95 only a short while ago. Now it is Windows NT that is making serious inroads into the digital audio arena.

What is the difference between Windows 95 and NT? In terms of installation, Microsoft says you "upgrade" to Windows 95, but "migrate" to NT.

Upgrading was simple: Pop in a CD-ROM or a few floppies. With that and the likely addition of a few MB of RAM, Windows 3.x was transformed to Windows 95. Existing 16-bit applications and the overall systems configuration remained in place and new 32-bit functions were layered on top.

## Migrating bits

In contrast, NT is a fully 32-bit operating system. As such, it really is not backward-compatible with 16-bit software written for Windows 3.x or DOS (Windows 95 software is 32-bit and will run on NT). So you "migrate" to it, installing new 32-bit applications from the ground up.

A year or so ago, upgrading made sense. It breathed life into aging machines and provided an easy way to utilize the latest software. Now, dropping prices and increased performance make the current crop of equipment nearly irresistible, so NT migration becomes less daunting.

"If a user is able to afford an NT system — and the cost difference is nominal these days — they stand to benefit from both performance and operating system stability," said Rimas Buinevicius, CEO of Sonic Foundry.

NT's speed comes from being a 32-bit thoroughbred. "Because the NT operating system is designed to execute 32-bit instructions exclusively instead of the specific 16-bit code of Windows 3.1 or the 16-bit/32-bit compromise of Windows 95, the user gains from more instruction horsepower per CPU clock cycle," said Buinevicius.

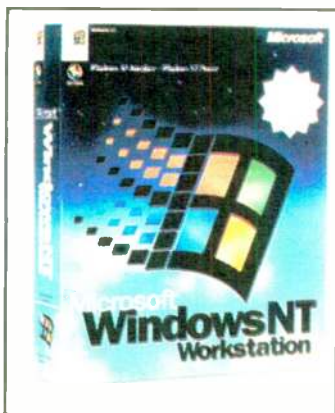
For Innovative Quality Software President/CEO Bob Lentini, such power is crucial for realizing the full potential of Software Audio Workshop (SAW).

"Performance is critical with our program," said Lentini. "It's a beast. It really beats up every ounce of the machine's capacity. We put the machine through all kinds of torture in DMA (direct memory

access) and interrupt access. Everything you can do to hog-tie a machine makes up SAW. NT on a properly set-up machine really makes us fly."

## Setting it straight

What defines a properly set-up machine? Microsoft says NT will run minimally on a 486/25 PC with 12 MB RAM.



Windows NT: Here it comes



The New Scott Studios NT System, Due in Q2 1998

applications," Glassman said.

As with any emerging technology, part of today's choice must be made with an eye to the future. "It was easy in the old days," Glassman said. "A console was a console. The cart machine was a cart machine. Now, you look at a computer. What is it, a computer? No! It's an audio editor, an automation system or traffic system. What you want to do is be open to new technologies and possibilities."

These "new technologies" will be strictly 32-bit. DigiGram recently released its "np" line (for New Performance) to be

used in Windows 95, NT and the successors to these operating systems. It does not support 16-bit "legacy" applications.

What does NT actually deliver? According to Lentini, SAW running under NT makes three to four tracks available for real-time playback. Also, faster reaction to commands improves the

feel and "liveness" over Windows 95 so that it "puts you closer to being at a real console," according to Lentini.

Another welcome improvement comes in stability. When Windows 3.x and Windows 95 crash, often all you can do is hit the reset button. This becomes truly problematic if you are multitasking.

Broadcast Electronics Director of Studio Systems Ray Miklius sees NT's superiority here.

"It provides greater protection against failure in a multiple applications mode," Miklius said. "If a news system running on an AudioVAULT on-air workstation crashes, it does not take down the AudioVAULT workstation."

See WINDOWS, page 48

## Dual-Bootin' Boogie

Part of what made Windows 3.x so irresistible was that it kept DOS programs accessible. The old applications and OS (operating system) were in place to fall back on while you learned the new one.

Windows 95 shares this ease-of-transition, but NT does not afford that luxury. However, creating a "dual-boot" 95/NT configuration is a way to segue, rather than migrate.

"Dual boot" means that the two different operating systems can exist in separate partitions on the same hard drive. On bootup, after the initial BIOS routines, a screen appears offering you a choice; in this case, between Windows 95 or NT.

From NT, you can access all partitions (formatted in either the NT file system or FAT 16), but not programs. For example, you cannot run SAW 5.x, but you can access old sound files.

If you do need old programs — or even the C:\ prompt — boot to Windows 95 instead. The only drawback is that Windows 95 only sees FAT partitions. You cannot access NT files residing on NT-formatted areas. To work around this, create an additional FAT partition to keep files under either OS.

Building a dual-boot system is simple. Run the NT installation disks. That creates a new partition past the pre-existing Windows system. But beware of a few pitfalls: my "migration" meant moving to a larger hard drive.

The first glitch came because my old version of Windows 95 (pre-OSR2) needed a software patch. Transferring the files without the patch caused errors that soon proved disastrous.

The lesson? Always check the Microsoft Web site for the latest service packs and upgrades. And don't even think about doing this without backing up first.

Oddly, NT installation on a system with OSR2 may be problematic, too. NT does not recognize FAT 32 partitions; only FAT 16. So if you attempt to do this with a Windows 95 machine of fairly recent vintage, you may have to use a third-party software solution to convert FAT 32 to FAT 16 first. Or rebuild from the ground up installing OSR2 onto a FAT 16 partition.

Another complication came from attempting to save a few bucks using a motherboard with a non-Intel chipset. A "100-percent compatible" clone of the Intel TX caused irrevocable problems with a Digital Audio Labs CardD+ soundcard (in NT only, not Windows 95), and had to be swapped.

Most compatibility testing is done with Windows 95 and not NT. Unless you like being a beta tester, stick with the name brands.

Finally, NT 4.0 is not "Plug and Play," so expect to spend some time setting IRQs (interrupt requests) in the BIOS. Like most high-performance cars, NT comes with a manual transmission.

— Carl Lindemann

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SHORT TAKE

# Yamaha Digital Goes PC

Alan R. Peterson

Given the popularity of PC-based digital audio editors, it was only a matter of time before Yamaha came out with its own entry. And the new Yamaha "DSP Factory" is anything but your standard game card fare.

**Debut performance**

The first product in the DSP Factory line is the Yamaha DS2416 digital mixing card, which combines the mixing power of the company's popular O2R console with an audio streaming engine capable of eight simultaneous recording tracks and 16

simultaneous playback tracks.

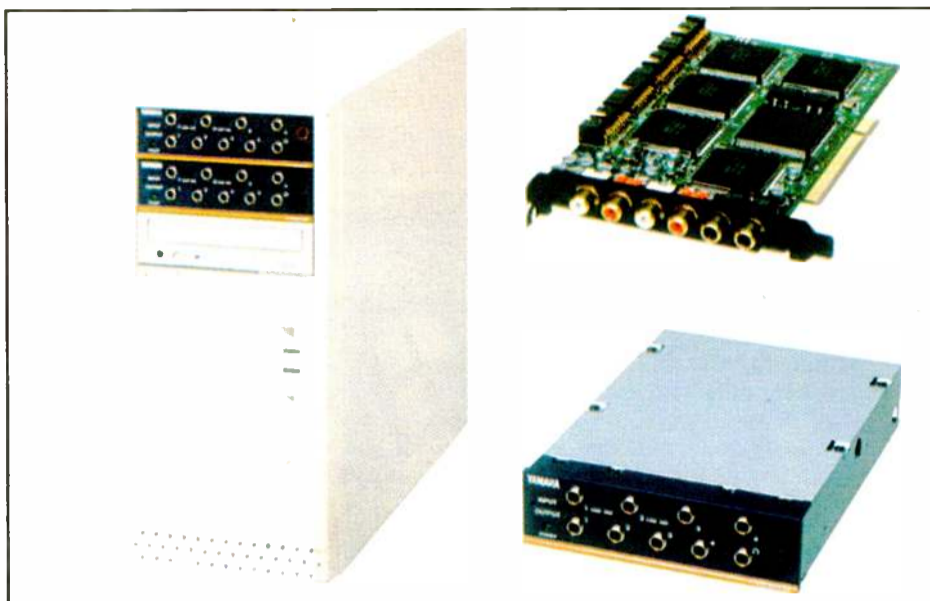
A major limitation in soundcard technology has been that most record only two tracks at a time. For a DAW to better emulate a conventional multitrack recorder and break away from its "one-man-band" manner, it should have the ability to record multiple tracks simultaneously. The DS2416 has the horsepower to do so.

The new sound card relieves the computer's central CPU of mixing, EQ and effects processing. Five proprietary chips made by Yamaha are dedicated to these tasks, speeding up the rendering and processing of audio without taxing the machine's processor.

Yamaha designed the DS2416 card to include a number of features from the O2R console, including a 24-channel, 32-bit mixer with 10 bus outputs and six Aux Sends; 104 bands of parametric EQ;

analog inputs and four outputs, along with a headphone jack. The AX44 is sized to fit into a drive bay on a conventional personal computer.

The Yamaha DS2416 is set for a



Yamaha O2R: Power in Your PC

26 dynamics processors; and two effect processors equal in quality to the REV500 reverb unit. Under the control of computer software, the mix can be fully automated.

The DS2416 has stereo analog and coaxial digital inputs, and an optional unit — the AX44 — breaks out to four

spring release and already has the support of several major audio software companies, including Cakewalk, IQS and Steinberg. Expected list price is \$1,000.

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## Moving on Up to NT

► WINDOWS, continued from page 47

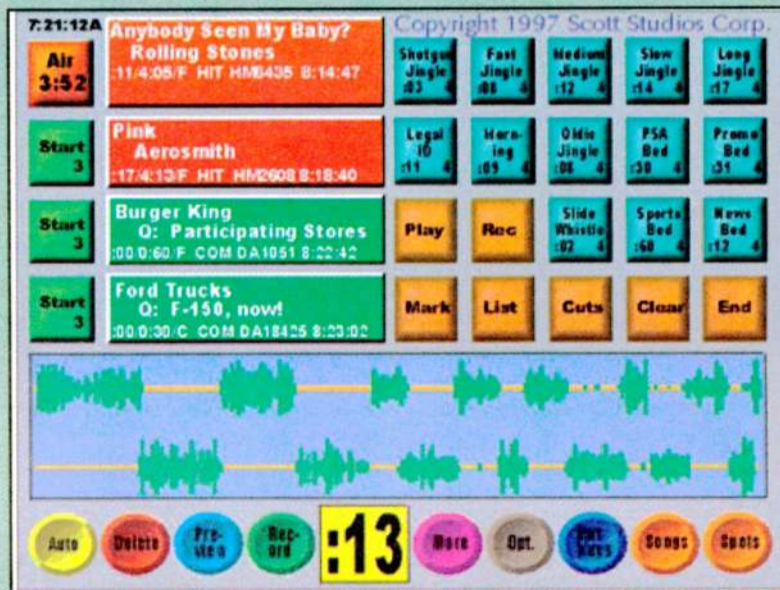
Another difference between Windows 95 and NT is in their file systems (the way data is formatted on the hard drive). The original version of Windows 95 kept a file allocation table called "FAT 16."

FAT 16 did not allow hard drive

partitions larger than 2 GB. For Dave Scott, president, CEO, and co-owner of Scott Studios Corp., that presented practical problems for an on-air audio library.

Scott notes that later versions of Windows 95 (known as OSR2) support an improved file allocation table — FAT 32 — that can also go beyond 2 GB. Even so, Scott Studios has made a full commitment to developing for NT. Expect products to be ready before the second quarter of 1998.

The only real downside to NT is that



Workstation software, such as SAW32, is ready for NT now.

it takes a long time to load, although with NT's increased stability, there is seldom any reason to take it down.

"In the old 386 days," said Lentini, "DOS/Windows could boot-up in moments. Now we have these Pentium IIs and it takes minutes and minutes for the operating system to boot. NT is a much more complex beast." ■ ■ ■  
Carl Lindemann produces the syndicated radio show "Cyberscene" and manages its supporting Web site: [www.radioshow.net](http://www.radioshow.net)



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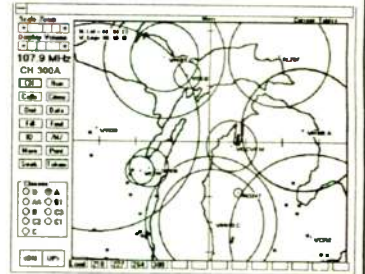
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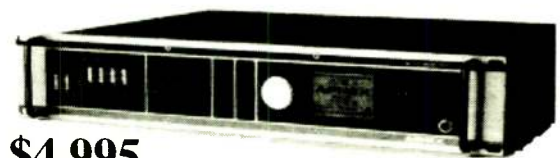
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## CD PLAYERS

## Want to Sell

**Technics SL-PG-300 (18), \$50 ea. E Swanson, WPKR, 2401 W Waukau Ave, Oshkosh WI 54903. 920-236-4242.**

**Denon DN-2200F dbl CD player, needs minor repair, \$300/BO. Mtn Bdctg, 516 Shenandoah Dr, Brentwood TN 37027. 615-376-9040.**

## COMPUTERS

## Want to Sell

**Computer Concepts DCS computers, control room & prod room & server, assume payment. G Wilkes, KTQB, 422 E Main #124, Nacogdoches TX 75961. 409-564-4559.**

**Apple Macintosh 512k w/various technical software, \$50. JC Goggan, KBNV, POB 87, Washington MO 63090. 314-239-0401.**

## CONSOLES

## Want to Sell

**Dynamax MX12L, \$3800; Dynamax S-MX semi/fuse kit, \$45; Dynamax TE-M test extender, \$25; Dynamax MAN-MX tech manual, \$20; Yamaha MC1604II, \$220. J Coursole, WPKR, 2401 W Waukau Ave, Oshkosh WI 54903. 920-236-4242.**

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**BE Spotmaster 5BE100 5 chnl, \$400. JC Goggan, KBNV, POB 87, Washington MO 63090. 314-239-0401.**

**Quantum QM-168 & QM-120 16x8 w/patch bay, \$2000; Gatley 16x8 w/quad monitoring, in custom console, 4 effects returns, \$500. A Baker, Bdct Prod of America, 804 E 38<sup>th</sup> St, Indianapolis IN 46205. 317-925-7371.**

**MCI/Sony 618, 24x24, \$6.5K; Quantum 24x24, \$4.5K; Soundcraft 600, 32x16, \$5.5K, like new; Model 30, \$295; 512, \$950; 520, \$1450. W Gunn, POB 2902, Palm Springs CA 92263. 760-320-0728.**

## Want to Buy

**Soundworkshop 40 or parts. A Polhemus, Excalibur, 750 8<sup>th</sup> Ave, NYNY 10036. 212-302-9010.**

**Info on Raytheon RC-11 bdct console, circa 1940-50's, transformers, UTC info mostly. E Davison, 6083 Bahai Del Mar Circle #559, St Petersburg FL 33715. 813-866-2635.**

## DISCO-PRO SOUND EQUIP

## Want to Sell

**Neumann AM-32B disc cutting lathe, complete with VG66 electronics & SX 68 head, in use, can demo, \$8900. R York, Jewel Records, 1594 Kinney Ave, Cincinnati OH 45231. 513-522-9336.**

**Avedis Zildjian 24" turkish USA made cymbal w/pre-drill rivet holes, \$190 +shpg. W Dougherty Jr, WLD Rcdr Std, Music Valley Rte 1, Mill Spring MO 63952. 573-998-2681.**

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**Orban 8000A stereo gen, \$1000; Microphon Flexmod composite processor, \$750. E Swanson, WPKR, 2401 W Waukau Ave, Oshkosh WI 54903. 920-236-4242.**

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## Want to Buy

**Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.**

## MICROPHONES

## Want to Sell

**Neumann U47, \$3900; U67, \$3300; U87, \$1800; KM83 or 84 pairs, \$1400; KM88s, \$950 ea; RCA 77DX, \$1200; BK5, \$700; BK1A, \$300. W Gunn, POB 2902, Palm Springs CA 92263. 760-320-0728.**

## Want to Buy

**EV RE20 mic, \$295; EV 309A shockmount, \$65; Popless wind screen, \$25; Telex V220 sportscaster headset w/cord, XLR plug, \$145; OC White M2MDUR mic arm/R, \$65; Symetrix 528E mic processor, \$285; Atlas deck mic stand, \$25. J Coursole, WPKR. 920-236-4242.**

**Shure SM7 (2), \$165; (2) Mike crane light duty, \$20 ea. E Swanson, WPKR, 2401 W Waukau Ave, Oshkosh WI 54903. 920-236-4242.**

**Sony C-37A condenser tube mics (2), excel cond, \$950/pr. G Garnes, 9 Quail Run, Hackettstown NJ 07840. 908-850-3826.**

**Langevin 5116's, 5301, EQ's and more! 818-887-6600 fax 818-887-4700.**

**RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.**

**RCA 77-DX's, 44-BX's, WE KU-3A's On-Air lights, recording lights. Top price paid. Fast response. Bill Bryant Mgmt, 2601 Hillsboro Rd, G12, Nashville TN 37212. 615-269-6131, FAX: 615-292-3434.**

## MISCELLANEOUS

## Want to Sell

**Eventide BD500 delay, \$1795; Audio Digital TC-4 delay, \$800; Circuit Werkes AC 12 coupler bay w/3 cards, \$700; Gentner TS612 6 line/exp w/screenware pkg, \$2000; Gentner TS612 network interface, \$275; Gentner TS612 control surface, \$275; Best Power UPS L1 3KL, \$1275; Pyramid 12V 3A reg pwr supply, \$50; Henry Engineering super relay, \$75; Pelican road cases, \$50; Panduit 2"x2" gray 6' lengths, \$2/lin ft; Illbruck white acoustic studio insulation, \$1/ft; 7' black rack, \$400; Fidelipac On-Air light, \$45. J Coursole, WPKR, 2401 W Waukau Ave, Oshkosh WI 54903. 920-236-4242.**

**Gates 78"x17" rack, gray, tapped equip, \$150; Gray 28"x15" rack, gray, tapped equip, \$50; rack, telephone relay, tapped, gold, \$20; Thunder Bay effects library LPs, \$50; Gorman Redlich CD EBS decoder, \$35; Symetrix SC-203 telephone hybrid, rack mounted, \$150. E Swanson, WPKR, 2401 W Waukau Ave, Oshkosh WI 54903. 920-236-4242.**

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US, British: KT88, KT77, KT66, 6550, 6CA7, EL34, 5AR4, GZ 32, 34, 845, 300 A&B, etc. R Cobb, 1044 Lightfoot, Winauma FL 33598. 813-634-1940.

TURNTABLES

Want to Sell

Russco Cue-Master w/tone arms (4), \$150. JC Goggan, KBNV, POB 87, Washington MO 63090. 314-239-0401.

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Call your advertising representative 703-998-7600 for details & deadlines

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BROADCAST EQUIPMENT

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Bext 20 W programmable exciter, excel cond, \$1500/BO. L Brent Oliphant, KMXE, POB 1678, Red Lodge MT 59068. 406-446-1199.

QE1 3500 W on 92.1, used 8 yrs, in storage, BO. K Diebel,

Life Network, POB 506, Bath NY 14810. 607-776-4151.

Harris MW-50 50 kW AM xmtr or plate modulated rig. A Weiner, WEGP, 3 State St Pl, Presque Isle ME 04769. 207-985-7547.

50 kW shortwave xmtrs or larger. G Richardson, WJLR, POB 91, Upton KY 42784. 502-369-8614.

Used 5 kW FM w/exciter. Steve, KDJR, 314-586-0101.

McMartin AM/FM xmtr, any model, exciter or stereo modules. Goodrich Ent., 11435 Manderson, Omaha NE 68164. 402-493-1886.

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Taylor Bros. (Oldham) Limited, Lee St. Oldham England. Tel: 0161 652 3221, Fax: 0161 626 1736

KTJL, 1707 Louisa St, Rayville LA 71267. 318-728-5852.

RCA 50F, 50 kW, tuned to 810 kHz, in Kansas City, gd for parts, BO. L Timmons, WHB/KMZU, 102 North Mason, Carrollton MO 64633. 816-542-0404.

Harris MW-5B 5 kW AM, \$15,000. JC Goggan, KBNV, POB 87, Washington MO 63090. 314-239-0401.

ITA FM 1000-C 1 kW FM w/exciter & solid state rectifiers, as is, buyer picks up, \$1500. D Carmine, WKKM, POB 549, Harrison MI 48625. 517-539-7105.

Used PTEK 500W FM amplifier, \$2950, full manufacturers 2 year warrentee. Other power amps and exciters also available. 408-448-3342.

Want to Buy

5 kW RF dummy load, to be used on 105.5. D Palmer, WXTQ, 300 300 Columbus Rd, Athens OH 45701. 614-593-6651.

Bauer 707 FM, 1 kW, no exciter, 2 tube design w/harmonic filter. J Travis, Family

I think radio, therefore I am radio, phones, ratings, women 18-54. Mike, 509-397-9176.

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ADVERTISER INDEX

This listing is provided for the convenience of our readers. Radio World assumes no liability for inaccuracy.

Table with 4 columns: Page No., Advertiser, Reader Service No., and a second set of Page No., Advertiser, Reader Service No. listing various companies and their corresponding page numbers.

Table listing staff roles and names: Production Director (Lisa Stafford), Production Manager (Lisa Hoagland), Publication Manager (Jennifer West), Showcase Coordinator (Vicky Baron), Ad Traffic Manager (Kathy Jackson), Desktop Management (James Cornett), Ad Traffic Assistant/Classified Coordinator (Anastacia Stometta), Ad Coordination Manager (Simone Mullins), Circulation Director (Sheryl Unangst), Circulation Manager (Robert Green), Accounts Receivable (Steve Berto).

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Table listing advertising sales representatives by region: U.S. East (Skip Tash), U.S. West (Dale Tucker), U.S. Midwest (Sandra Harvey-Coleman), Southwest Sales (Christopher Rucas), Other Regions (Stevan B. Dana), Latin America (Alan Carter), UK, Ireland (Phil Guy), Europe, Africa, Middle East (Raffaella Calabrese), Asia/Pacific (Eiji Yoshikawa).

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