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Act now to prevent damage to buildings and equipment in early spring.

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Radio World

The Newspaper for Radio Managers and Engineers

January 3, 2001

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Congress Limits LPFM Service

by Leslie Stimson

WASHINGTON The number of stations possible under the FCC's low-power FM service will be scaled back dramatically, and former pirates will be forbidden from LPFM ownership entirely, under legislation that passed Congress.

Before it adjourned in December, lawmakers passed a bill restoring third-adjacent channel protection for the service. Thus LPFM will be limited mostly to smaller markets. The bill also prohibits the FCC from eliminating or changing minimum distance separations for third-adjacent channels without authorization from Congress.

NAB, NPR and the International Association of Audio Information Services applauded the bill, which President Clinton has signed into law.

It requires the FCC to have a third party conduct interference tests in nine markets to determine if third-adjacent channel protections should be retained in the future.

CES Show Kicks Off A Digital Satellite Year

2001 Pivotal for Digital Radio as Sirius, XM Showcase Receivers to Retailers While iBiquity Plays Up Data

by Leslie Stimson

Vegas Jan. 6-9.

Terrestrial radio is seeing the evolution of MP3, wireless and other technology as competition for listeners in their cars. But the single biggest change that receiver retailers, manufacturers, broadcasters and consumers will see this year is the emergence of satellite-delivered digital radio.

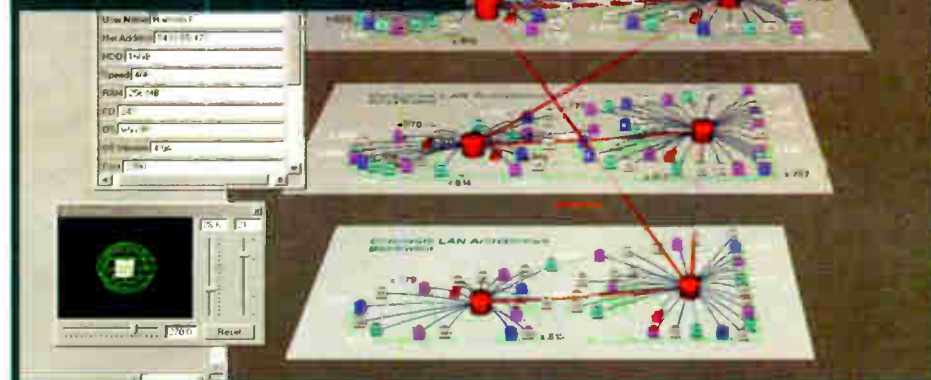
This will be reflected on the floor at the 2001 International CES show in Las

To showcase its technology and garner retailer awareness for its subscription-based digital service, Sirius Satellite Radio will broadcast live at the show. Sirius plans to originate a signal from its New York studios, uplink it to one of its satellites and downlink that signal to its terrestrial repeater system in Las Vegas.

If successful, this would be the public's

See CES, page 8

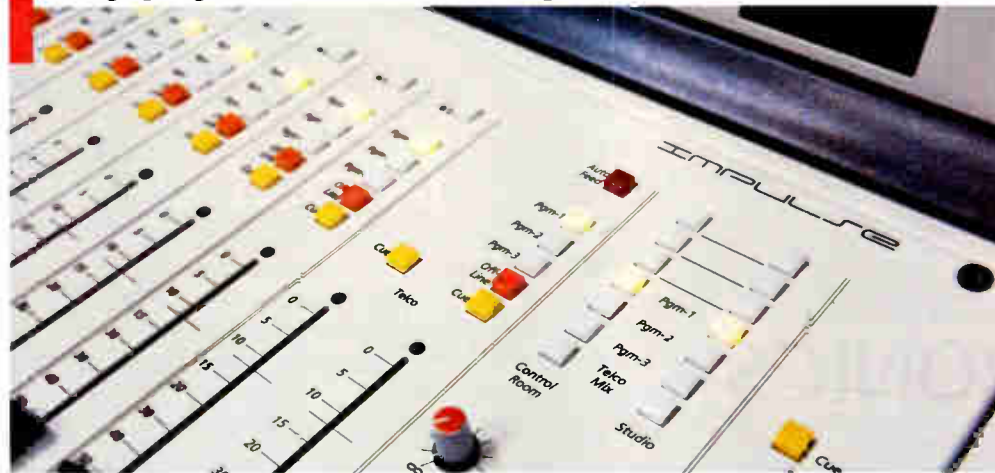
FOR THE RECORD



Engineers are using powerful new software to create enhanced station documentation

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◆ NEWSWATCH ◆

15,960 Total Stations in U.S.

WASHINGTON There are nearly 16,000 radio stations in the United States, including translators and boosters. The exact total from the newest FCC report is 15,960.

The breakdown: 4,685 AM stations, 5,892 FM stations, 2,140 non-com FMs, plus 3,243 FM translators and boosters. The number of stations in each category increased from a year ago, according to the commission. The count was accurate as of Sept. 30.

EEO Rules Upheld

WASHINGTON The FCC upheld and clarified its new Equal Employment Opportunity rules in November 2000 in response to NAB's request for several changes earlier in the year. The commission let stand enforcement policies when the rules have been violated, but allowed for unusual circumstances when some exceptions can be made. NAB had argued that special efforts to reach women and minorities are no longer needed because those groups are now part of a "word-of-mouth" network. The FCC disagreed, saying EEO's performance over 30 years

attests to "the success of the requirement, not grounds for its abandonment."

All EEO reporting requirements were retained, but the Public File Report does not need to contain specific applicant or interviewee names, said the commission.

LPFM Filing Window Stalled

WASHINGTON The FCC will hold its third application filing window for low-power FM Jan. 16-22. Originally, the

third window was slated to begin around the end of November. Sources said the delay was due to uncertainty surrounding the presidential election and how LPFM would fare as Congress returned for a lame-duck session. The commission was reviewing approximately 1,200 LPFM applications from two filing windows.

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Station Count Is Not Like 1-2-3

FCC Proposes Changing How It 'Counts' Radio Stations to Determine Markets, Ownership

by Leslie Stimson

WASHINGTON Could radio see a big rush to consolidate stations in middle and small markets? Some experts believe so, based on the outcome of an FCC proposal to redefine radio markets for the purpose of determining whether groups fall within ownership limits.

Among their last actions affecting radio in 2000, commissioners proposed changing how the FCC calculates the number of stations in a market and how many stations one licensee owns in that market.

Some commissioners believe the current method for determining the number of stations in a market — by counting overlapping signal contours in a geographic area — allows one company to control more stations in a market than intended by the limits spelled out in the 1996 Telecom Act.

Taking comment

The commissioners have invited comments on a proposal by Jan. 26 (MMB Docket # 00-244) to use different methods to count stations in a market, such as Arbitron market definitions. The commissioners feel the agency's methodology should at least be reviewed, because the current system sometimes produces unintended results.

No changes would be applied retroactively, so any transactions already closed would not be affected.

But pending applications may be affected. Generally, the commission intends to process pending applications under existing standards. However, in cases "raising concerns" about how it counts the number of stations one party owns in a market, the agency would defer a decision on that transaction until the definition issue is resolved.

Because consolidation of the larger markets is largely complete, observers said, any market definition changes would more likely affect deals in medium and small markets, where mergers continue.

Commissioner Susan Ness supported the proposal, but compared market definition changes now to closing the barn door after the horse has left.

The commission would review comments, and some months are likely to pass before any definition changes would be made.

But even if nothing is changed, at least one telecom lawyer said the possibility that ownership limits could be affected by a new counting method could spur a rush of transactions in medium and small markets.

"If I owned a group ... under these new rules I would sell now rather than wait," said Pepper and Corazzini's John Garziglia, who represents stations in smaller markets. If the definitions would allow group owners to control fewer stations in a market, that could affect whether clusters could be sold as a package or need to be split up, he said, negating any value and efficiencies normally associated with being part of a cluster.

An NAB spokesman said the association did not want to comment because it had not seen the details of the proposal.

However, in its newsletter *RadioWeek*, sent weekly to member stations, the association said, "NAB has told the commission that Arbitron's market definition is not a valid regulatory definition, but the FCC apparently disagrees. It appears that the FCC wants to tighten ownership rules beyond what Congress intended."

NAB has told the commission that Arbitron's market definition is not a valid regulatory definition.

— NAB's *RadioWeek*

In voting for the proposal, all the commissioners agreed the current counting method should at least be reviewed to ensure consistency with radio ownership limits.

But going beyond that, said Commissioners Michael Powell and Harold Furchtgott-Roth, would oppose what Congress intended when it passed the ownership limits.

"The effect of eliminating the commission's current methodology and replacing it with a commercially defined market (such as Arbitron) would be to shrink markets, and thereby substantially limit the number of stations one could own," said Powell.

The FCC feels using "Arbitron-like" definitions would more accurately reflect the location of a station's listeners and the identity of stations actually perceived by advertisers to be in a market.

The agency cited a transaction in Wichita, Kan. in which the FCC signal contour overlap method produced a market with 52 commercial stations; in that case one licensee could own up to eight stations. But staff told reporters "commonly used commercial market classifications, such as Arbitron," defined that market as having a total of only 24 stations. In that case, one licensee would only be able to own up to six stations.

At present, the FCC counts the stations whose principal community contours overlap *at all* with the contours of any station "whose contours define the market." However, when it determines how many stations one group owns in a market, it only counts stations with overlapping signal contours.

An FCC source confirmed that where its proposal reads "an Arbitron-like market definition," it means using Arbitron Radio Metro Survey Areas, or MSAs.

Arbitron says its metros generally correspond to the federal government's Office of Management and Budget Metropolitan areas. These are a starting point for the metros, as they can be different than OMB's definition due to topographical, sampling or other considerations.

Two criteria that determine whether counties are included in a metro are: at least 55 percent of listening quarter-hours from the county must be credited to existing metro stations, and at least 15 percent of commuting from the county

must be into the existing metro, according to "Arbitron Radio Description of Methodology."

Audience research sources agreed the metro is the most-used Arbitron market definition. The metro is generally the counties where the majority of listening is to the stations in the core city or cities of that metro.

Although nearly 80 percent of the nation's population is included in the approximately 850 counties in Arbitron



Michael Powell

"Although metro has been the traditional yardstick, more ad agencies are looking at stations in the TSA, not just the metro, as they consider placing advertising to support all of the stores of a single retailer in a region," said one audience research expert. "For a lot of your category killer stores and fast food chains, TSA is increasingly a consideration."

Other factors that research sources said should be considered are: how to count smaller stations within a metro that have some audience, but not enough to get into the ratings book; whether to count stations whose signals only cover part of a metro; and whether the absence or presence of an audience should be a factor in determining available signals.

And FCC observers note that all commission plans are subject to changes after the new president takes office. ●

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How Much Is 25 in Dog Years?

With the onset of 2001 comes the kick-off of a party season for us here. This year marks the 25th anniversary of our parent company, IMAS Publishing.

For the next 18 months, we will be celebrating a quarter-century of covering the wide world of radio, culminating in the 25th anniversary of Radio World itself in the summer of 2002.

You'll hear more about this as we go along. Next issue, I'll have details about a contest that might just put some pretty neat gadgets into your hands as part of our ongoing celebration.

★ ★ ★

In this issue we also mark the launch of a new section of your newspaper, called *Internet Radio*.

In alternating issues, Business Editor Laura Dely and her team of writers and columnists will help you make sense of the ever-changing dot-com world and how a radio professional can make the most of it.

We'll report on the newest ventures and online success stories, tips to succeed and strategies for implementing the technology. We'll also tell you about ideas that didn't work, and why.

If you have suggestions and ideas, send them via e-mail to LD@imaspub.com

★ ★ ★

Author Michael C. Keith is writing a book about all-night radio and would like to publish your experiences or observations in it.

Late-night radio fills a special void in the lives and memories of its fans. At radio's height — before overnight automation and satellite- or WAN-fed networks — there was a romance about our medium at night, a romance that still has an echo.

I remember falling asleep as a teenager, night after summer night, to the sounds of Mets baseball, distant ball games not from Shea Stadium but from some West Coast ballyard where my heroes wore gray and the first pitch was thrown at 10:05 p.m., according to my bedside clock.

Over the years, listeners around the

country have twiddled their tuning knobs to pull in that distant station in Chicago or New Orleans, to hear distant weather forecasts and local commercials read in distinctive local accents. Even today, the quiet tones of an overnight classical music DJ (in those towns lucky enough to have one) will soothe the soul. And how many truckers have whiled away long hours in the friendly company of a voice carried to them by radio waves?

I recall the lyrics to a Bob McDill song, performed by Don Williams:

*Nothing makes a sound in the night like the wind does;
But you ain't afraid if you're washed in the blood like I was.*

The smell of Cape jasmine through the window screen

John R. and the Wolfman kept me company.

*By the light of the radio by my bed
With Thomas Wolfe whispering in my head ...*

Late-night radio. Whether you work in the business or just listen, the warmth of the dial at night retains a powerful flavor.

If you have something to say about the role or value of all-night radio in American life, please e-mail Michael Keith at mckradio@mediaone.net

★ ★ ★

I don't know about you, but I'm glad we finally got that election thing figured out and can carry on with this inauguration like a real democracy.

One reason I wasn't overly concerned about the outcome, though, was that we would have had a moderate president in any event. This will not be a Mandate Presidency. Coalition building will be the order of the day.

Given the literal balance of power in the U.S. Senate and the razor-thin Republican lead in the House, George W. Bush will not have things much easier than Al Gore would have. Either of them certainly

would have been obliged to rule from the center.

Which is a good thing. Americans don't like extremists. We are fascinated by them on television, and our media cover them under the squeaky-wheel theory. But we prefer moderation in our governance.

The coming year will be remarkable politically. How will radio be affected? With a Republican calling the shots for the first time in eight years, how will FCC policy change?

We can look to the early 1950s for some ideas of the tenor of the times to come. The election of Dwight D. Eisenhower marked the last time Republicans held the White House as well as both chambers of Congress. Ike, a genial war hero and no liberal himself, spent a tremendous amount of effort trying to work with, and around, the ultraconservative elements of his party, who would have preferred that he put less labor into America's international commitments and more into rooting out the pinko Communists they detected lurking in government. Much of the wrath they had directed at Harry Truman simply transferred to Ike.

The issues today are different, but the political balance is much the same, and early comments in 2001 suggest that W. may face many of the same challenges as DDE in trying to adopt a centrist course while placating the active, conservative wing of his party.

That can't help but trickle into broadcast regulation. Stay tuned.

Despite the presence of Bill Clinton in the White House, Republican free-traders have not had much to complain about in the changes that have taken place in broadcasting of late. Bill Kennard may be the man who tried to push LPFM, but that's a footnote compared to the consolidation of radio ownership that has swept our business. When the broadcast history books write about the late 1900s, they will focus not on low-power but on the

From the Editor



Paul J. McLane

tremendous impact of the Telecommunications Act of 1996.

★ ★ ★

On this page I recently ran a photo of a cat that has taken up residence with a well-known audio processing manufacturer. Turns out that there are other animal lovers out there.

The photo shows Comrex President Lynn Distler and Vice President of Marketing Kris Bobo consulting Company Morale Officers Angus and Toby at the Comrex facility in Acton, Mass.

We're told that pooches in the Comrex office are a company tradition. Missing from the picture are Max, who owns Operations Manager Marsha Cook, and Kris Bobo's dog Jenny. 🐾



Lynn Distler, Angus, Kris Bobo and Toby

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READER'S FORUM

AM Receivers Trash AM Signals

Readers Respond to a Guest Commentary and Say The Problem With AM Is the Receivers

Jon GrosJean's Guest Commentary in our Oct. 11, 2000 issue, generated quite a few responses.

His article began, "When are AM broadcasters going to stop living in a dream world of thinking that there is a way to make practical AM receivers with audio response which will compete with FM receivers?"

Reader letters demonstrate that the question of how to improve the AM band remains a vital topic to our readers.

Dear RW,

All due respect to Mr. GrosJean and his qualifications, but he appears to be living in a black-and-white world when radio communication, particularly by amplitude modulation, is anything but. The difference can be compared to that between digital and analog.

In the black and white digital world, something either is or it isn't. There is no other state. So when thinking in this realm, one could make the error that a receiver which has a roll-off specification at 4 kHz will produce *no* audio above 4 kHz. So why transmit anything above 4 kHz?

In fact, this is not a digital realm. There are shades of gray. Receivers generally *roll off* and do not *cut off* at 4 kHz.

There is indeed some response above 4 kHz and the difference between something above 4 kHz and *nothing* above 4 kHz will be apparent to most ears except to those with hearing difficulties in this region.

I, therefore, beg to differ with the statement that it would be "better for the listeners if the audio modulation were limited to 4 kHz."

Many years ago, I was privileged to own a Meissner AM/FM tuner, the model number of which escapes me. Through this tuner, at a time when broadcasters were still sending out true high-fidelity AM, response into the highest ranges of human hearing could be reproduced. It was noticeably better than that obtainable on FM.

True, a strong signal was required to obtain the best quality, but a filter was provided to clean up the edges for weak signals and you just switched it in when you needed it.

We had 10 kHz spacing then, too. The virtual spacing is greater than this, however, because two signals in the same county aren't going to be allocated to adjacent channels. (I realize I am disregarding skywave for this discussion — please bear with me.) Therefore, there is room to accommodate the wider bandwidth we use.

I do agree with Mr. GrosJean's observation that an all-digital system is preferable for his stated reasons and also, because in order to accommodate the digital in-band, on-channel digital audio broadcasting signal as it is being proposed, the analog sig-

nal will have to be reduced to 5 kHz audio bandwidth. I don't know why I don't hear a big hue and cry about this from engineers and managers.

You all know what a two-line frequency extended feed sounds like, right? Is that what you want all the time on your analog channel (translated: the channel most people will be listening to for who knows how long to come)?

It's undoubtedly too late to turn back,

'Voices should be clear and live, not sounding like the announcer has a bag over his or her head.'

but AM broadcasters are being sorely cheated by this whole scenario. It would have been better to have established a whole new broadcast band and move all AM stations (and probably FM, too) to it, with a time period of several years for the changeover.

All this rolling off of audio to fit digital or to reduce interference I fear will be the final nail in the coffin of AM radio as we know it.

That may not be a bad thing, but there seems to be something that can be said for the radio service that is receivable on a \$5 radio anywhere you happen to be, and which will soon be another thing of the past.

Mike Shane
Operations Manager
KCRO(AM)
Omaha, Neb.

Dear RW,

I must strongly take issue with some of the issues expressed here. I have been actively involved in developing AM stereo radios and decoder circuits for 15 years.

Through the not-for-profit Web site www.amstereoradio.com, which was established in May 1998 by Alex Kay, I and our group of 70 members have been tirelessly working at dispelling the myths about AM radio.

In order to have a successful radio station, you must have something that the people want to listen to. *We* the listeners did not leave AM for FM. AM left *us*!

In the 1970s and '80s, AM and FM co-existed peacefully. We listened to *both* at the appropriate times.

If anyone had done a survey of popular opinion *before* WABC or WFAN changed formats way back when, we would still be tuning in to them every day. Today, it's all about the money, isn't it?

To think that AM should be limited to sports talk, yak radio, etc., with a bandwidth of 4 kHz is a big mistake. Music on AM can and does sound fine.

As far as AM stereo goes, everyone knows how the FCC blundered its duties here as far as choosing a format when it should have. As well, AM stereo was a little ahead of other technologies at the

time it came out.

The original IC Motorola came out with, the MC13020, was quirky. Our entire industry was just beginning to make digital radios. Analog radios posed difficulties in making the transition to stereo.

Today, however, the scene is different. The digital front ends are now "decoder friendly" and the MC13028 is a fine IC that can make a \$59 Sony boom box sound just fine.

As far as occupied bandwidth, what is the problem?

I am listening to WSM 650 AM stereo from Nashville, Tenn., right now, right

changes to *programming*!

Case in Point: WICC 600 AM stereo in Bridgeport, Conn., is consistently No. 1 or 2 in its *very* large market, and, get this — it's a *full-service* station! With music, sports and talk. It *works*! Give it a try!

Chris Cuff
Owner

www.amstereoradio.com
Forestburgh, N. Y.

Dear RW,

Shame on Radio World and shame on Jon GrosJean for spreading more misinformation about AM broadcasting. With friends like Mr. GrosJean we may as well shut off the AM band. Maybe that is what he wants by advocating a bandwidth of 4 kHz.

The article, while technically reasonable, distorts by omission. Bandwidth would be a much more serious problem if stations in the same market were allowed on co- and adjacent channels, which they are not. So this becomes a non-problem.

The strong signal requirement, suggested as a problem by Mr. GrosJean, never manifested itself in several of the cities in which I've driven while listening to AM stereo on non-super-power AM stations.

Mr. GrosJean needs to realize the receivers *are* the problem with AM today. Think back to the bandwidth of AM radio before miniaturization.

Even the automobile radios of the

See LETTERS, page 12 ▶

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Correction

In the Nov. 8, 2000 RW *Reader's Forum*, Steve Tuzeneu's name and station, WVNE(AM), were incorrect.

NEWS MAKER

Reiser: Interference Concerns

by Naina Narayana

MOUNT VERNON, Va. With several technologies affecting radio now and more to affect the medium in the future, former FCC Engineer John Reiser views interference as the most serious technical threat to radio today.

Observing radio from the sidelines since his retirement last September after almost four decades at the commission, Reiser is wary of new technologies because of the potential interference and signal degradation they may cause and warns broadcasters to carefully weigh the benefits of any new service for the public.

Reiser played a significant role in many landmark rulings during his 39 years at the FCC including the standardization of the FCC national program for broadcast station inspections in the 1970s, the 1976 revision of the agency's broadcast rules and regulations, and the reorganization of the Broadcast Bureau into what is now the Mass Media Bureau.

Future threats

Reiser's biggest concerns for the future of radio center around the increase in interference and degradation of service caused by the licensing of more stations, the authorization of additional RF devices and the inability to control unlicensed sources of RF energy.

"Stations should be more alert to all sources of interference to their signals," he said.

As for the possible threat of low-power FM stations, he doubts those stations will have a significant effect on full-service stations.

"The rules for the new low-power service are rather complex. Only organizations that are very serious in operating such stations will apply and have the financial resources to construct and continuously operate them," he said prior to the congressional vote on LPFM (page 1). "It does not seem that the LP radio rules were what most of the former pirate FM broadcasters were looking for, and probably will not deter their continued operation."

For up-and-coming radio technologies such as in-band, on-channel digital audio broadcasting, station engineers and owners will have to be totally convinced that

the conversion to in-band, on-channel digital audio broadcasting is worth any potential interference or signal degradation that may result, according to Reiser.

In addition, he said both IBOC and satellite-delivered DAB services will need to demonstrate a sufficient value and difference in quality so the public is willing to invest in receivers.

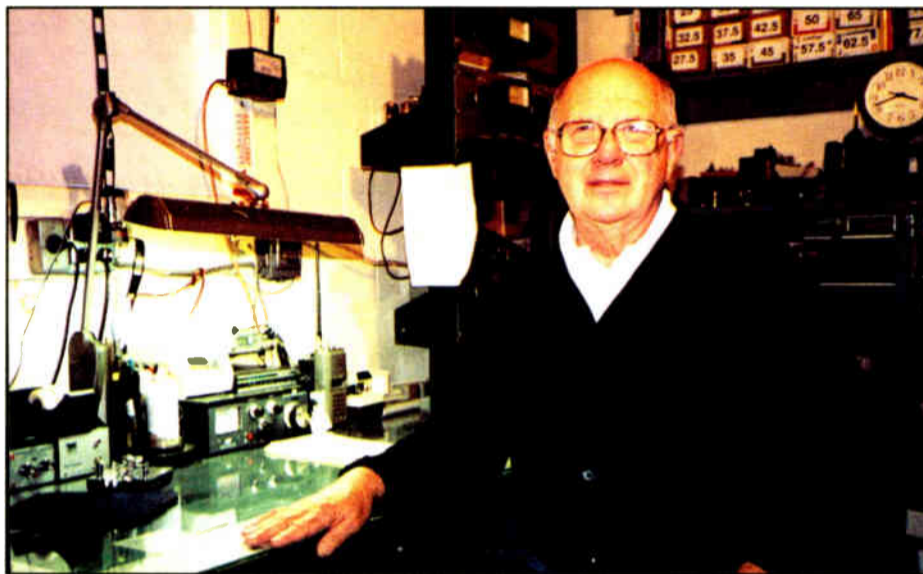
One technology he does not view as a danger to radio is the Internet, a medium he infrequently uses to listen to the radio.

childhood in Cadillac, Mich.

"During the 1930s, radio listening and attending movies were our main entertainment," he said. "It was impossible to buy radios, but sufficient parts could be found to build small battery sets."

A little help

With the help of a local radio repair shop owner named Harvey Pell, Reiser said he built his own radio and two-tube battery receivers to listen to the sympho-



Reiser sitting at his ham station

"A lot of Internet use is now a fad and many users will soon be more selective in the time they spend online," he said. "Also, I do not find the quality of Internet audio high enough for the type of music I enjoy hearing."

As for now, Reiser enjoys hearing symphony music the old-fashioned way and using his amateur license WQ4L.

So far, he said, retirement has been good for him. "After 39 years of federal service and reaching the age of 70, I wanted to spend more time doing recreational activities and traveling."

Naturally, Reiser has not left the audio world entirely. Last fall, the 70-year-old began spending more time digitally recording and mastering symphonic and other classical music performances, which he had previously done as a hobby. It was an interest, he said, that probably originated from his love of listening to symphony concerts during his early

ny concert broadcasts.

His sense of inventiveness also helped him as a high school freshman when he helped organize a radio broadcast club to produce a school program. At that time, Reiser had his first experience with the FCC. He obtained his first FCC commercial radio operator permit for the show, which, he said, prompted him to begin a career in radio.

After attending Purdue University and working as a broadcast engineer for several years, Reiser began working for the FCC's Detroit field office in 1961 — a time of steady growth at the commission.

"During this time, FM broadcasting was in a period of rapid expansion and conversion to stereo broadcasting, and TV stations were completing their installation of color programming facilities," he said. "Developing a standardized inspection checklist for FCC engineers to use as an inspection guide was a

major project."

Defective remote-control equipment and poor antenna field measurement performance data were the most common violations for which Reiser wrote up stations. Those problems, in turn, led to other mishaps at some stations he inspected.

Reiser recalls inspecting a station at which the operating logs were complete. But when he tried to take the readings himself, the metering was "way off."

"The chief operator insisted everything worked fine but I just did not know how to operate the unit," he said. "Just then, the duty operator came into the control room and said 'Charlie, I sure am glad to see you have someone to fix that thing. I haven't been able to get the thing to work since the first of the month.'"

In 1972, Reiser moved to the Washington office of the FCC, first supervising the national program for conducting commercial and amateur radio operator examinations, then working in the former Broadcast Bureau to revise existing rules that were outdated because of technology developments and problems experienced by operating stations.

Task force work

His significant experience in broadcasting earned him a position in 1976 as an engineering member of FCC Chairman Richard Wiley's broadcast regulation task force. Reiser said he and two fellow members were charged with reviewing all broadcast rules, deleting obsolete regulations and removing inconsistencies.

"Many of the changes in the technical rules were taken from my experience of inspecting operating stations of all kinds," Reiser said. "This was the most rewarding period of my FCC employment because I had continuous contact with station operators and engineers through many meetings, conferences and correspondence."

Younger engineers can learn a significant amount from Reiser's example of sticking to what he knows, said Frank Lucia, FCC special advisor for the Emergency Alert System. Lucia worked with Reiser on several projects. "Longevity can be the key to success because you eventually become the expert in your field," Lucia said.

Reiser's last position at the FCC allowed him to use all of his accumulated

See REISER, page 7 ▶

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Reiser

► Continued from page 6

knowledge and apply it to crafting international standards. In 1986, the U.S. Department of State appointed him chairman for the U.S. participation in the broadcast study groups of the International Telecommunication Union.

While he was heading U.S. delegations of broadcast engineering experts for meetings and conferences covering regulations and recommendations, Reiser said many countries adopted the recommendations established by the ITU.

Fellow engineers praised his ability to

handle sticky international problems such as a recent frequency conflict between the United States and Cuba.

According to Charlie Wooten, director of engineering of the Clear Channel Communications Inc. stations in Panama City, Fla., Reiser helped him recently when strained diplomatic relations over the Elian Gonzalez situation prompted a station west of Havana to move its 590 AM signal up the band exactly 1 kHz, at 591 kHz, which caused listeners in Florida to hear a loud tone when their radios were tuned to that frequency.

"(After I put) a call into John he would start the ball rolling to have the FCC contact the ITU in Geneva who would then in turn contact the 'Cuban FCC' about the problem." The situation was resolved in one day, said Wooten. ●



Reiser's home music editing equipment

Reiser File

- **Name:** John W. Reiser
- **Age:** 70
- **Home:** Mount Vernon, Va.
- **Family:** Wife, Patricia, five children and two grandchildren
- **First semi-professional radio experience:** As a freshman in high school, he received his first FCC commercial radio operator license to produce a school program and remote broadcasts.
- **Work experience:** Broadcast engineer, Midwestern Broadcasting Co., 1952-54; chief engineer, University of Michigan and technical director, Interlochen Center for the Arts, 1954-61; electronics engineer, FCC Detroit Field Office, 1961-65; assistant engineer, FCC Buffalo Field Office, 1965-72; chief of FCC Radio Operator Examination and Licensing Branch, 1972-76; engineering member of the FCC Chairman's Broadcast Regulation Task Force, 1976-86; U.S. chairman for International Telecommunication Union — Radio Communication Study Group 6, 1986-2000.
- **Notable technical accomplishments:** Reiser said he is most proud of his work on standardizing the FCC's national program for broadcast station inspections and helping to update the FCC broadcast rules and regulations as part of Chairman Richard Wiley's broadcast regulation task force.
- **Most serious technical threat for radio today:** Increasing interference from all sources.
- **The person he admires most in the radio industry:** The late Carl Smith of Cleveland, Ohio, one of the great pioneers in the design of broadcast antenna systems. "Carl was a gentle man who ... was an outstanding engineer serving commercial broadcasting and the government. Carl insisted on doing things exactly correct with no compromises."
- **Hobbies:** Listening and digitally recording classical music performances and traveling.

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COMREX

CES

► Continued from page 1

first opportunity to hear the new service. Visitors would hear the broadcast from prototype receivers on the show floor.

Van rides are planned so attendees can listen to the Sirius service.

Sirius has three satellites orbiting the earth and says deployment of its approximately 100 terrestrial repeaters should be complete by the end of March. Repeater testing is on-going at the San Francisco site, said Doug Wilsterman, vice president of marketing for Sirius.

Both Sirius and the other licensed satellite provider, XM Satellite Radio, are earmarking late June to early July as the timeframe they expect to have aftermarket receivers on store shelves in volume.

Pioneer, Alpine and Sony planned to exhibit prototype XM receivers.

Receiver manufacturers that intended to show Sirius prototypes are: Clarion, Jensen, Kenwood and Panasonic.

"We'll have a limited number of receivers out in the first quarter," said Wilsterman. Sirius expects to ramp up receiver availability in the second quarter of the year.

"We're a little buoyed by the fact that we've launched three satellites."

Automakers partnering with Sirius and XM plan to include AM-FM-Satellite receivers in some car models introduced in 2001.

Mobile

CES attendees can see prototype head units for Sirius and XM in the North Hall of the Las Vegas Convention Center exhibition area and the mobile electronics exhibit area in the Riviera Hotel.

XM plans to launch its first satellite on Jan. 8, and plans a demo of its terrestrial repeater system on prototype receivers in van rides and on the show

floor. It will originate signals from its Washington studio and from its booth, uplink them to a third-party satellite and downlink it to its terrestrial repeater system in Las Vegas. XM plans to include some channel samples to illustrate its programming.

XM intends to show an Acura MDX SUV and a Saab convertible equipped with pre-production samples of its receivers. Attendees also can see XM's antenna installation demonstrations.



A Sirius prototype receiver in a Mercedes-Benz

XM intends to launch its second and final satellite by the end of February.

The Washington-based satellite-delivered digital radio proponent's studios are slated for completion late this month and the approximately 1,200 terrestrial repeaters are expected to be

deployed by mid-summer, said Steve Cook, XM senior vice president for sales and marketing.

The companies developing satellite-delivered digital radio want their technology and roll out plans to wow retailers they say are eager to sell new product.

Lucrative radio

"Retailers want this. Satellite TV has been so lucrative" and they believe satellite radio would be similar, said

ogy. This year, attendees will see the merged entity, iBiquity Digital Corp.

iBiquity plans to air a live IBOC DAB signal from KWNR(FM), Las Vegas. The company will exhibit a prototype receiver showing the data capabilities of IBOC, in a van as well as in the Kenwood, Alpine and Visteon booths.

The data demonstration will show how radio station information can be displayed on the receiver face. "It shows an ad banner that stations can use to supplement their advertising," said iBiquity vice president of Marketing, David Salemi. "The next step is to add a 'buy' button to supplement commerce activities."

An important focus for the company now is its receiver chipset design, executives said. If the National Radio Systems Committee recommends a single IBOC standard in 2001, iBiquity could have receivers in the market in late 2002 to early 2003.

DAB is hot

Both the satellite and terrestrial forms of digital radio have a sizeable presence at the show. Representatives of iBiquity, XM and Sirius will participate in a digital radio panel (see story, page 14).

Satellite digital radio is not the only new form of entertainment to share dashboard space with terrestrial radio.

Auto manufacturers continue to shorten the design cycle of new car models, which allows receiver designs to be introduced to consumers faster. Ten to 15 years ago, the design-to-manufacturing cycle could typically take up to six years. Now, automakers are outsourcing more development to suppliers; the average cycle is three to four years. Automakers would like to reduce that to two to three years, to give them a competitive edge.

Radio still commands heavy consumer use in the car. But the way in which drivers and passengers use their car radio is evolving, experts say, necessitating changes in how manufacturers think of the traditional head unit.

For example, drivers who want to use their PDAs, cell phones or other personal devices can connect to the dash either with a cord or a cradle that interfaces with the device and the dash. Another new approach is to connect with a removable storage card

Steve Cook, XM senior vice president of sales and marketing.

The first generation of receivers will each receive only one service. The companies have signed an interoperability agreement, pledging to design a receiver that can receive both so a consumer can switch without having to purchase a new head unit and antenna.

Truly integrated receivers are likely three years away, although automakers are looking at interim solutions, said Cook.



iBiquity displays wireless data shown on a receiver of the future

The other form of digital radio — in-band, on-channel terrestrial — also will have a strong presence at the show.

At last year's CES, retailers saw the former USA Digital Radio and Lucent Digital Radio exhibiting IBOC technol-

inserted in the device and the dash.

An anticipated method of perfecting that connection is Bluetooth, a short-range wireless technology that makes it possible for data to be transmitted in two directions. New to CES this year

See CES, page 10 ►

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CES

► Continued from page 8
is a Bluetooth Pavilion.

Swanston said of Bluetooth, "A Bluetooth-enabled PalmPilot would negotiate a connection with your car. If your (storage) card is still on your belt, it no longer rings. It automatically senses your presence in the car and forwards the call to the speakers."

Mobile Internet

Debates abound over the potential timetable of Internet access in the car. Experts agree it's theoretically possible with wireless modem and PC-based devices. But getting that theo-

retical "pipe" to the car, and how the interface would work, is in flux.

"I think you'll see in the car similar

and all of TV is experiencing competition from the Internet," said Bob Law, vice president of mobile electronics

nection, to provide more data, speed and processing power to the car.

In this era of cell phone distractions, another issue is how drivers might access information from the Internet and still be able to concentrate on the road. One often-discussed solution is voice recognition or text-to-voice technology so the driver's information might be read aloud.

MP3 and more

Other trends will also be visible at CES. Receiver displays continue to incorporate larger, more colorful graphics. With the Internet in mind, one source said the future receiver might have a touch-screen display rather than several buttons.

Radio receivers with MP3 player capability continue to rise in popularity, and more manufacturers are expected to show such products.

"Some use cards that have slots for a memory card. It comes with a cradle like a phone and enables you to download music from your PC at home and put it in a box that acts like a CD changer," said Consumer Electronics Association spokesman Matt Swanston.

He said new head units have MP3 decoders that can convert the compressed data back to music. Some manufacturers are making head units that can play a CD that has the MP3 equivalent of 6 hours of music burned onto a disc.

"These are fairly new. There were some prototypes at the show last year and now they're on store shelves." Swanston said the average cost was more than for a head unit with a CD changer, but not as much as double that cost.

Swanston said manufacturers and retailers created this new product category swiftly in reaction to consumer demand.

Generally, consumer technology that originates in the home migrates to the car. Sirius and XM point to consumer desire to hear music not played on most stations as a strong indication of consumer support they expect for their products.

Wilsterman said consumers are downloading several billion dollars' worth of music they can't get on the radio. "That means people make an extra effort to get the music they want."

But this trend doesn't mean the death of radio, experts said. Despite the millions of receivers sold with cassette decks or CD players, 75 percent of the time people spend in their car they're listening to AM or FM radio. About 80 percent of that time is spent listening to music.

Receivers with cassette players continue to decline in popularity but are not a dead category yet, according to experts.

CEA forecast sales of 11 million cassette-CD units in 2000. That breaks down to about 7.7 million CD players-receivers and 3.5 million cassette-receivers. That compares to the 1999 forecast: 6.4 million for CD player/receivers and 4.6 million cassette receivers.

"The difference between the total units sold isn't huge but the switch between cassette and CD is significant," said Law.

Satellite DAB is not the only new form of entertainment to share dashboard space with terrestrial radio.

to what you see in the home, where the traditional broadcasters have had increasing competition from cable ...

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Letters

► Continued from page 5
mid-1950s sounded quite nice. Then, with the advent of transistors and the miniature chassis, bandwidth went the way of the vibrator. (*The vibrator was an electro-mechanical device, used for years in car radio power supplies, that changed DC to AC. — Ed.*)

Receiver engineers moved their focus to incorporating FM and all future thoughts of AM fidelity went out the window.

Today, AM is often the afterthought or the punishment given to some rising new engineer. Since AM is not "hip," guess what scientific knowledge gets applied. We hear the results. In the 1940s and early 1950s, the telephone links between studios and transmitters were expensive and many stations opted for 3 kHz lines to save money, and that was the beginning of bad-sounding AM.

Now, transmission technology is in place but receivers continue to disappoint. The decent ones are expensive, beyond the reach of the working class needed to make AM fidelity and stereo successful. The automobile companies discovered several years ago they could eliminate AM stereo and save \$3 per receiver, so they did.

What is really needed are several things to restore the fidelity to AM: an FCC ruling similar to the UHF ruling of the 1960s creating a requirement for AM

stereo on all receivers retailing for more than \$25, an FCC ruling establishing minimum bandwidth requirements and transmission system, an engineering community that would take pride in AM receiver designs and owners who were somewhat concerned with how their stations sounded.

Since the last is almost an impossible dream, and the first very uncharacteristic of the FCC, which seems afraid of its own shadow and the lawyers in Washington, we broadcasters need to find a high-profile senator with a passion for AM willing to sponsor some meaningful legislation.

William Allen
Consult-Ed.
Tucson, Ariz.

Dear RW,

Anyone who has worked in AM for any time and has experimented with wide-band reception knows that a lot of what Mr. GrosJean wrote is very true. In fact his numbers, if extrapolated, would show that signal strengths of 100 mV/m or more are often necessary to achieve true FM stereo quality, even on a stationary receiver.

Where I disagree with his comments is that he avoids the issue of really narrow band receivers. He suggests a 4 kHz audio response for AM while failing to address intermediate frequency responses of some receivers which yield a 1.8 kHz response.

Would a 4-kHz-wide AM station sound dramatically better on a 4-kHz-

response receiver? Yes, when compared to responses half that now. However, 4 kHz audio that sounds decent leaving the transmitter is not achievable in a National Radio Systems Committee-like mask.

The effects of sharp cutoff filters in that part of the audio spectrum are far more offensive to the ear than a similar 10 kHz filter. Realistically, the response should be no more than about 12 dB down at 7 or 8 kHz, after which a sharp filter could be used. The overall "cleansing" of the spectrum would be much less than first imagined.

Even if news and talk were the only formats on AM, music is still a part of the presentation and should at least sound balanced. Voices should be clear and live, not sounding like the announcer has a bag over his or her head.

About 30 years ago, the Germans reached a similar conclusion about bandwidth. They had to address a 9 kHz spacing rather than the 10 we do, but the mechanics are very similar. The filters required to address the issue sounded and still sound awful. This includes those built by U.S. processor manufacturers.

I have built systems in this country that essentially limited audio to 5 kHz, but a soft rolloff was always necessary to avoid unnecessary harshness. The stated audio response was really a filter corner frequency of 5 kHz (-2dB or so) and a cutoff of about 7.5 kHz.

There are two sides to the equation. While numbers that speak to the occupied bandwidth of a broadcast station vs. channel separation are enlightening, in most other services the bandwidth of the transmitter and receiver are complementary and are thus a system.

It would appear that even if broadcasters were to narrow their audio bandwidth, they would not have a complementary system through the receiver. This is where receiver manufacturers deserve their bad rap.

Over recent history, receiver manufacturers have all but refused to cooperate with broadcasters to develop a complete system.

In the past, economy required the use

of ceramic filters in the IF, replacing hand-tuned circuits, which were far less brutal on the overall audio quality. Many of the old arguments, such as the cost of manufacturing a receiver, will not work out very well in the 21st century.

Digital signal processing receiver technology that is now openly available to the end user in certain products for under \$300 reveals how good AM and reception could be, if more widely deployed. Not only would we have much better-sounding and -performing receivers, but the cost of manufacturing should be less as there is virtually no alignment required.

The available features that could be offered, and currently exist in DSP radios, are much greater. Anti-fade reception, impractical with analog techniques, is easily possible in digital by more than one method. Variable bandwidth is another easily achieved improvement and the list goes on.

AM in-band, on-channel digital audio broadcasting reception requires DSP-based receivers, but I for one have little faith that the technology will be fully exploited on the analog side of the unit by receiver manufacturers, who are deeply entrenched in their old time-tested analog design paradigms.

On the broadcaster side, current digital technology would now permit certain interference reduction techniques proven impractical in their previous analog implementation.

AM is still an important medium and should not become a technological stepchild.

A fair discussion on balancing the needs of broadcasters and receiver manufacturers has become almost a holy grail. NRSC was supposed to be a major step in that direction. Broadcasters gave on their side at some considerable expense. We see little, if anything, changed on the receiver side.

Robert Meuser
New York, N.Y.

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

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◆ NEWSWATCH ◆

► Continued from page 2

Emmis Delays Tracking Stock Plan

INDIANAPOLIS Emmis Communications Corp. (NASDAQ:EMMS) has postponed plans to separate its radio and TV businesses because of the slowdown of the economy. Executives plan to reconsider the separation when equity market conditions improve.

The company had been prepared to file a statement with the Securities and

Exchange Commission to create tracking stocks for Emmis' radio and TV business. Emmis owns 24 domestic radio stations, 15 TV stations, two radio networks, three international stations and a magazine-publishing arm. Given the recent downtrend in media stocks, the company "decided not to move forward immediately," said Emmis Executive Vice President/CFO Walter Berger.

"Instead, we will continue to evaluate our tracking stock plan as equity market conditions change over the next several quarters," said Berger.

Emmis shareholders plan to meet and discuss the situation Jan. 10.

Car Radio Big Theme at CES

ARLINGTON, Va. The 2001 Consumer Electronics Show in Las Vegas Jan. 6-9 will have four session tracks devoted to mobile electronics, with a special super session on Saturday, Jan. 6.

During the Digital Car Revolution super session, David Acton of General Motors/On-Star and Jack Withrow of DaimlerChrysler will talk about the impact of digital technology on mobile electronics and products consumers can expect to see from manufacturers

and retailers.

Nine sessions on the mobile electronics track will cover auto technology, including entertainment, which covers radio. Digital radio, both satellite and terrestrial, will be on hand; Sirius Satellite Radio, XM Satellite Radio and iBiquity Digital Corp. plan to exhibit in the North Hall of the Las Vegas Convention Center.

Radio World News Editor/Washington Bureau Chief Leslie Stimson will moderate the Sunday mobile track session, "Revamping Digital Radio," beginning at 1 p.m. at the Riviera Hotel.

Radio Advertising Bureau Ups Davis

DALLAS Lindsay Wood Davis has been elected executive vice president/meetings for RAB. He succeeds Wayne Cornils, who died last summer.

Davis came to RAB in March of 2000 as senior vice president/meetings and was senior vice president/sales for the former AMFM's Central Star region. He began selling radio in 1968 at age 17.

Davis was elected to his new post at the RAB board of directors meeting in November.

Audemat Reorganizes U.S. Base

STERLING, Va. French-based Audemat is reorganizing its presence in this country. It has moved its U.S. corporate offices to the Washington, D.C., area, where it will share administrative space with another French firm, ATDI.

In so doing, Audemat closed its Massachusetts office, where former vice president Dan Rau had been based.

The reorganization comes after 18 months of what the company described as increasing presence for its line of mobile field strength measurement equipment. It said it hopes the change will result in more visibility, technological awareness and effective support systems.

Sales Engineer Christophe Poulain will assume responsibility for contact with U.S. customers, according to Audemat spokeswoman Sophie Lion. Based in France, Poulain will travel in the United States approximately two weeks each month, and has visited Audemat's major clients, Lion said.

"We understand support is the most important thing, and we hope to develop an agreement with a (U.S.) company to do calibrations, technical support and repair," she said.

Rau becomes one of five Audemat dealers. "I believe that Audemat SA underestimated what it would take to get the U.S. office off the ground," he said. "I invested a tremendous amount of time and energy in the positioning of Audemat in the U.S. market and ... it is Audemat's intention to continue the effort from France so they do not lose momentum."

He said the line of products is "second to none" and he was pleased to continue the relationship as a dealer.

Audemat's new office is in Sterling, Va. The toll-free number is (866) AUDEMATE. Rau's company, Applied Wireless, can be reached at (978) 425-2420.

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PM Edition

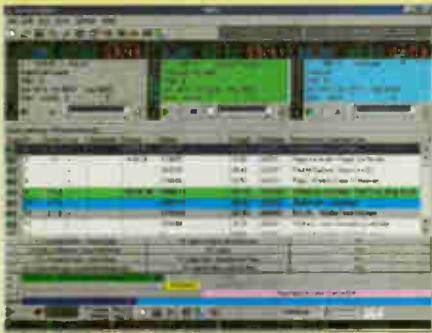
Published Monday, Tuesday and Wednesday afternoons, the PM edition is the source for up-to-the-minute news, making it a must-read "hot sheet" for the show. The afternoon edition will be distributed at both the Las Vegas Convention Center and the Sands Expo Center.

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PHOTO GALLERY

120 Stations — One Big Remote

Marvin Collins

A few months ago, when Barry Victor of Premiere Radio Networks learned I was retiring from KFI(AM)/KOST(FM), he called to ask if I could work on a project in Las Vegas for a few days.

The project involved having 150 radio stations broadcast all at the same time from the Aladdin Resort and Casino.

I agreed, and soon learned the purpose of this mass remote broadcast

front of the rooms on a large table on a riser. This much of the setup had been done before I arrived under the direction of Kirby Miovac, assistant to Barry Victor.

Zephyr convention

There were so many Zephyrs the place looked like a Zephyr convention. I have never seen so many Zephyrs at one place before in my life.

My first duty was to assist in setting

Each table was served by a smaller four-pair cable that fanned out from the 12-pair cable. All cables were terminated with XLR connectors.

use. The fourth pair provided a podium feed that went to all tables.

By Wednesday night we had three of the six rooms all cabled and plugged together and pretty much ready to go. The space in the ballroom for the other three rooms became available to us on Thursday morning at 10 a.m.

Now the rush was on to move all the



Barry Victor, director of engineering for the Radio Music Awards remote broadcasts, sits at the temporary Telos Zephyr farm during ISDN line checkouts. This farm eventually was divided and moved to rooms that were set up later.

was to promote the ABC television show "The Radio Music Awards" which aired Nov. 5, 2000. Guests on the Saturday night show were interviewed on radio stations all around the country on Friday and Saturday afternoons from noon until 4 p.m. to promote the TV show.

I arrived in Las Vegas the evening of Oct. 30 and checked into my room in the Aladdin. The next morning,

up the audio kits at each table. Each kit consisted of three microphones, three headphones, headphone amplifier and Shure mixer plus cables.

The final count of radio stations turned out to be close to 120. We had a lot of microphones, earphones, headphone amplifiers and mixers to set up. The audio kits were rented from Steve Kirsch of Silverlake Audio in New York. The 65 or so Telos Zephyrs were also rented



Shown is an exterior night view of the new Aladdin Resort and Casino, from which the remote broadcast originated.

The 12-pair cables started at the front of the room, where the Telos Zephyr farm was located, and extended out in the room to serve a group of three tables. The room for which I was responsible had 15 stations, so five 12-pair cables extended out to each group of three tables.

At the front of the room, the five 12-pair cables plugged into an XLR patch bay. Cables coming out of the back of the patch bay rack were then plugged into the appropriate Zephyr inputs and outputs. This accounted for two of the four pair serving each table. The third pair serving each table was for a dial telephone located at each table for station

previously set up tables from the "green room" center area of the ballroom to the now partitioned additional three rooms.

Thursday was a long day, with having to move into the last three rooms, cable and test the setups. We needed to be ready to put all stations on the air at noon on Friday.

Doom and gloom

Doom and gloom appeared on the scene Thursday afternoon when it was discovered that the ISDN lines provided by Sprint were not working properly. Test calls were being dropped prematurely. As test calls were being placed using the Telos Zephyrs, it was also found that there was not enough

See REMOTE, page 18 ▶



One of the six rooms set up and waiting for the radio stations to arrive

Tuesday, I reported to one of the large ballrooms at the Aladdin. I learned that the plan was to set up six rooms within the ballroom. Each of the six would be devoted to a particular radio format. Three rooms already had tables in place for each station to use.

Three also had Telos Zephyrs at the

from Silverlake Audio.

I was impressed by the amount of gear Steve Kirsch has in his stable of equipment. By the end of the day Tuesday we had the audio kits set up on the 120 or so tables.

The next job was to string out the 12-pair cables to each group of three tables.

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Remote

► Continued from page 17
capacity to handle but about half the out-bound long-distance calls.

Barry Victor, the director of the project, was now a worried and busy man. What if we had 120 radio stations arrive on Friday and could not put them on the air reliably, if at all?

Barry was busy calling all his contacts at Sprint. Late in the day, Sprint technicians and supervisors started arriving. They did their best but it was not until about 2 a.m. Friday that the last of the ISDN problems were finally cleared.

As it turned out, there was more than one problem. Telos advised that since the channel bank serving all our Zephyrs was located right in the hotel near the ballroom, the Zephyrs might be overdriven. To solve this problem, punch blocks quickly were purchased and put in series with the cables to the ISDN patch bays

nects. Replacing the CPU card finally cleared that serious problem.

Also during their testing, Sprint found a defective channel bank in a central office that reduced the number of ISDN outbound long-distance lines available for Las Vegas. The defective channel bank was replaced and finally early Friday morning test calls were made from all the Zephyrs and sufficient capacity existed. Whew!

Friday morning, the final checkout of the last three rooms was completed — a bit later than planned because the remaining three rooms had not been available until Thursday. Also the ISDN line problems put us behind on calling the stations to make sure we had good two-way ISDN connections.

Before we knew it, station staffs were arriving at their tables anxious to get on the air. This is when it really became hectic. Unplanned last-minute changes in ISDN settings with some of the stations made for some last-minute re-patching the assignments of Telos Zephyrs.



Marvin Collins and his assistant Mark Perry. This room had facilities for 15 stations to be on the air simultaneously.



Mike Phillips and Burt Weiner are shown in the largest of the six remote broadcast rooms. This busy room had 36 radio stations on the air simultaneously.

for each room. Five-hundred-ohm resistors were punched onto the punch blocks so that each ISDN line would have 500 ohms in series with each side of the line.

This helped, but other problems continued. After much testing, Sprint determined that the CPU card for the fiberoptic system that brought all the ISDN lines to the Aladdin had an intermittent problem that was causing the discon-

We had to group stations in pairs on the Zephyrs, which required any two stations to be using the same standard. The preferred standard was to send Layer 3 to the station and receive G.722 for the mix-minus return.

Last-minute changes

At the last minute, some stations found they had to deviate from the

planned standard. In one case, the Layer 3 would not work at the station end. Right up until noon Friday it was a busy time figuring out which stations to put on which Zephyrs to accommodate the last-minute changes and try to get them all dialed up on time.

I sure was glad when the last station was finally connected and checked out. The ISDN circuits worked well except

preparing to attend the Radio Music Awards TV show in the Theater for the Performing Arts at the Aladdin.

However, those of us who had been involved in setting up this big event now had the big job of packing it up. All those audio kits had to be packed back in their cases. All the Zephyrs had to be disconnected. All the cabling had to be taken up from the floor, coiled up

**There were so many Zephyrs
the place looked like a Zephyr convention.
I have never seen so many Zephyrs at
one place before in my life.**

for some unplanned disconnects. A quick redial usually took care of that problem.

After the stress of the Friday startup, Saturday's broadcasts were a pleasure. All we had to do was redial the stations for Saturday. No last-minute changes were needed. The rooms were full of personalities coming in for interviews and a good time seemed to be had by all.

All remote broadcasts ended at 4 p.m. Most of the people disappeared,

and returned to their shipping cases. Hundreds of boxes were brought out from the temporary storage area to contain audio kits, Zephyrs, etc. for shipping. Boxes had to be taped shut and labels attached.

By 11 p.m. Saturday, you would never have known that the Radio Music Awards mass remote broadcast had ever been in the large ballroom at the Aladdin Resort and Casino. 🌐

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Radio World, January 3, 2001

Keep an Eye on Leaks, Lightning

John Bisset

Cold weather brings frozen soil. The effects of freezing and thawing can disrupt building foundations, causing water leaks that may become apparent in the spring. Sometimes the problems rear their ugly heads on an occasional warm day in the middle of winter.

Patrick Staley is a headend technician for Time-Warner Cable in Raleigh. He experienced a water leak in one of the Controlled Environment Vaults, or CEVs. The problem presented itself as a pool of water at the lowest point of the building. Unfortunately, the lowest point was in the middle of the building, not lending itself to easy tracking.

side would have to be higher than the top of the tube cutoff inside. Another thought was the water leaked under the door threshold. Drain devices were tried on the high-grade end of the building, but still, technicians would arrive after a storm to find the telltale puddle. Short of manning the site around the clock, the crew was stumped.

Then, one evening in his shop at home, Staley spied his bottle of red chalk powder. Inspired, the next morning he visited the offending site and sprinkled a generous line of powder around the interior perimeter of the building, being sure to surround all of the potential trouble spots.

The day after a big storm, Staley ran by the site. There it was, a pretty red

time, the problem was corrected. Thanks for a really ingenious method of tracing leaks, Patrick.

Engineers," published by McGraw-Hill. In his book, Steve explains that every metal has some potential when compared to a metal other than itself. All that is needed is an electrolyte.

Steve recently found out that the key electrolyte in the atmosphere is sulphur,



Fig. 1: Water leaks can damage equipment

Staley had the site re-graded, resealed inside and out and had the building inspected several times. One contractor thought the water was coming through the conduit tubes. That possibility was discounted, because the water level out-

trail across the floor to the puddle spot. The trail led to the source of the problem: a break in the seam between the wall and floor.

The evidence was left undisturbed and the contractor was called once again. This

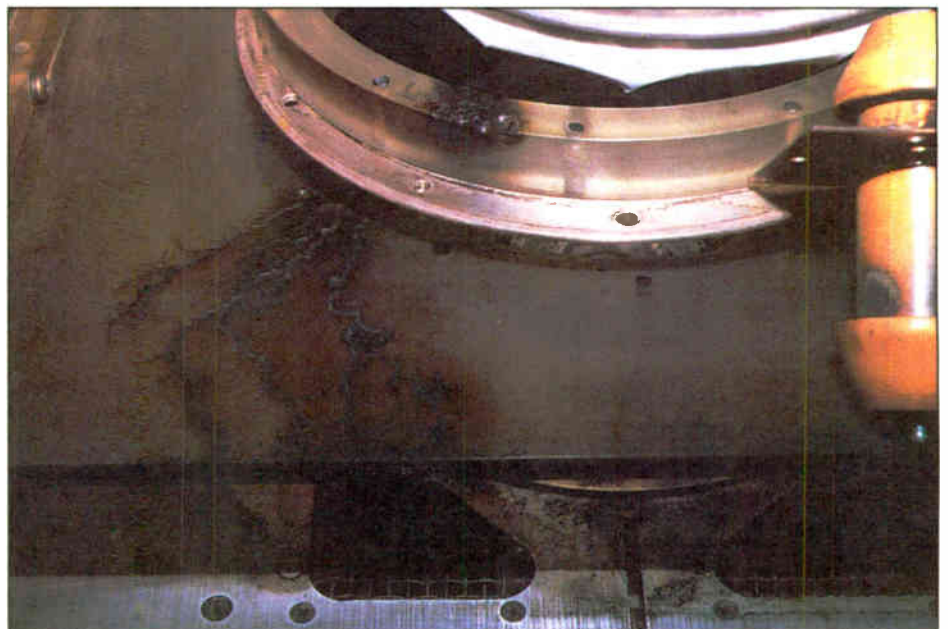


Fig. 2: Lightning damage to the PA shelf of an RCA transmitter

Keeping water out of a building can avoid damage, as seen in Figure 1. The potential for water leaking into a building is a good argument for mounting transmitters on a wooden frame, keeping them above the floor. At several customer transmitter sites I've visited, the wooden shipping pallet is used for this purpose.

In the Aug. 16, 2000, issue, we discussed the potential between copper and galvanized steel. Steve Lampen of Belden, who also writes in RW, has authored a really neat book that discusses this concept. The book is "Wire, Cable, and Fiber Optics for Video and Audio

not salt! A key ingredient in smog is sulphur, which poses a multitude of galvanic actions to occur. Here are the potentials of various metals in volts:

Gold:	+1.498
Silver:	+0.799
Copper:	+0.337
Hydrogen:	0 - reference
Tin:	-0.136
Nickel:	-0.250
Aluminum:	-1.662

The secret is to keep the smog (sulphur) out, so no reaction occurs. Thus, gold pins should be mated to other gold pins, silver to silver, etc. Outdoors, the problem can be

See WORKBENCH, page 22 ▶

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► Continued from page 21
prevented by always using the proper connectors and, where applicable, a weatherproofing kit.

★ ★ ★

Lightning is an interesting animal. Figures 2 and 3 show the results of lightning traveling down coax and entering the PA cavity of an RCA BTF-20E transmitter.

The vein-like carbon traces etched into the PA shelf are a reminder of the energy that was present. Visible in these photos are the two harmonic snubbing "dipoles" in the back and to the right.

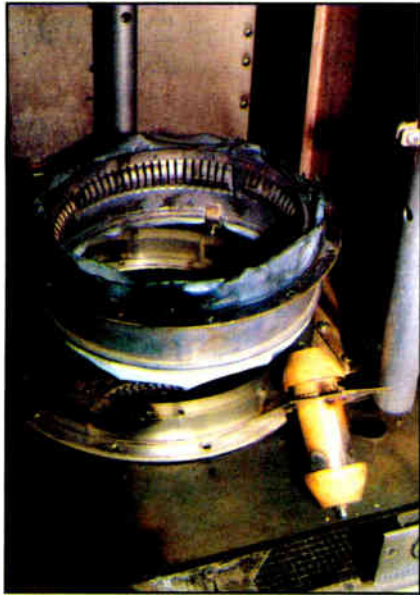


Fig. 3: A lightning-damaged final cavity

In this transmitter, similar PA cavity damage can occur should the resistors in these snubbers open. When changing the tube or cleaning this transmitter, use an accurate ohmmeter to measure the resistor value. Replacing a \$100 resistor is cheap insurance, especially if this is your main transmitter.

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

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

Not Just a Batch of Pretty Pictures

Buildouts and Staff Cuts Create Demand for Better Computer-Aided Technical Documentation

Tom Vernon

As the next wave of consolidation forces many broadcasters to relocate facilities, studio design and construction have become hot topics in radio circles. Less publicized, but equally important is the documentation of those facilities.

A good graphical description is impor-

tors, wire numbers and equipment types. Three-dimensional CAD diagrams can enable engineers to envision a facility before it is built, while databases can describe cable run lists and bills of materials. Good documentation should tell a user everything he or she needs to know about a system in both macro and micro views.

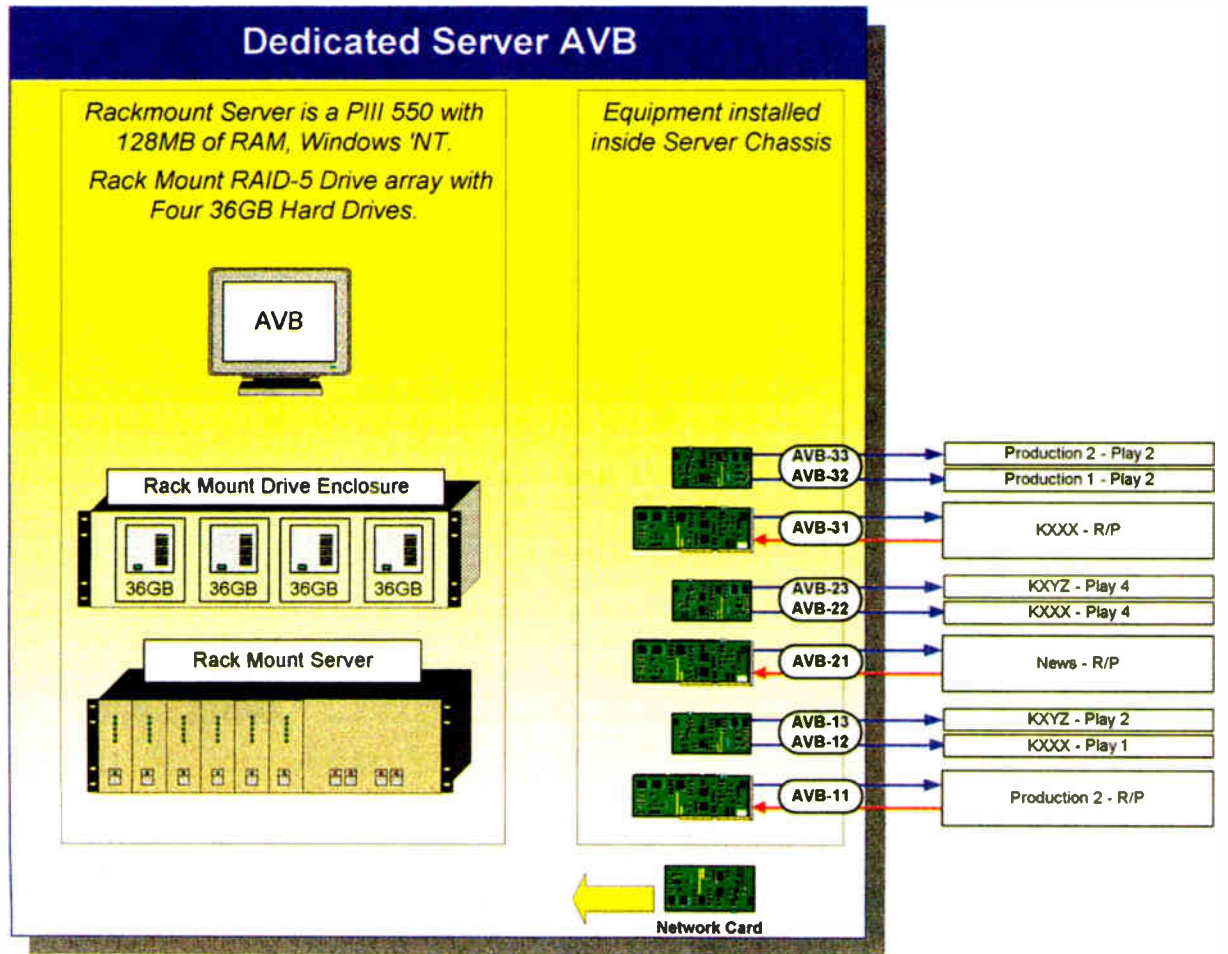
At a more advanced level, the information

tion. Online representations can, in effect, become the control interface.

Standards and symbols

The American broadcast industry has never agreed on standards for equipment symbols. As a result, different manufacturers may represent audio connectors, punch blocks and patch panels in varied ways. The only notation that has been agreed upon is that signal flows from inputs on the left to outputs on the right.

The situation is a bit more orderly in



Broadcast Electronics uses Visio with customized templates to document AudioVault installations

tant because most people comprehend complex information more easily when it is presented visually. By definition, documentation can include everything from simple flow diagrams and operator instructions to more complex drawings for installers and engineers.

Detailed drawings may show connec-

could be presented, for example, by clicking on the icon for a piece of equipment that may link to a database containing that item's specifications or maintenance log.

Mouse clicks may be combined with option or function keys to call up additional items such as a menu for remote control of the device or status informa-

Europe, where the German DIN standards have been almost universally adopted for equipment and connectors.

Efforts are underway to standardize documentation and to provide some common organizational principles within the broadcast CAD realm. Radio Free Asia's

See PICTURES, page 23 ►

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Pictures

► Continued from page 22

Broadcast Open Development Exchange Initiative proposes adherence to AutoCAD's DWG and DXF file formats.

Adherence to the CAD layer guidelines of the American Institute of Architects as well as formatting measurements in inches and feet are recommended to facilitate integration with construction industry CAD standards.

As broadcast facilities begin to look more like IT enterprises, standards from the computer industry are becoming more apropos, although they are not always clearly defined in that arena either. Documentation has had a long history before the advent of computers.

When broadcast facilities had a much longer life cycle than today, draftsmen crafted drawings by hand using pen and ink. The final output was done on large Diazo sheets. All of that would soon change. The draftsman's pen, inkbottle, T-square and triangle were destined to become museum pieces.

Beginning in the late 1970s, computer-aided drafting software came of age. These programs could produce drawn documents in a fraction of the time it took a draftsman, and with more precision.

Many major-market stations had an AutoCAD specialist on staff to maintain documentation. With consolidation and downsizing, this documentation manager position was eliminated at most stations. Then maintaining accurate records became the duty of individual engineers

ware also facilitates collaborative work by tracking multiple revisions of documents made by several users simultaneously.

Entering the third dimension

While the future is difficult to predict, certain initiatives at Radio Free Asia, the U.S. government broadcaster with headquarters in Washington, D.C., suggest directions in which broadcast documentation may be headed.

As part of the RFA Broadcast Open Development Exchange Initiative, the 3D Documentation Project takes documentation to the next level.

While some might argue that doing CAD drawings of broadcast gear and furniture in 3D is somewhat frivolous, RFA Engineer David Baden said it has a practical side.

"Many people have trouble making the leap from 2D to reality. The closer that you can make your documentation to reality, the larger the audience that you can share the facility vision with," Baden said.

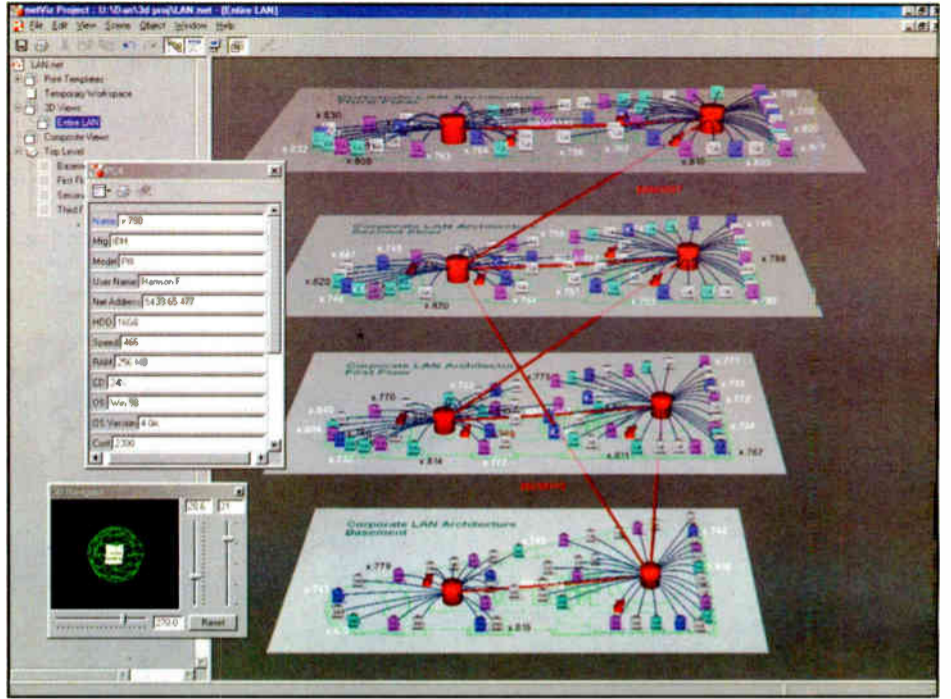
He said RFA started doing its drawings in 3D with Autodesk AutoCAD three years ago. The downside, initially, was that it took longer to do a rendering in 3D than 2D.

However, once a 3D drawing is completed and stored in the library, it can be reused in multiple 3D and 2D applications. Multiple views of a 2D drawing required that the objects be redrawn, so drawing objects in 3D does save time over the long run.

As RFA's library of 3D objects grows,

clearinghouse for 3D tutorials, object drawings and material/texture bitmaps. For more information, visit the Broadcast Open Development Exchange Initiative Web page

Maryland-based software manufacturer, said, "An overwhelming amount of information needs to be readily available: who has what equipment, how machines are



LAN documentation created with netViz

at www.techweb.rfa.org.

As WAN-casting becomes more common, broadcasters are faced with the tasks of documenting and managing large systems that span wide geographic areas. Getting a comprehensive overview can be difficult.

Dan Blum, COO for netViz, a

configured, what types of equipment are deployed and how computers are connected throughout the system."

Part of the solution used by netViz involves representing this information in 3D. By adding the third dimension,

See VENON, page 24 ►

A good graphical description is important. Most people comprehend complex information more easily when it is presented visually.

for small projects or systems integrators when large systems were installed.

The current dilemma facing many engineers is the need to document increasingly complex systems that change quickly with fewer resources to do the job.

Today, electronic collaboration and distribution of large documents is changing the way business is done. The logistical nightmare of transporting large paper documents has been eliminated by software such as docQuest from Digital Paper, which breaks documentation up into easily downloaded 50 kB packages. The soft-

creating new documentation becomes more of a drag-and-drop operation.

The 3D objects are saved as wireframes and can later be assigned material/texture bitmaps. The rendering process changes wireframes into a realistic representation.

The final output can be presented as a "photo-realistic" picture. Three-dimensional representations at RFA are not limited to floor plans and equipment racks. Signal-flow documentation is also done with AutoCAD in 3D.

Radio Free Asia has established the 3D Documentation Project as a free exchange

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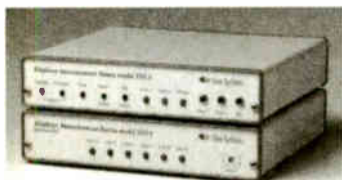
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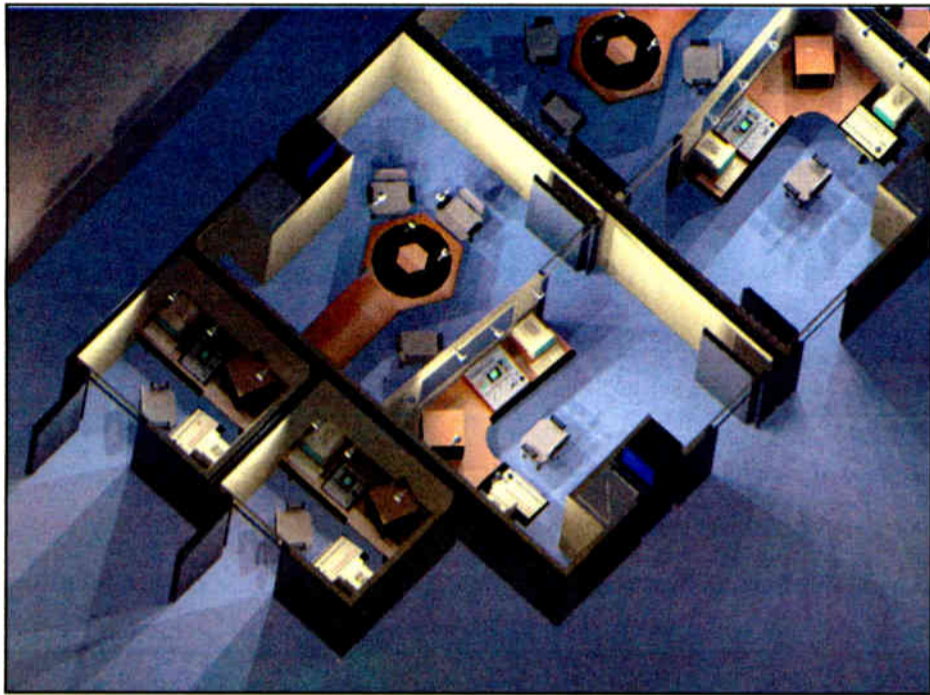
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Pictures

► Continued from page 23
netViz 3D provides ways to create and view horizontal and vertical relationships throughout a system.

Through the use of graphical objects linked to databases, information is available readily by clicking to drill down. As information in these databases changes, views can be updated automatically. Blum said one application for netViz in LAN environments is user-friendly fault reporting.



Radio Free Asia creates complex 3D documentation with Autodesk AutoCAD

"Whereas many monitoring programs will just print out the number of a circuit or node when a failure occurs, netViz can display flashing links or hubs in real time to quickly indicate where the problem is located," said Blum.

Tools of the trade

For manufacturers of broadcast automation systems, first-rate documentation is a plus in ensuring customer satisfaction. Trevor Stern, domestic sales assistant for the Broadcast Electronics AudioVault, said no two installations are identical and each customer is sent drawings of their system.

"We have been a long-time user of Visio to generate our documentation. Custom templates with soundcards, servers, consoles and other equipment allow us to provide very detailed drawings," said Stern.

BE provides two types of documenta-

tion to customers. System overviews show control and signal flow studio by studio and server by server. Rack drawings show the customer how to organize the equipment and how many racks are needed.

Documentation is part of what systems integrators and contractors do for a living, so they need to be good at it. Here are some tips from the pros on how to layout your next project.

If you haven't gotten up to speed on at least one documentation program, do so. Many are inexpensive and have a quick learning curve. Trying to learn a new program when you're feeling the crunch to

complete a project is not a good idea.

Try and get all the documentation completed before the project begins. While there undoubtedly will be changes and modifications, it's much easier to take these in stride than try and go back and document a system after it has been built.

Too often the pressure to move on to the next project or get caught up on backlogged work is overwhelming and the preliminary drawings end up being the final documentation.

Being consistent with documentation standards is also important. Symbols and abbreviations should be the same on all drawings.

Things easily can get out of hand if more than one person is working on the documentation for a project. While "PB" might mean punch block to one engineer, it could just as easily mean patch bay to another.

Popular Documentation Programs

Product: AutoCAD 2000

Company: Autodesk Inc.

Located: California

Platforms: PC

Price: \$3,750

Phone: (415) 507-5000

Fax: (415) 507-5100

Web site: www.autodesk.com

Description: AutoCAD 2000 permits flexibility in drafting documents that describe complex systems. Some time needs to be invested in learning the software before the full benefits can be realized.

Platforms: PC

Price: \$399

Phone: (800) 24-VISIO

Fax: (425) 895-8496

Web site: www.microsoft.com/visio

Description: Now a part of the Microsoft Business Productivity Group, Visio Technical's relatively short learning curve allows users to rapidly create detailed drawings and represent a system with different levels of detail in a single drawing file.

Product: Power CADD 2000

Company: Engineered Software

Located: North Carolina

Platforms: Mac/PC

Price: \$795

Phone: (336) 299-4843

Fax: (336) 852-2067

Web site: www.engsw.com

Description: Although most CAD programs are PC only, Power CADD permits Mac users to create drafting documents, which some systems integrators claim have more detail than IBM-compatible programs can offer.

Product: Inspiration 6.0

Company: Inspiration Software, Inc.

Located: Oregon

Platforms: Mac/PC

Price: \$69.95

Phone: (800) 877-4292

Fax: (503) 297-4676

Web site: www.inspiration.com

Description: This program allows users to import custom symbols and shapes easily. The software's limitation of eight connections on each side of an object makes it more applicable to smaller projects.

Product: Visio 2000 Technical Edition

Company: Microsoft Corp.

Located: Washington

The document needs to be much more than shorthand for its creator, whose memory may fade over time and who may or may not be around when the next upgrade happens. It should be complete enough so that someone not familiar with the plant can easily understand what has been done.

A good rule of thumb is that if it seems like your drawings are overkill at the time they are created, they probably will be good enough for yourself in five

Products: netViz 4.0 Professional and netViz 3D

Company: netViz Corp.

Located: Maryland

Platforms: PC

Price: netViz 4.0 \$789 and netViz 3D \$1,995

Phone: (301) 258-5087

Fax: (301) 258-5088

Web site: www.netviz.com

Description: netViz features data-embedded graphics for designing multi-level diagrams that integrate graphics, data and object relationships throughout an information network. A 3D version of the software has just been released.

Product: VidCAD 2000

Company: VDP, Inc.

Located: New Mexico

Platforms: PC

Price: VidCAD 2000 Ultra \$6,000 and VidCAD 2000 Professional \$4,000

Phone: (800) vidCAD-6

Fax: (505) 524-9669

Web site: www.vidcad.com

Description: VidCAD 2000 operates on a runtime version of AutoCAD 2000 that has been customized and simplified for broadcast documentation. VidCAD automatically links between drawings and database programs, eliminating much repetitive work.

years or for your replacement.

Finally, it is important to be disciplined about documentation. Drawings need to be checked for accuracy when completed and regularly updated when the plant is modified.

Tom Vernon is a training and documentation consultant working in Philadelphia. E-mail him at TLVernon@blazenet.net or call (717) 367-5595. 🌐

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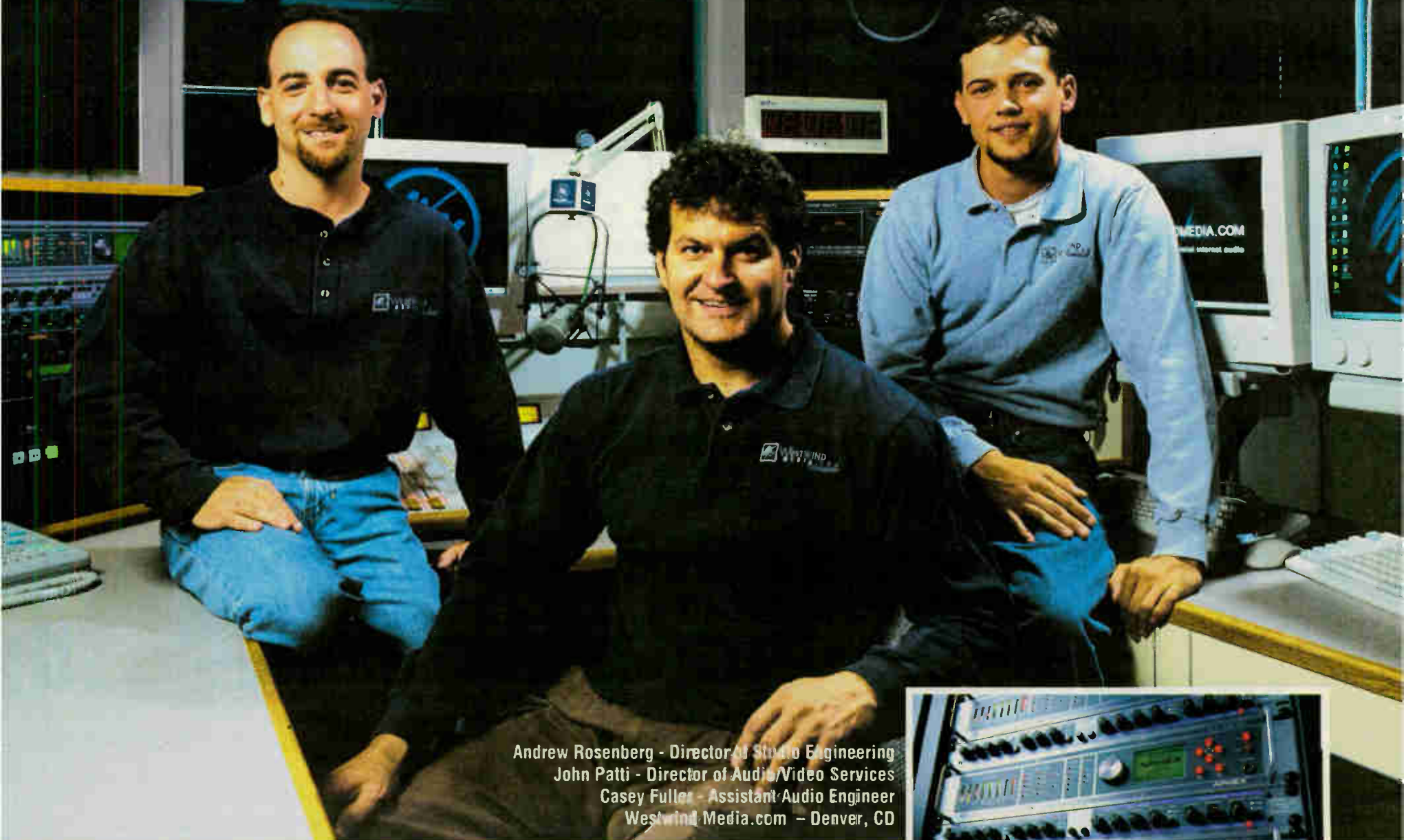
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World Radio History



Joaquin Araya

LPFM Debate: Trapani on Krock

RW welcomes other points of view. Write to us via e-mail at radioworld@imaspub.com or to the address on the inside back page.

Dear RW,

With regards to the Oct. 25, 2000, Guest Commentary "Sensitivity to Degrade With LPFM?" by Fred Krock, may I quote a former president: "There you go again ..."

The information that Mr. Krock conveyed about "sensitivity degradation" makes absolutely no sense (as in a previous article by Mr. Krock), since it does not follow conventional physics or practical logic. By misled information and double talk, the reader is led to believe this unscientific mumbo-jumbo.

It seems the interference that the LPFM opponents try to elude to is analogous to a five-year-old beating a world heavyweight-boxing champion.

I addressed an interference issue in a recent RW editorial. I indicated that actual on-air tests were conducted, and I determined conclusively that any interference occurring would be from

the high-powered stations to an LPFM station. Here is a more technical discussion of this matter.

Given the following field strengths at one mile from the transmitting antenna: LP-100 station (100 W ERP and 100 ft. HAAT) is 790 uV/m. Class A (6 kW ERP, 328 feet HAAT) is 19.8 mV/m. A Class C3 (25 kW and 328 feet HAAT) is 40 mV/m. These calculations were derived by using the chart in FCC rule 73.333.

If you compare the voltage dB ratios using the LP-100 signal as the reference: LP-100 to Class A: 28 dB, LP-100 to Class C3: 34 dB.

The signal strength difference between an LP-100 station and a Class-A station is close to what Wayne C. Ryder indicated in the article is the minimum signal strength he determined would produce for a 30 dB signal-to-noise ratio.

Now assume worst-case co-channel interference between an LPFM station and a Class-A station. Place the two stations, one Class-A, and the other LP-100, on the same frequency 8 miles from each other and assume same polarity for both transmitting stations.

Place a receiver (with an omnidirectional antenna) equidistant from both transmitting antennas at a height of 20 feet, utilizing the same polarity of the transmitting antennas. Now assume a flat-earth 20-mile square area around the entire setup. Now turn on the LP-100 station and record the noise floor. Then turn off the LP-100 station and conduct the same noise measurement for the Class-A station. Then turn on the LP-100 station. No matter how you work the math, or attempt to change physics, the LP-100 station will *always* be 28 dB *below* the Class-A station. Take capture ratio into effect, and the LP-100 station will be essentially non-existent.

The article fails to indicate several factors: the spectral purity of the signal generator, the bandwidth of the measured signal, and if a stereo signal was utilized (this will degrade the S/N by an additional 23 dB).

The next time Low-Power FM opponents want to complain about the bicycle interfering with the Daytona 500 car race, we should not overlook the obvious.

Jim Trapani
President
JT Communications
Ocala, Fla.

Dear RW,

Once again confusion reigns. In the Nov. 8, 2000 RW, Mr. Krock gets rather cynical and accusatory, without attempting verification of the facts.

Well, since the manufacturing of radios of Mr. Krock's Ike era, receiver design has improved dramatically. Mr. Krock, I did *not* state "FM receivers cause deep shadow areas." How in the world does a "deep shadow" affect the performance of an FM receiver anyhow?

Secondly, I did *not* suggest customers install additional filtering in their receivers to improve them. I stated that FM selectivity in receivers I own improved immensely by the *replacement* of the sloppy, extremely wide filters currently used by receivers. All this at a minimal cost to me. The result is the same as Mr. Krock's "golden" expensive radio.

Even if I did *not* replace the filters, the third-adjacent channel interference skirts from LPFM stations would not significantly interfere with current high-powered stations.

Mr. Krock indicates FM stations operate with much less than 100 kW (Class C). Mr. Krock, there are at least five stations within my listening area that are Class C (100 kW). I have *actual measurements* (not falsified "noise" measurements that the NAB is touting) that prove conclusively current stations will *severely degrade* the reception of LPFM stations.

Another issue Mr. Krock discusses is receiver overload. If you are in the near field of *any* transmitting antenna, receiver overload *will* occur.

Mr. Krock stated that an external antenna connected to a receiver will decrease the sensitivity. Does this mean if I attach a nail to my antenna terminals of receiver, the sensitivity will be *better* than an external antenna?

Mr. Krock does not indicate the proximity of the transmitting antennas were to the receiver (which would cause receiver "de-sense"). The receivers from the Ike era used mechanical filters, and low q tank circuits. Perhaps these are the receivers he refers to.

Mr. Krock, I am not aware of what technical methods you utilized to arrive at your "conclusions." I also noticed the call letters of the station you work for is a PBS station, which has close ties to NPR. Mr. Krock, didn't NPR (and the NAB) lobby Congress heavily in opposition to LPFM, the same people who killed the educational Class D license?

I must stress again, all my measurements are realistic. I made actual on-air tests as allowed by the experimental license that was issued to my company by the FCC. The experimental license (WA2XRY) allowed 10 watts into various antenna designs. This license allowed me to conduct the experiments that allowed me to conclude that *existing stations will interfere with LPFM stations.*

Jim Trapani
President

JT Communications
Ocala, Fla.

See LPFM, page 30 ▶

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FEED LINE

Shared Use of Transmitter Sites

Good Engineering Helps Everyone Share Space, Avoiding the 'Not In My Backyard' Problem

W.C. Alexander

This is the fifth in a series of articles about shared use of transmitter sites. The previous part appeared in the Dec. 6, 2000, issue.

With the public becoming more and more tower- and RFR-conscious, the task of obtaining approvals to construct a new tower or directional array can be daunting if not impossible.

"Not in my backyard" (NIMBY) has become the prevalent attitude, with most people wanting the convenience of broadcast reception and cellular/PCS service but no one wanting radio towers within view.

Challenges in sharing

In many places, planning and zoning commissions actively encourage co-location of tower sites. "Co-location" has become something of a magic word with such regulatory bodies, representing the solution that will satisfy constituents completely while — to some degree, anyway — meeting the needs of those in need of a tower site.

In the early days of FM and TV broadcasting, it was common to use an existing co-owned AM tower for the FM or TV antenna. This practice has become less common, as FM/TV installations typically require considerably greater height than most AM towers provide. Even today, such installations are sometimes desirable and necessary.

The same principles used to co-locate an FM or TV antenna with an AM apply to cellular, PCS and other wireless services. As a result, the AM tower owner can open up an often much-needed revenue stream.

The challenge in sharing an insulated AM tower and some other broadcast or wireless service is getting the transmission line across the insulated tower base without shorting the tower or significantly altering the base impedance at the AM frequency. There are several ways of doing this, all of which have advantages and disadvantages.

The isocoupler is, from the AM engineer's point of view, the preferred means of coupling a transmission line onto an insulated tower. This device simply couples both the inner and outer conductors of

and sizes, from small quart-size units for STL/RPU use to large, oil-drum size units for high-power FM/TV. Each one operates over a specific range of frequencies and must be chosen for the specific application. In some cases, an off-the-shelf isocoupler will not work and a custom will have to be manufactured.

A well-designed and -constructed isocoupler will present a high shunt impedance at the AM frequency, changing the self-impedance of the AM tower very little or not at all. At the VHF/UHF frequency, however, isocouplers represent a significant loss, making them less desirable than other methods of coupling across a base insulator.

The couplers also tend to be a weak spot in the transmission line, subject to leaks (if pressurized) and damage from lightning.

Quarter compromises

Less desirable from the AM engineer's point of view but much preferred by the FM, TV or wireless engineer is the quarter-wave stub. The transmission line is installed on insulators all the way up the tower with a short to the tower installed at a point, which is electrically a quarter-wavelength above the tower base.

This operation acts like a quarter-wave transmission line, transforming the short at the quarter-wavelength point to an open at the tower base. In some cases, where the tower is less than 90 electrical degrees high, for instance, finding a point to locate the shorting stub that will produce the desired high impedance at the tower base may be impossible.

To remedy this problem, a resonating capacitor can be placed between the transmission line outer conductor and the tower itself and tuned for high impedance.

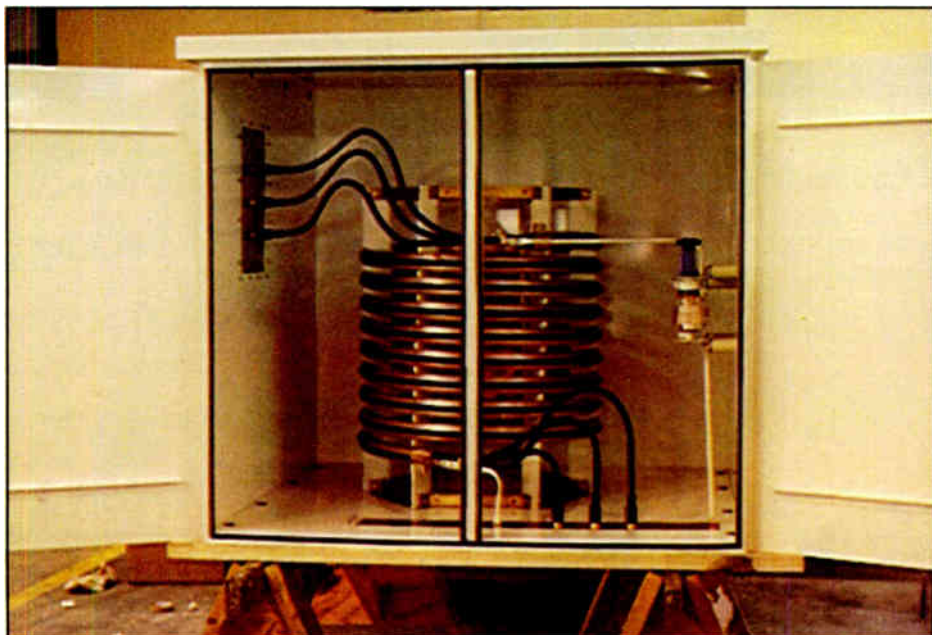
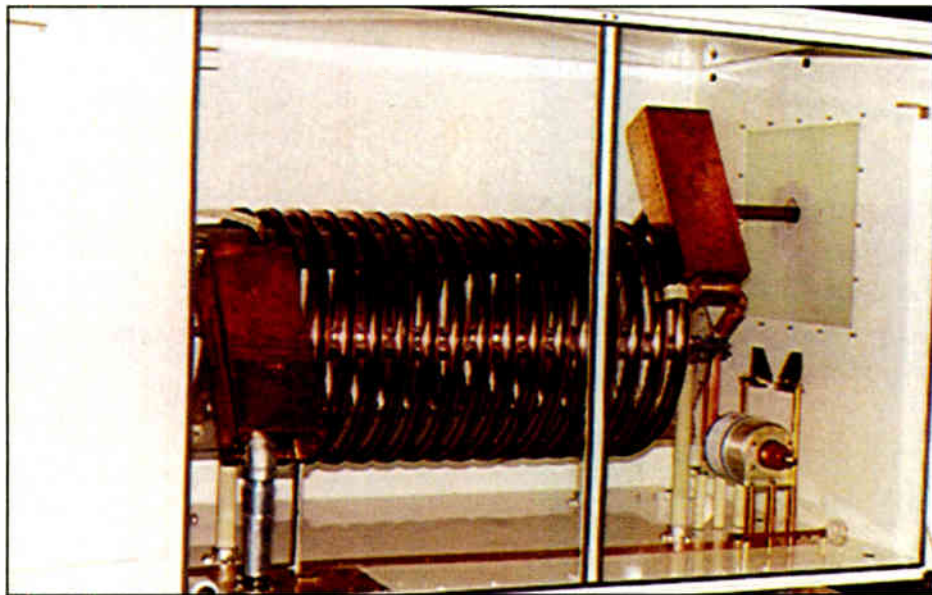
This method can be an economical means of coupling a transmission line across a base insulator and it is certainly desirable from the FM/TV/wireless point of view because no additional loss is introduced.

In addition, the expense of an isocoupler is avoided. That advantage is somewhat offset by the cost of the ceramic or porcelain insulators and the maintenance headaches that go along with them. These insulators and the resonating capacitor, if used, tend to be something of a weak point, both mechanically and electrically and are subject to failure and damage from lightning and the elements.

A third method that is sometimes used is the transmission line "isocoil." The transmission line is wound onto a coil form and itself becomes a high-reactance inductor. A fixed capacitor is connected from a point on the coil to ground so that the L-C combination is parallel resonated to provide high impedance across the tower base insulator.

This method is somewhat advantageous to the AM broadcaster in that it provides a low-impedance DC path to ground across the tower base, effectively bleeding off static electricity. On the other hand, the resonating capacitor can become a weak point and subject to lightning damage.

From the FM/TV/wireless standpoint, there is a practical limit to the size of transmission line that can be wound into an isocoil. Further, the line



Two custom-wound Kintronic isocoils

The challenge for broadcast engineers often is to find practical ways to make installations that would otherwise be considered non-compatible work together.

the transmission line at the VHF/UHF frequency while keeping them decoupled at the AM frequency.

Isocouplers come in various shapes

See SHARED, page 30 ▶

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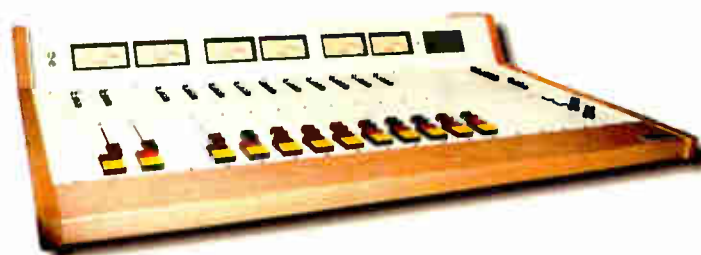
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LPFM

► Continued from page 26

Dear RW,

I am responding to the exchange between Mr. Krock and Mr. Trapani. There are too many "red herrings" being thrown around in the LPFM debate.

It is interesting to compare what various signal or power ratios might do at some arbitrary distance. Using lab tests to do so excludes a lot of real-world factors. Since real radio stations have protected contours ranging from 0.5 millivolts to 1 millivolt, using 30 and 50 microvolt signals for desense tests is unrealistic.

Some might argue that those field strengths do not equate to what a receiver will actually see at its antenna terminals. This is quite true, *but* whatever difference exists impacts all signals equally. The *ratio* of a desired to undesired signal is not changed on the common omnidirectional antenna.

In many markets, the aggregate signal from licensed stations will create various desense conditions worse than a two signal lab test. That all being said, the main issue that seems to be overlooked is the real-world existing regulatory structure.

Setting aside LPFM for the moment, the existing licensed classes of FM stations and the existing translator rules establish the overall dynamic of the FM band. It is essential that any interference comparison be made both with

a relationship to a stations licensed protected contours and the FCC-mandated separation between the various classes of stations.

Many broadcasters seem disturbed by the fact that listenable signal outside the established protected contours will be adversely impacted. Unfortunately, the translator provisions in Part 74 have already placed a tighter limit on fringe coverage than will LPFM. A station's license and the conditions attached describe a station's service. Part of that "contract" is the coverage area that is protected for a given station. Expecting more than what that contract describes is both unrealistic and beyond the scope of the license.

Proposed Low-Power FM stations have the same co-channel protection requirements, as do translators, a 20 dB ratio. However the first- and second-adjacent channel spacing for LPFM to any licensed class is much more stringent than are the required translator protections.

The required first-adjacent channel separation for LPFM gives better than 6 to 12 dB more protection than does a translator. On second-adjacent, the protection is the same or more than a translator except for a Class B station where it is marginally worse.

In the real world, there are very few locations where, after co-, first- and second-adjacent protections are put into play, a negative third-adjacent protection is possible. Using the translator example, an LPFM located on the edge of a protected contour of another

class station would in the worst case equal or exceed the translator protection within a radius a few hundred feet at most, often these contours would be in the air and never touch ground.

Assuming, for a minute, that second-, first- or co-channel spacing limits were not violated and it was possible to locate an LPFM closer to a third-adjacent station, the ratio of 40 dB holds true, this means that contours well over 100 dBu from the LPFM must exist before the long established limit (for translators) is exceeded. The zone of interference rapidly reduces to feet.

In most countries outside the United States, the third-adjacent protection has been proven overly conservative and is often not included in interference calculations in the first place. LPFM-style operations or third-adjacent have long been proven viable in those countries; using the same technical standards, or better, than in this country.

In the New York City area, a licensed translator overlaps part of the

primary coverage area of two local second-adjacent stations. Under LPFM rules, this license would not even be possible. This translator does not cause interference even in such a densely radioed area.

Conversely, the translator's coverage drops rapidly as the multitude of much stronger stations bury it with intermodulation products on a typical receiver. This effect is quite typical for low-powered signals interacting with much stronger signals. It is the LPFM that will suffer in such instances.

When one examines the real numbers and applies real-world engineering to the LPFM discussion, the question must really be one of either opposition to both translators as they now exist and LPFM or the acceptance of both. This is not new theory, we have been working with the same numbers for decades. You cannot alter physics because it does not suit the politics of the moment.

Robert Meuser
New York

Shared

► Continued from page 27

used in the coil will introduce a significant amount of loss.

Which method is chosen must be a compromise. It is impossible to couple across the base insulator of an AM tower without some penalty, on the AM frequency, the VHF/UHF frequency or both.

The engineer's job is to balance cost with risk and performance penalties on each side and come up with the best method for the particular situation. A competent and experienced consulting engineer can draw upon years of experience with many such installations to help with the planning of the installation.

Skirting the tower

An insulated-base AM tower can be made into a grounded-base tower, in some cases, greatly simplifying the task of coupling an FM, TV or wireless transmission line onto the tower.

This operation can be done by installing a wire skirt onto the tower. A number of wires are installed on the tower legs, faces or both on fiberglass rods, which hold the wires at a fixed spacing from the tower and insulate them.

The ends of the wires are joined at the base and driven with the AM transmitter and, on the tower, the wires are joined at the quarter-wavelength point and shorted to the tower. Like the quarter-wave stub discussed above, this produces the same transformation as a quarter-wavelength transmission line, transforming the short up on the tower to an open at the tower base.

The advantage of shorting the tower base is that any number of transmission lines can be coupled onto the tower without isocouplers, insulators or isocoils. The disadvantage from the VHF/UHF perspective is that the skirt wires are often in the aperture of its antennas mounted on the tower, creating interference with its radiation patterns.

From the AM broadcaster's perspective, it has both advantages and disadvantages. The advantage is that the base insulator, which can be troublesome, is done away with.



Kintronic 30 kW isocoupler for FM

No static drain chokes, ball gaps or lighting chokes are needed. Because the shorting stub location can often be chosen to produce a driving point resistance of 50 ohms, the transmitter output can often be matched to the skirt with only a vacuum variable capacitor, doing away with several tuning components.

However, since skirted towers usually have a Q of 10, the driving point reactance can amount to hundreds of ohms. The reactance of the skirt in series with the capacitor needed to offset it produces a series tuned circuit that limits bandwidth.

Environmental conditions, particularly ice on the skirt wires, tend to produce a shift in the driving point impedance. Another disadvantage is that the skirt wires and insulators add a considerable maintenance load.

An AM tower that functions as the supporting structure for an FM, TV or wireless antenna is not the easiest thing in the world, but co-location of such services is possible. By carefully choosing the method for coupling the transmission lines onto the AM tower, a compromise can usually be found that will be acceptable to everyone involved.

In the next part of this series, we will look at using an existing FM, TV or wireless tower as an AM radiator. 🌐



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Ideas to Jump-Start Your Station

Bill Mann

"Geek Meets." "Bras Across the Bay." Interviewing job applicants at their homes. "Gotcha!" cards.

These are some of the interesting and offbeat ideas that come up when you put a group of creative radio people into a room.

In this case, the event was a session at this fall's NAB Radio Show, aimed at passing along fresh ideas to help stations build ratings and come, as well as upgrade staff and morale.

An overflow crowd of managers and



Cary Pahigian

programmers armed with notebooks and legal pads took plenty of careful notes as the ideas cascaded off the podium. A large digital clock displayed the elapsed time in the unusual managers' session.

The four panelists were Theresa Beyer, who was then marketing director

See IDEAS, page 35 ▶

KISS(FM) Teams With Coastal Mart

Scott Fybush

Take a drive around San Antonio and you'll see the Diamond Shamrock convenience store chain just about everywhere.

"They're on every interstate exit," said Ron Ross, director of market development at San Antonio rock station KISS(FM).

Pull off the exit into the city's Hispanic neighborhoods, though, and you'll see another chain competing for the market's gas, cigarette and beer dollars.

"Coastal Mart is a small regional convenience store chain that was more of a neighborhood-type chain," Ross said. "They were just getting crushed."

Ross said KISS is especially strong with Hispanic listeners — perhaps as much as half of the station's listeners are Hispanic.

"Coastal Marts are in the neighborhoods where our people are buying milk and beer and cigarettes every day," he said.

Two years ago, the Cox station approached Coastal Mart with a solution to its competitive struggle: a radio campaign that included remotes, a charity tie-in and a promotional CD.

Putting it together

Creating the campaign forced the KISS team to pull together several ideas that had been floating around the station, starting with a public-service goal.

"My sales manager had a strong relationship with the archdiocese of San Antonio," Ross said.

The archdiocese, home to the first Hispanic archbishop in the country, runs a scholarship fund for Hispanic students — and the fund needed support from the community.

"There was a chance for kids who didn't have enough money to go to college to benefit from this opportunity," said Ross.

"But because we're in radio and we're greedy pigs, we said, 'How can we make money from this?'"

A partial answer came in discussions with a longtime advertising client, Anheuser-Busch. The brewery's local distributor wanted to get more of its products into Coastal Mart.

KISS wanted to pick up Coastal Mart as a new client. All they needed was the right approach.

That came in the form of a proposal from the folks at Friday Morning



Ron Ross

Quarterback, which services rock and CHR stations with monthly discs of new music. FMQB approached KISS in 1998 to suggest assembling a CD featuring up-and-coming bands.

The Plan

With the CD idea in hand, KISS and Anheuser-Busch approached Coastal Mart with a plan. The station and FMQB would create a "KISS Buzz Band CD," with sponsorship from Anheuser-Busch's Sea World. The CD would sell for \$5.99, with all proceeds to go to the Hispanic Scholarship Fund.

The hook? The only place to buy the CD would be Coastal Mart's 23 San Antonio locations.

Ross said KISS listeners, who heard about the CD in on-air promotions, were motivated to stop by and pick up the first

disc, which featured artists such as Papa Roach and Nickelback.

Coastal Mart had never done local radio, though it had run some national campaigns on occasion. When it came to this campaign, though, the chain was eager to sign on as a sponsor.

First-time radio buyer

"For us, it was a natural fit," said Coastal Mart's Jerry Godwin, zone vice president for operations for the great western region.

We've been part of the Hispanic Scholarship Fund and we have been a major role-player for them ... so when they approached us, it was a natural."

That tie to the Hispanic community proved to be the key for Coastal Mart, whose stores are in largely Hispanic areas.

A steady diet of on-air promotion for the disc didn't hurt, either.

"Each disc is a five- to seven-week promotion, it's getting mentioned six to eight times a day," Ross said. "There are live promotions, there are pre-recorded promotions, we do a remote from a Coastal Mart location to kick off the new CD — 'get it here first,'" he said.

Another key to the promotion Ross said was that the CD wasn't available on the air. "The only place to get them in the world is at Coastal Mart."

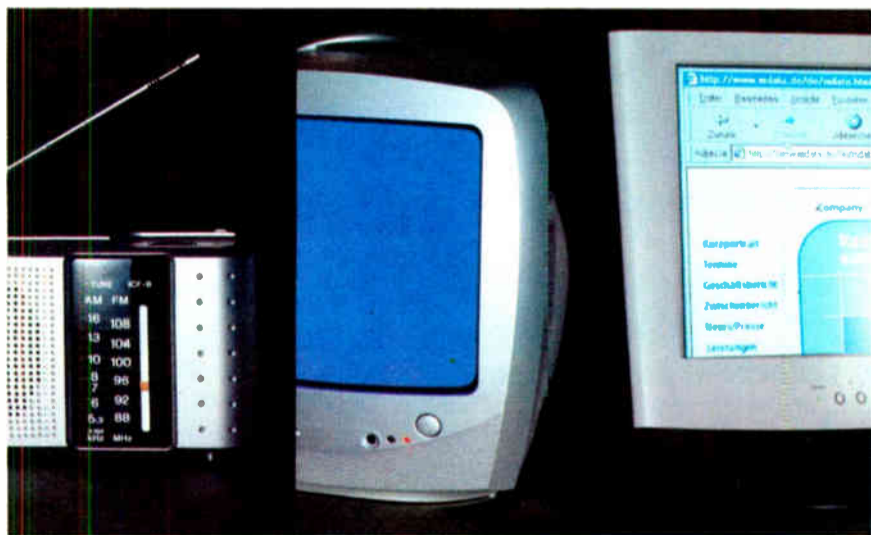
More than 5,000 copies of "KISS Buzz Bands CD, Volume 1" flew out the doors of Coastal Mart in the first promotion two years ago, a sell-out that netted a \$21,479 donation to the Hispanic Scholarship Fund.

Coastal Mart and Anheuser-Busch signed on for three more discs over the next two years, selling out each one and drawing crowds to Coastal Mart locations for each release party.

"It put a lot of people in our parking lot," said Godwin.

Bringing people in was only part of

See SALES, page 32 ▶



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Sales

► Continued from page 31

the goal at Coastal Mart, though.

"We look to retention," said Godwin. "If we bring in 150 people within an hour, our goal is to get a small percentage of those people to buy something in addition to that CD."

Coastal Mart had never done local radio but when it came to this campaign, the chain was eager to sign on as a sponsor.

So far, the project has achieved that goal. "We continue to see steady gains every year since beginning the program," Godwin said.

It's been a success on the business side at KISS, too.

Janis Maxymof, the station's general sales manager, said each CD has involved about \$35,000 in underwriting from Coastal Mart, Anheuser-Busch and other sponsors.

"The key to life in corporate America,"

Maxymof said, "is if you're going to do corporate fundraisers, you'd better figure out how to make money off it, too."

Maxymof said future CDs could include more sponsors, but KISS prefers to use the program to partner more closely with its existing sponsors.

"I want to keep it pure," she said.

In addition to sponsors picking up the production tab for the CDs and costs of on-air promotion, Maxymof said the pro-

ject has led to significant additional buys by Anheuser-Busch's Sea World and Coastal Mart.

Bigger and better

The latest in the series, "KISS Buzz Bands CD, Volume 5" hit the shelves around San Antonio on Thanksgiving week.

"This disc has 16 songs, and nine of them are on our playlist right now," Ross said. And even if not everyone in San Antonio has heard of bands like Iommi,

Spineshank and Nonpoint, the disc is connecting with KISS's core audience.

"Every time we play a song from the disc, we give it a plug on the air," Ross said.

This disc brings some high hopes with it: Ross expects it to drive the total donations to the Hispanic Scholarship Fund over the \$100,000 mark, and to sell out an increased production run of 10,000.

There's one difference with the latest volume: it's being sold not at Coastal Mart but at the Rent-a-Tire chain.

Ross said the change in partners is only a temporary one, brought about by an impending change of ownership at Coastal Mart.

"Rent-a-Tire has a one-shot deal," he said, after which KISS has already promised Coastal Mart the first shot at distributing volume 6 and subsequent discs.

Other potential partners eager to join the project have already approached the station.

"If Coastal Mart wasn't part of it, Best Buy wanted to be," said Ross.

Godwin said the chain is eager to get back together with KISS and the Buzz Bands CD project.

"Our customers see us as part of the community," he said, crediting the goodwill created by the Hispanic Scholarship Fund donations.

After four sellouts and more than \$80,000 in scholarship fund donations, there's no question that the KISS Buzz Bands CDs have been a success for the station, the clients, and the community.

Ross said the idea might not have worked as well in another market or on

another format.

"There's still a sense of family here, still a sense of community," Ross said, "so when we say it benefits the Hispanic Scholarship Project, there's a good feeling all around."

Smaller chain

Using a smaller chain like Coastal Mart contributed to that community feeling.

"It probably wouldn't have been as strong if we did it at Diamond Shamrock or at McDonalds," Ross said.

With a format so dependent on new music, Ross said the CDs have also helped build listener loyalty for the active rock sound of KISS.

"Obviously there's an emotional attachment between the listeners and the station, especially with our format," he said.

With that in mind, KISS is looking at ways to expand the Buzz Bands concept. The station produces the cover art for the discs, and Ross said there's been talk of doing more than a simple two-page folder.

"One of the things we're looking at is doing inside coupons," he said.

The station is also considering an even bigger event next year, now that some of the bands on the early discs have become staples in its playlist.

"We might do a concert with some of these artists," Ross said. "Call it Buzz Bands Live."

Scott Fybush (www.fybush.com) is a free-lance writer based in Rochester, N.Y.

Electronic Invoicing Is Coming to a Station Near You

Lyssa Graham

Electronic Data Interchange is changing the way radio does business. Are you ready for EDI?

Thirteen major advertising agencies, including J. Walter Thompson, Saatchi & Saatchi and Young & Rubicam, have spearheaded a movement to switch to electronic invoicing.

Thompson and Saatchi & Saatchi already guarantee payment in 30 days for non-discrepant invoices that are sent electronically.

Mary Bennett of the Radio Advertising Bureau encourages radio to move to electronic invoicing. She said the resources required to process the standard paper invoice — from the manpower needed to open envelopes, sort duplicates, remove staples, re-enter all invoice information into the agency computer — is just too expensive when there is an alternative: electronic invoicing.

"A switch to electronic invoicing will not only save radio stations and agencies time but also money," Bennett said.

TV ahead

Radio lags behind the television industry, Bennett said, in making the timesaving leap to EDI.

"Television has already made great strides," said Bennett. "Radio has yet to take a few fledgling steps."

Inducement to make the change for

radio comes from the ad agencies themselves. The expense of processing paper invoices, along with the likelihood of human error, has prompted the top agencies in the United States, which control over \$9 billion in annual advertising revenue, to insist on a paperless invoicing plan.

Electronic data interchange programs are available from a variety of sources. Representatives from several of those sources joined Bennett at The NAB Radio Show last fall to promote their software and network programs, including Ellen Weinstein of Spotdata/CJDS, Harvey Kent from Donovan Data Systems and Don Wahlig of Interep.

Most of the systems available will act in conjunction with existing traffic software, creating invoices during a normal billing cycle. An added benefit is the decrease in manpower and hours needed to handle billing.

Although there are many plans already available with many more in development, Bennett's main message was an alert to the radio industry that paperless invoicing system is an inevitable trend.



Ellen Weinstein



Harvey Kent



Radio station WAZP(FM) chose a new QEI Model FMQ-10000 FM transmitter, according to QEI Sales Manager Bill Harland. The station is licensed to Cape Charles, Va. ...

Actor Kevin Spacey recorded voice-overs for a radio spot advertising the Broadway revival of "Cobb" at New York post-production facility Pomann



Actor Kevin Spacey and Spotco Producer Tom Greenwald

Sound. Ad agency Spotco produced the spots. ...

AP Radio has inked deals with several broadcast organizations in recent months.

The Dakota News Network, which supplies audio newscasts to approximately 40 stations in North and South Dakota, chose AP Radio as its chief news content supplier.

New York news station 1010 WINS picked AP Radio as its primary Web content provider. Farther east, AP Radio will stream its live turnkey audio network "All News Radio" to a new online

station operated by WOON(AM) in Woonsocket, R.I.

And syndicator Westwood One renewed with AP Radio as its primary provider of news and other information content. Affiliates such as the Fox News Radio Network and the "Jim Bohannon Show" will continue to use AP content. ...

BuySellBid.com recognized three West Coast Clear Channel radio stations for "innovative leadership in integrated marketing."

Jay Shepard, CEO of the Internet classifieds network, commended executives John Sutherland, Eric Stenberg and Chris Ott.

"Each of these Clear Channel executives has worked closely with our team to create a truly compelling integration of our co-branded Internet classifieds with significant marketing muscle, which also includes broadcast inventory across three radio stations (The 92 KSJO Rock Network, 98.5 KFOX, Channel 104.9) in addition to a major direct-marketing campaign targeting the Silicon Valley and greater San Francisco Bay Area." ...

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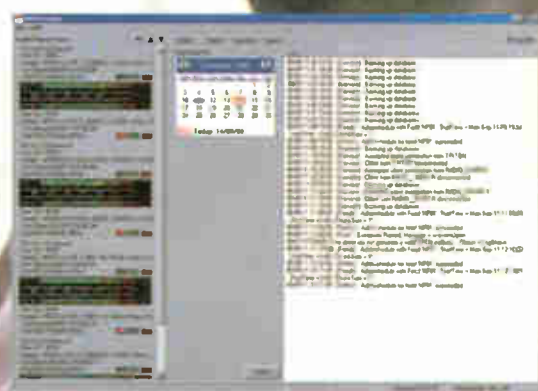
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World Radio History

AM Broadcasters See Bright Future

Scott Fybush

Never mind satellite radio or even IBOC. For today's top AM station managers, there's still a bright future in good old amplitude-modulated medium-wave analog broadcasting — at least where news, talk and sports formats are involved.

After all, they say, their business isn't about the 80-year-old technology, it's about the content.

"You could put Rush Limbaugh only on CB radio ... and there would be a line of people outside Circuit City trying to buy CB radios," said Gabe Hobbs, national director of news/talk

programming for Clear Channel Communications, which owns Limbaugh's syndicator, Premiere Radio Networks.

The challenge, say AM leaders who gathered at last fall's NAB Radio Show, is making sure their stations stay focused on providing the best possible talent, whether local or satellite-delivered.

"Your next big talent could be driving a taxi cab in your town right now," said Skip Essick of WOOD(AM) in Grand Rapids, Mich.

They could also be speed-dialing the call-in lines, like one talented listener Hobbs discovered while programming Tampa's WFLA(AM).

"He went from bugging our talk hosts to doing morning drive at WABC in New York," Hobbs said of Lionel, the talk host who has since moved to an online show.

And with the advent of multi-station clusters, there's another untapped source of fresh AM talk talent: the FM jocks down the hall.

"FM people have a sense of show business," said Hobbs. "They understand what you mean when you tell them they have to say the call letters 25 times an hour."

Fresh juice

Developing new talent goes hand in hand with another goal of AM programmers: appealing to a younger audience. Hobbs said Clear Channel stations have begun rejecting network spots targeted at much older listeners.

"When we run funeral home ads," he said, "we try to say things like, 'When your parents die,' instead of 'when you die.'"



Kris Olinger

Panelists argued against some of the common strategies many AM stations use to boost revenue, such as having on-air talent endorse products and selling block time on weekends for gardening, home repair and auto repair shows.

"There is still a basic skill set that radio people need," Hobbs said.

Another benefit to multi-station clustering is the opportunity to cross-promote AM talkers on multiple FM outlets reaching younger audiences.

"If you're in a cluster, make sure your CHRs, your country stations are cross-promoting your news product," Essick said.

Even as FM talk gains a foothold in major markets like New York and Boston, the format's AM counterparts

don't see much threat.

"You're hitting a much younger audience (with FM)," said Kris Olinger, program director of Entercom's Seattle group, which owns FM talker KQBZ ("The Buzz") as well as KIRO(AM) and KNWX(AM).

Instead of drawing listeners from existing news/talk formats, FM talkers are pulling audiences from classic rock and active rock stations.

To bring that audience over to AM as it ages will be the next big challenge, panelists agreed. Cited as an example of an AM jock who is leading younger listeners to the older band is Premiere's sports host Jim Rome.



Skip Essick

news/talk are very inclined to send you e-mail."

As for those other technical developments making waves elsewhere in the

If you're in a cluster, make sure your CHRs, your country stations are cross-promoting your news product.

— Skip Essick

Embracing the Internet is another way to bring young listeners over. In addition to Web sites and streaming audio, Essick said targeted e-mail is working for his station.

"The news/talk format is beautiful," he said. "It's perfect for that kind of marketing, because people who listen to

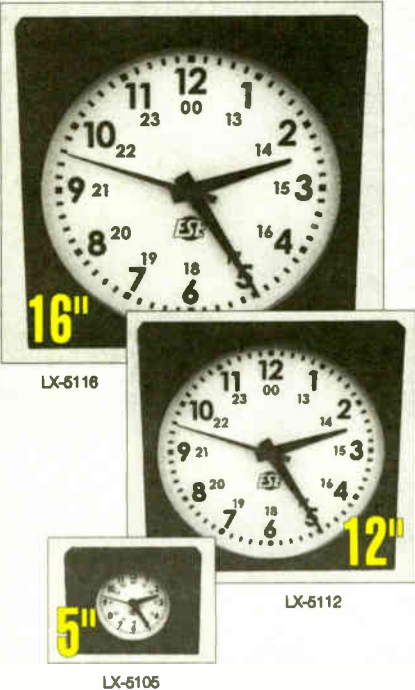
radio industry?

"If we're waiting for some kind of technical epiphany to land on our desks," said Hobbs of IBOC, "I think we're going to be severely disappointed."

Scott Fybush is the editor of *NorthEast Radio Watch* and a frequent contributor to RW.

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Ideas

► Continued from page 31

for Clear Channel in New York City; Casey Keating, program director of Bonneville CHR station KZQZ(FM) in San Francisco; Mike McVay, president of McVay Media in Cleveland and a former radio GM; and Cary Pahigian, GM and vice president of Saga Communications' Portland, Maine, five-station cluster.

Here are some of the ideas that were tossed out that seemed to generate the most interest, along with panelists' explanations.

Customize Voice Mail — Your staff and clients, Pahigian said, are probably tired of hearing the same message they've heard the past eight years. Try to do a new one at least weekly.

Sell Birth Announcements to a Local Hospital — "You can present the newborns as your station's 'newest listeners,'" McVay said. "Sell it (the idea) to a local diaper company, maybe print up some T-shirts."

Create a Listener Advisory Board — "Have a quarterly dinner for these people as well as their spouses," Keating said. "It's invaluable market research, plus, these are your core listeners."

Create a Daily "Wassup" Staff Voice-Mail — "You can talk about weekend contests, when time sheets are due, etc.," Keating said. "This way, your whole staff's on the same page."

Use the "Dollar-Bill" Game to Build Cume — "You don't have to print anything up. Just have listeners accumulate bills with your call numbers, like 9, 5 and 7," said Beyer.

Then add other numbers on the air. First listener to call with your call letters and, say, another 5, 5 and 1 wins a prize."

Read the (Sales) Book — Pahigian recommends that every sales manager and account exec read the book "Close the Deal" by Sam Deep and Lyle Sussman. "There's nothing flashy about it, but it's an excellent book on sales fundamentals."

Distribute "Gotcha" Cards to Your Loyal Listeners — McVay said, "Have staffers go out and 'catch' people listening to

your station. If they fill out the back of the 'Gotcha' card and send it in, they win a prize. It builds listener loyalty as well as your database.

"You can also do a variation of this by giving cards to people if they switch stations."

Try the "\$10,000 Money Maze" Promotion — "It's an easy listenership-building contest to set up. You just pre-record a bunch of tapes," Keating said, "and once the listener contestant goes into the 'maze,' he'll say 'left,' 'right' or 'straight.' As people tune in, they'll know which way to go to head for the prize."

Invite Your Sales Manager to Programming Meetings — "They'll see that there's a lot more involved than throwing records on the air. The two staffs will be on the same page," Pahigian said.

Likewise, Get Your PD to Attend Sales Meetings — "They need to be there to sell your salespeople on what's happening," said Pahigian. "Sell your program lineup to these people. PDs have to excite these people about selling."

Build a "Station Bible" — "That way it's always in the studios," Keating said. "If there's a problem, everyone has the contact numbers."

Once a Month, Rent a Hotel Room and Listen to Your Station — You can't listen to your station in your office properly, Pahigian said.

"You'll be amazed at the stuff you find you've been missing when you're sitting there taking notes. You'll take away a legal pad full of ideas."

Put a White "Wipe Board" in Your Studio — "That way, you'll create easy communication between your various air shifts," Keating said.

Try a "Geek Meet" or a "Meet Market" — Beyer: "You won't believe how many listeners will turn up for blind-date promotions and singles events," Beyer said. "Just advertise these singles gatherings a few weeks in advance. We get 3,500 to 5,000 people at some of these."

Collect Bras for a Good Cause — "Create awareness for breast-cancer research by collecting bras and donations. Call it 'Bras Across the Bay,' for example," said



Casey Keating

Keating. "Then maybe have a guy string them all together behind a parasail. That'll get you a lot of free press."

Add One Safety Tip Daily to Your Newscasts — "Research shows that these PSAs build female demos," McVay said. "It could go something like, 'Here's this morning's 94.9 Safety Tip ...'"

Create Promotions Exclusive to Your Database — "Listeners want a better chance of winning prizes than they get by calling in," said Beyer. "So have contests that involve only your listener e-mail lists. It will build your database quickly."

Interview Applicants at Their Homes — Every hire you make is important, Pahigian said. "Do one interview at the station, and follow up with a second at the applicant's home. They can't fake it in their own environment — you'll see them in their own element."

Take Three People From Different Departments to Lunch — "Maybe pick the receptionist, a jock and your traffic manager," Pahigian said. "Put them in a comfortable setting. You'll get plenty of useful feedback. And the people you take to lunch will take it back to the staff. It's a real morale-booster."

Bill Mann has covered the Bay Area radio scene since 1983.

Conese said, "The two companies have developed remarkably similar applications, servicing essentially the same customers."

FastChannel Network combines adDIRECT's and SpotTaxi's online network of approximately 5,000 agencies, production studios, broadcasters and publishers.

In the first of its international efforts, CMI launched SpotTaxiCanada.com in October of 2000, under a licensing agreement with Broadcast News/Canadian Press. Both companies have developed strategic alliances with technology leaders such as Microsoft, Intel and Digidesign, as well as companies in their respective industries.

Customers can access SpotTaxi.com and adDIRECT via their respective URLs at www.spottaxi.com or www.addirect.com

STATION SERVICES

Delivery Companies Merge To Form FastChannel

A merger in the digital delivery business has created FastChannel Network Inc.

The partners are adDIRECT, which provided digital ad delivery via the Internet for the print industry, and Central Media Inc., owner of Net-based radio-ad distribution and management system SpotTaxi.com.

FastChannel Network said it will offer distribution and management of ad campaigns and short-form content across multiple media channels.

Announcing the deal, Eugene P. Conese Jr., chairman and CEO of the

new entity, said, "The merger develops a one-stop infrastructure resulting in highly efficient customer-oriented services for the management and distribution of print and radio advertising."

He said the ad workflow process will be "revolutionized" by the networking of agencies with radio stations and publishers into one suite of services.

FastChannel Network will maintain offices in Seattle and Belmont, Mass. Conese will serve as chairman and CEO. John Roland will serve as president, Peter Barnes as executive vice president.

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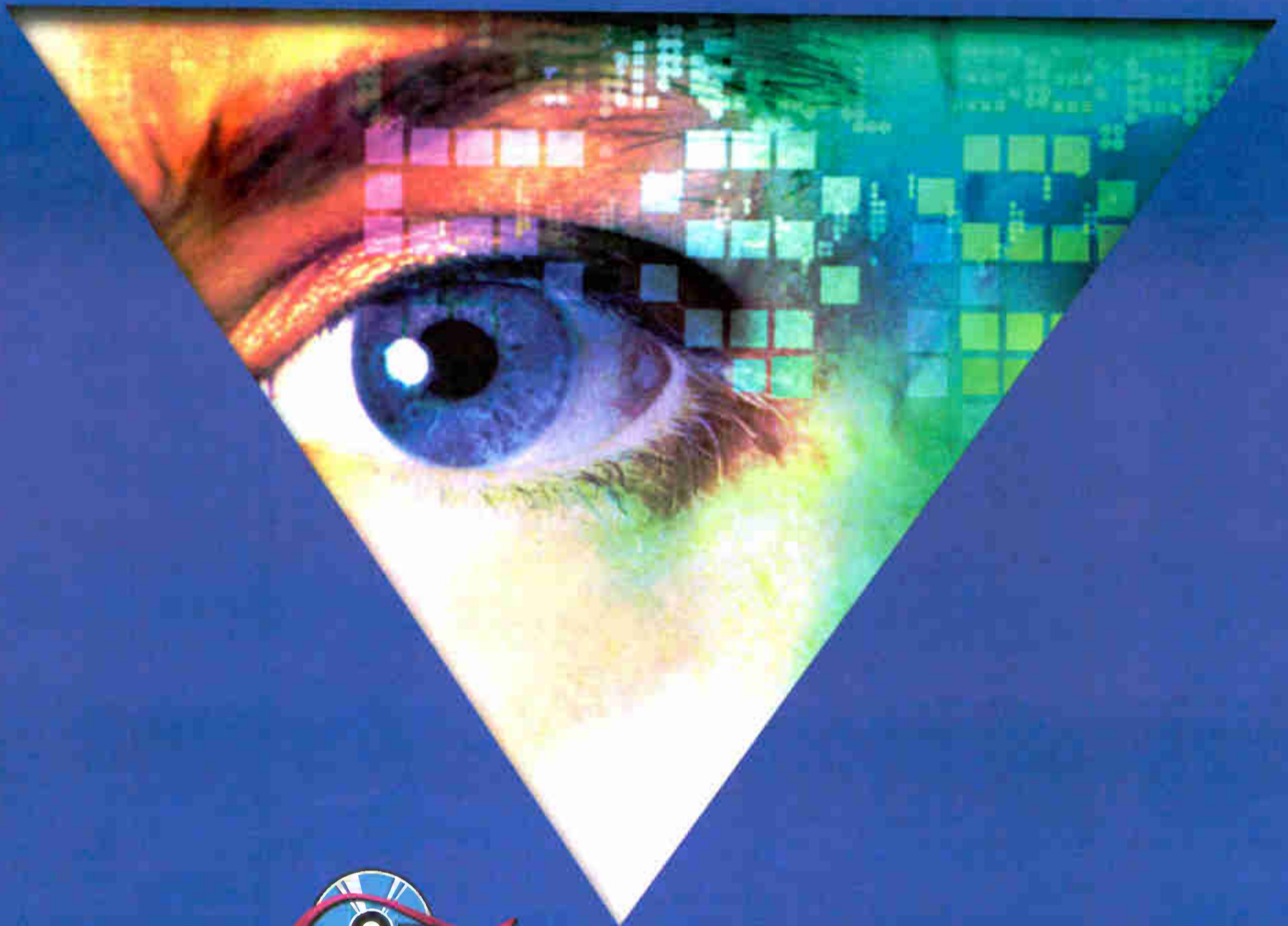
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Internet Radio

The RIAA
wins a
round:
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Radio World

How to Succeed in the Dot-Com World

January 3, 2001

Streaming to the Dial-up Crowd

Laura Dely

Education of radio and media companies about Webcasting, and improved technologies that will bring "near CD-quality" Internet radio to dial-up consumers, dominated the Streaming Media West show.

The battle for dominance in codecs was visible. RealNetworks and Microsoft introduced advanced versions of their streaming services, including upgrades in their codecs. Apple announced an alliance with other companies to develop an open standard for streaming rich media, including an attempt to define an industry-standard codec. The Internet Streaming Media Alliance includes Cisco Systems, Kasena Inc., Philips and Sun Microsystems.

Optimizing bandwidth

"Interoperability," the ability to stream to any provider's player at any bandwidth, was the buzz. RealNetworks RealSystem iQ will support more than 45 streaming formats, including Apple's Quicktime, Flash 4 and streaming MP3, and may eventually include archrival Windows Media Player.

iQ also promises to relieve congestion by creating honeycombs of connection between servers. Real said iQ's Neuralcast Technology allows satellite and terrestrial delivery between all servers in the network. This turns any point to both an "origin" and an "edge" where all servers communicate and direct traffic to the most efficient path.

This promises to improve a provider's reliability and reach while cutting costs.

The Local Market Internet Venture, an open alliance of small to mid-sized radio broadcasters, announced that Real Broadcast Network would provide streaming services to all 190 LMiV member stations. LMiV CEO Jack Swarbrick said the addition of Real's iQ to their suite of streaming services closed the deal.

In the RealNetworks Theater, within a darkened, tented pavilion, visitors watched

short films streamed to a giant flat-panel screen using Real iQ over the Internet. There were no skips or congestion during the half-hour screenings.

Visitors appeared unaware that they were watching streamed content, not a projected image. Instead they were absorbed by the claymation stories. They concentrat-

wants to serve the population that uses dial-up service, in 118 major metropolitan areas with 160 million residents.

"It's going to be two, three years before broadband reaches that audience, so let's not ignore that huge audience that will use dial-up service until then," Kirk said.

Live365.com demonstrated its streaming



Exhibit floor at Streaming Media West in San Jose, Calif., in December

ed on the content and suffered no distractions from static, congestion or dropouts.

TuneTo.com demonstrated streaming technology to deliver high-quality audio to wireless handheld devices such as the Ricochet or a Palm Pilot using only about one-third of the bandwidth that other streamers use. The company combines the caching and streaming functions of a Webcast. The system works at the most common bandwidth used by dial-up services such as AT&T and Verizon, delivering streams at 19.2 kbps.

TuneTo promises that its technology will deliver wireless streams while saving providers millions of dollars of bandwidth cost, said Anu Kirk, senior market development manager. Kirk said the company

technology, which Vice President of Marketing Alan Wallace said is the easiest and least expensive way for radio stations to Webcast. He steered an automated toy PC Cruiser car with his right hand, while he streamed a station in his left, using two connected handheld devices (a Ricochet and Palm Pilot). The two devices together cost \$1,000 to \$1,200, he said.

Through a headset the sound was excellent. Wallace chose the station he streamed from the Live 365.com Web site, which boasts 23,000 stations at last count. Anyone, including radio broadcasters, can access its streaming services and its catalogue of licensed music or provide their own content for a subscription fee of about \$90 per month.

On the ad insertion front, Hiwire will offer iBeam's streaming services as part of a reciprocal arrangement that will allow iBeam to offer Hiwire's ad insertion service to all of its customers. iBeam's 60 million streams per month across 160 networks can no doubt be a significant boost to Hiwire.

Lightningcast entered a cooperative agreement with Scott Studios, saying the arrangement will benefit radio streamers, allowing live ad insertion service into their automated systems easily.

MS news

Microsoft President and CEO Steve Ballmer showed off Windows Media Player 8, expected to be out this year. The audience was almost fooled when showed movie clips via a Windows Media Player 8, a videocassette player and a DVD player. An applause poll showed that about half believed the Media Player was superior.

Ballmer also demonstrated the next version of Windows, code-named "Whistler," expected to be released this year. The comprehensive upgrade to the Windows operating system will allow users to edit and distribute digital home movies.

Participants said radio managers must pay attention to video transmission technology as the ability to stream good video at low bit rates becomes possible. Surveys find advertisers anxious to experience TV-like commercials in radio streams, something that has been impossible until now.

Arbitron and MeasureCast released Net media ratings here. Arbitron's September numbers showed NetRadio in seven of the top 10 slots; MeasureCast's weekly list reported ABC Radio in seven of its top 10.

Arbitron released a study that reports Net users are enthusiastic about "side channels," Internet-based extensions of a station's programming such as KISSFMi.com, which features edgier, more alternative programming than the on-air signal, or the federal news site WTOP2.com, run by the all-news station in Washington.

For more detailed show coverage including the battle of the audio and video codecs, see www.rwonline.com

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World Radio History

Radio Streamers Via Web Portals

Ken R.

"The Aggregators" might conjure an image of a rock band wearing skinny ties under an abandoned bridge on MTV, but it's actually a term used to designate Web sites that provide a portal to a number of streaming audio alternatives.

Some aggregators simply provide links to as many station streams as possible while others create virtual stations out of whole cloth. Aggregators use the term "virtual station" to mean a site at which the listener, or Net surfer, can select his or her own music, determine playing order and even skip or replay certain selections which are housed on the aggregator's servers.

There are also Internet-only stations. Lately some hybrids have appeared that combine attributes of all these styles.

The choice

Radio stations have a choice. They can host their own Web sites, or they can join any of a multitude of aggregators.

For Greg Jenkins, operations director of classical-format WMKY(FM), located on the campus of Morehead State University in Morehead, Ky., the choice was easy.

Some aggregators provide links to as many station streams as possible; others create virtual stations out of whole cloth.

"We went with WebRadio because we were short on two things: money and bandwidth."

Many of the Morehead students use MP3 to download music over the Internet or do their own Web streaming via Live365.com, which creates crunch for bandwidth on campus.

"We can barely maintain a good connection to our own server. We also can't afford RealAudio, Windows Media, etc.," said Jenkins. "WebRadio sent us a server, CPU, monitor and keyboard. All we had to do was plug into one of our existing data connections and an audio source."

Jenkins actually watches the fluctuations in available bandwidth as the student population ebbs and flows during the ordinary cycle of a semester.

"We can't stay connected to WebRadio during the week, but when the students leave for the weekend it's a lot easier."

Tom Pinkus is director of business development for two-year-old WebRadio. Pinkus said it's simple for a broadcaster to be up and streaming quickly. They just need a dedicated Internet connection and an audio source.

"WebRadio provides all the hardware and software. All the listener need is a Java-enabled browser. There's no download, no plug-ins and no problems," said Pinkus.

WebRadio has about 200 stations under contract and an impending partnership with Westwood One and its roughly 1,000 affiliates.

Market size determines the fees paid by WebRadio client stations, but the larger markets pay the least.

"That's because they drive more listeners to the site," said Pinkus. "Fees are negotiated, but typical monthly costs range from

\$500 to \$1,500."

WebRadio is able to generate instant listenership data for its stations using a third-party software package called Analog 4.12, developed at the University of Cambridge Statistical Laboratory.

The latest Edison Media research, for the period of July through September of 2000, shows that surfers want more than just streaming audio.

"That's why we provide a custom branded Internet store that's designed specifically for each station," said Pinkus. "This helps the station retain listeners and extend the brand."

Andy Collins is senior manager of the Yahoo Broadcast radio division. He believes that radio and the Internet go together "like peanut butter and jelly."

"Not many people listen to radio while they watch TV, but a lot of people like to listen to radio while they check stock quotes, handle e-mail, etc.," said Collins.

Yahoo Broadcast builds a customized pop-up player that streams the station's audio.

"We simply work with the stations to deliver their content," said Collins. "We want to be experts in this one area and

mesh it with the large Yahoo audience base of 166 million unique users worldwide."

The cost for Yahoo's service to the stations varies based on factors including market size and average quarter hour rankings.

"Sometimes the station pays, sometimes they give us somewhere between five and ten minutes of ad inventory a week," said Collins. "We have an ad insertion technology in the works now, but we won't make it available until we can perfect it."

Unlike many sites, visitors to Yahoo Broadcast do not have to "register" to receive the service, nor are they asked for



Tom Pinkus

any personal information.

"We believe that the user ends up with a better listening experience if they can feel freer and not give up anything on their end," said Collins. "So there's no database building at this time."

Yahoo Broadcast provides all the equipment necessary to the station, along with technical assistance. "We make it very easy

for our stations," said Collins.

Station experience

Jim Radcliffe is Webmaster for the Susquehanna Radio cluster in Dallas including KPLX(FM), which streams its signal on the Internet via Yahoo. KPLX has a barter arrangement through which the station provides a certain number of commercial spot positions for Yahoo national ads each week. Radcliffe said this is much less expensive and less troublesome than trying to stream using in-house resources.

"You have to baby-sit it (your stream) 24 hours a day. With Yahoo we just supply the audio stream and they take it from there."

But what are the other advantages of signing up with an aggregator for a large commercial operation like KPLX?

"In a large metro area, you still have signal problems," said Radcliffe. "The signal may actually be better on the Internet. And some companies don't allow employees to listen to the radio while they work — but they can't tell you not to have a computer," said Radcliffe.



Brad Porteus

He also said that his station garners many listeners in Canada and overseas.

"We've actually had satellite phone calls from our soldiers in Bosnia because they like to stay in touch with their hometown," said Radcliffe. Because both Yahoo and KPLX are in Dallas, Radcliffe believes that the station receives excellent service.

"They came into our building and set everything up," said Radcliffe. "If there is a technical problem they take care of it. All we have to do is provide audio to the feed point."

Do-it-yourself radio

SonicNet takes a different approach to Internet radio. The company allows each listener to build his or her own radio station from the music inventory on their servers, from an online catalogue of 150,000 songs or artists, said Brad Porteus, SonicNet vice president.

SonicNet.com is considered an aggregator because in addition to "custom" stations that the listener can create, a visitor can select from a number of other formats, about 50 of which are programmed by celebrities and nationally-recognized musicians. XTC's Andy Partridge, the Blue Mann group, Dwight Yoakam, Pat Metheny, k.d. lang, the Barenaked Ladies and Bon Jovi are some of the well-known musicians hosting radio shows on the SonicNet site.

Brad Porteus, vice president of MTVi Radio, parent company to Sonicnet.com, said its virtual station provides options that



Andy Collins

traditional streaming can't touch.

"Listeners can select the artists and the style of music they like. They can even skip a song or pause it and continue to listen later."

"We're a narrow-caster rather than a broadcaster," said Porteus. "There are no disk jockeys or timely information such as weather, traffic or news because each listener is tuning in and beginning the listening experience at a different time and perhaps in a different country."

This online service is made possible through the support of ads that are inserted into the programming. Where possible, these commercials are customized to the listener.

Spinning the hits

America Online purchased Spinner.com last year. Spinner provides another alternative to terrestrial broadcasting, which allows listeners to hear the top hits online. In fact, Spinner offers more than 150 professionally programmed music channels. Listeners can select the genre, or they can seek certain artists or titles. Downloads involve only certain selections and on certain occasions.

Visitors to Spinner can obtain bios on each musical artist simply by clicking and they can rate songs or provide feedback to the DJs. There is no charge to the user for the music service.

The site streams about 25 million songs each week and uses commercials inserted into the programming to create its revenue stream.

"But unlike traditional radio which has anywhere from 8 to 15 minutes of spots per hour, we only have one or two minutes an hour in our shows," said Ann Burkart, spokeswoman for Spinner. "Our site also uses banner ads."

"We're adding about 100 or more stations to our site every month," said George T. Bundy, CEO of BRS Media Inc., a streaming portal that derives its income from banners ads and other advertising on the station's site, as well as services such as streaming and domain names. "We now have over 4,200 stations available to listen to."

No one knows what the rules are yet for this new medium. Bundy believes that radio will once again weather a technological challenge and even grow stronger from it.

"All the extras that come with the Internet, including pictures, click-throughs and e-commerce just draw interest to the main product: the audio," Bundy said. "The ability to add video will only complement the (radio) service and allow stations to have another revenue stream while drawing interest to the main product. All this will help radio succeed and thrive."

Ken R. is a former broadcaster who remembers when a "Net" was something one used when playing tennis. 🌐

“Don’t worry, it’ll still be good in three months.”



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WEB WATCH

Over Before It Began: Webcasting?

The Brave New World May Be Just Talk If RIAA Prevails in Its Fight to Charge Broadcasters for Webcast Music

Carl Lindemann

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

Hillary Rosen, the president and CEO of the Recording Industry Association of America, really missed her calling. She could have single-handedly decided the Gore/Bush brawl.

Why? The self-serving rhetoric that's issued under her aegis exceeds anything produced in the partisan pugilism for the presidency. Take a minute now. Sit down and take time to see what the RIAA is up to.



Hillary Rosen

The association has won the first round in its fight to have broadcasters pay performance rights for streaming their signals. The struggle over this is far from over. Pay attention; your future in broadcasting depends on it.

But first, let's look at the rosy picture broadcasters would otherwise have for

streaming audio are "super sticky." It's the single most powerful element to keep visitors on a site and keep them coming back day after day.

One of the conclusions is that "it makes perfect sense for the radio industry to stream its audio programming and to put itself in the position to own Internet audio. If the radio industry does not do what it needs to do to co-opt this new medium, it leaves Internet audio open to the Ted Turners of the world."

Some of the interesting suggestions in the Edison Media Research/Arbitron study include developing online "side channels" that are variations on the same themes developed by the core over-the-air signal.

A certain number of listeners who like the general "feel" of the programming will like this tailored piece even more. Given that a station has already invested the time and effort to hone the core programming, it's relatively cheap to produce such side channels.

The notion of increasingly customized streams is what's behind the real revolution expected for 2001 — ad insertion technology. Targeted ads will finally make Internet audio pay for Webcasters. Looking ahead, understanding a listener's interests enough to target ads also allows programmers to polish playlists accordingly.

With this, online audio finds its true place as it takes old-style radio's localism and transforms it into a highly personalized approach. With this, broadcasters who've made an investment in the new medium will enjoy a thriving business well into the new century and beyond.

No so fast

Well, this sure sounds great, but there's a big piece missing. Much of this is based on the notion that performance rights will remain a freebie online as they

incurred a fortune for performance rights.

What's the appropriate price for having helped launch a new medium for music? How does bankruptcy sound? Isn't it counterproductive for the RIAA to strangle online radio with excessive fees? It seems stupid until you see that killing radio online is the RIAA's best bet to ensure its own future in the digital age.

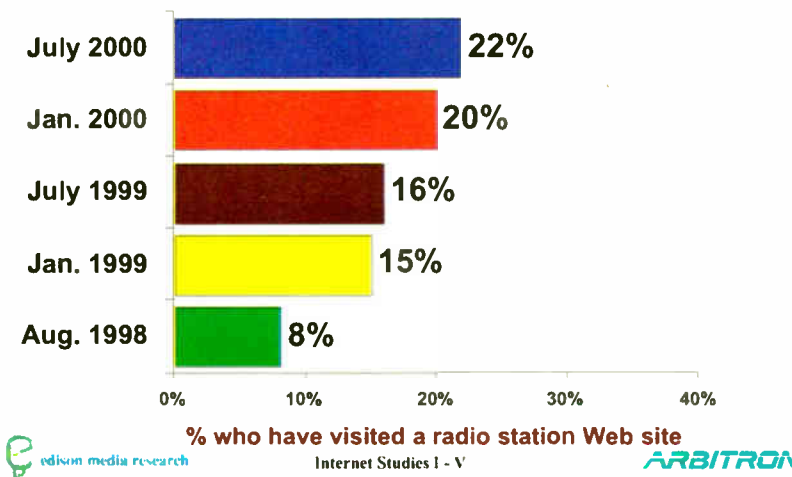
This has to be understood in terms of the traditional relationship between radio and the recording industry. Until now, they've gotten along amiably. Radio has introduced its audience to the recording industry's wares.



There is no future for its core business — manufacturing and distributing discs.

If you were a record company exec, wouldn't it make sense to try to take hold of the new mode of distribution? Unfortunately, this happens to be uncomfortably close to

Radio station web site visitation continues to grow

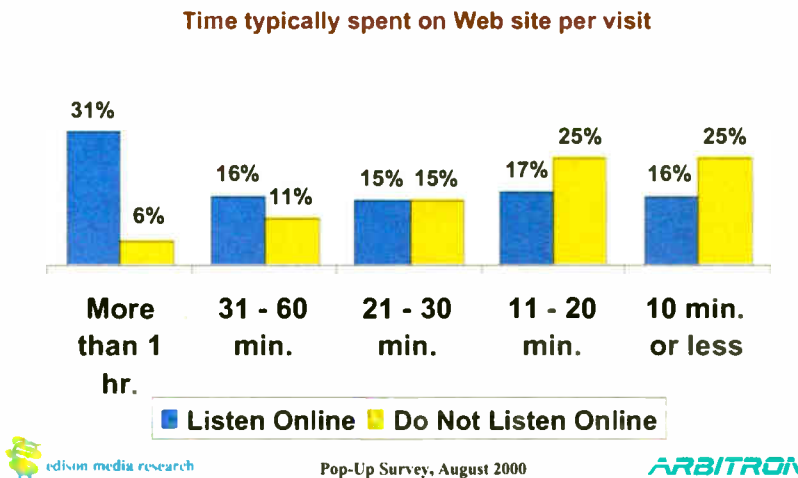


After hearing a catchy tune on-air, listeners dutifully marched down to the local record stores to buy the LP/cassette/CD. It's hard to imagine how the record industry could have become what it is without radio. And, by the same token, it's hard to imagine what radio would be without music. In short, this

the same turf many broadcasters have staked out as the future of radio.

The language of the RIAA petition is both menacing and amusing: "It is well known that consumers want to listen to and obtain music online. The recording industry is acutely aware of this desire and understands the benefit to artists,

Those who listen to station online spend more time on Web site



has been the very soul of symbiosis.

Looking at this in more general terms, the RIAA has been in the durable goods manufacturing business. They make the bulk of their money manufacturing and distributing discs that happen to contain intellectual property.

Imagine their horror faced with the inevitability of Internet distribution. The recording industry as it is currently constituted is about to become obsolete.

record companies, songwriters, music publishers and consumers alike of electronic delivery of music. The industry is excited about, and eagerly embracing, the opportunity for such delivery offered by the Internet."

The "eagerly embracing" claim is laughable in light of the RIAA's protracted struggle against online audio. During last summer's Senate Judiciary
See WEB WATCH, page 42 ▶

At what point does it become an antitrust issue if music companies leverage copyright to crush competition for their online audio ventures?

the future online. Now that we've stepped into the Third Millennium, Internet audio is booming and station Web sites with streaming audio are among the most popular places to listen.

Content

The latest Edison Media Research/Arbitron study expands on the data released in September 2000's "Internet Study V — Radio Station Web Site Content: An In-Depth Look." The report shows that visits to station Web sites grew 22 percent from January to July 2000.

That makes for a total of some 50 million Americans visiting these sites altogether. What's more, stations with

have been over-the-air. How that changes can alter everything. All of the aforesaid will still come true, but broadcasters may not be the ones reaping the benefits.

On Friday, Dec. 8, the Copyright Office sided with the RIAA's petition to set aside the exemption on performance rights enjoyed in over-the-air broadcasts when the same signal is streamed online.

An arbitration panel will decide what's appropriate as far as fees for these performance rights. Incidentally, the RIAA's petition called for retroactive fees for Webcasts going back to Jan. 1, 1998.

Say you've been streaming your station's signal online for the past few years. Even though it has been a novelty and not a moneymaker, you may now have

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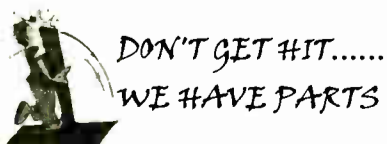
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INTERNET RADIO

Web Watch

► Continued from page 40

Committee hearing on "The Future of Digital Music," Committee Chairman Sen. Orrin Hatch (R- Utah) noted "the complaint that the major record labels have not been willing to license online music distributors to provide their music, or have offered licenses on terms much different than online entities related to those labels."

So, to be more precise, let's just say that the RIAA is "eagerly embracing" opportunities to enhance its position.

What's menacing in their licensing proposal is that broadcasters and Webcasters aren't mentioned among the beneficiaries recognized here. This is no accident.

So it seems that the traditional symbiosis between broadcasters and the music biz is about to undergo a fundamental change. Radio's partner is poised

to become a parasite.

Sure, radio will continue to thrive online. But if things turn out the way the RIAA seems to have it in mind, its members will own and/or control these broadcast entities. Or, at the very least, their ventures will enjoy an unfair advantage over others.

Anticipating that this coup would soon be a fait accompli, the RIAA announced the launch of the online mechanism to carry this out on Nov. 28, 2000.

An RIAA press release proclaims, "Members of the recording community announced today a ground-breaking royalty program, launching the 'SoundExchange' to provide record companies and recording artists with a long overdue performance right for sound recordings in the United States."

Meanwhile, the record companies are striking deals with various Webcasters — typically for an equity stake. Warner Music Group announced a non-exclusive deal with San Francisco-based Echo Networks giving the streaming music ser-

vice access to its entire catalog. Warner gets a piece of the action.

Elsewhere, Farmclub.com announced it would be offering a streaming subscription service. Farmclub.com is the online label created by Jimmy Iovine, co-chairman of Universal's Interscope A&M, and Universal Music chairman Doug Morris.

Oh, and don't forget that music giant Bertelsmann AG has bought into Napster.

Brave new world

In case you missed it the first time around, try to imagine what radio's future online could look like under the same intellectual property costs that made over-the-air radio possible.

Then, think of how will it fare in an environment with potentially onerous performance rights costs. Add the fact that radio will be going head-to-head against competitors that are simply extensions of the major record labels. These new competitors are essentially exempted

from the licensing fees because the money is going back into the same pockets it's coming from.

For the RIAA's Rosen, the Copyright Office' ruling makes way for an exciting time for her constituents.

"We look forward to working with the broadcasters for a smooth transition into this marketplace". But did she misspeak? Shouldn't she substitute "monopoly" for "marketplace"?

At what point does it become an antitrust issue if music companies leverage copyright to crush competition for their online audio ventures? If that's how the cards fall, it's probably best to dump all musical programming and focus exclusively on talk. Radio may as well pull the plug on music before the RIAA pulls the plug on Internet radio. If this happened, it would give listeners plenty to talk about.

Carl Lindemann is Radio World's Internet Radio News columnist.

RW welcomes other points of view. 🌐

Products & Services Showcase



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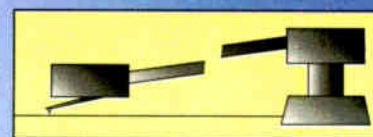
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PRODUCT EVALUATION

DC-Live Traces Out Analog Noise

Read G. Burgan

In the past few years, several companies have released good digital noise reduction software products that have cleaned away the noise inherent to vinyl and other analog recordings.

In the past, most affordable systems have required that the sound source first be recorded to hard drive and then submitted to hours of digital noise reduction processes.

Diamond Cut Live (DC-Live), from EnhancedAudio.com Inc., has changed all that. The software allows users to play a record on the turntable or a reel of analog tape and listen immediately to the digitally restored sound in real time.

For a radio station, this means that those stacks of records lying fallow in a back closet can now be resurrected and played directly on the air with a sound rivaling present-day CDs.

ware costing many times more.

DC-Live enables an IBM-PC computer to become the center of the audio chain. The output of the turntable, reel-to-reel or cassette deck preamp is connected to the computer sound card input, while the output of the sound card is connected to the stereo monitoring equipment.

Using the DC-art software as its base, EnhancedAudio has created a "Live Multi Filter" that allows one to chain and gather nearly all of the DC-Live filters and effects and run them in real time. When the Live Multi Filter is open, a list of all applicable filters and a drag-and-drop screen for filters in use are accessible.

The filters are applied in the order that they are dragged to the multi filter screen. Multiple copies of the same filter may be dragged to the screen. I usually have two of the impulse filters in the chain to remove both large and small

incoming and outgoing sound. The delay is dependent on the processing power of the computer, the sampling and bit rate selected, the number and kind of filter

various filters and tools of DC-32, so I won't go into detail here, except to list some of the filters more pertinent to digital audio restoration and to highlight some upgrades and additions.

Central to the core of audio restoration are the Impulse, Continuous Noise, Harmonic Rejection, Dynamic Noise, Low Pass, Bandpass, Notch, Graphic EQ

Anytime I want to hear an old recording, I can drop the needle on the record, sit back and enjoy yesterday's sound with today's fidelity.

selected and whether or not it is processing in mono or stereo. Using a Pentium-II 650 MHz processor to process a 44.1 kHz stereo file, I experienced a latency of about one second.

Building up

In the case of badly deteriorated sound sources, it may be better to process a sound source the conventional way — recording the sound to hard drive and then applying the filters one at a time to the WAV file. By its very nature, some of the filters can be applied more aggressively to an existing WAV file than to live audio.

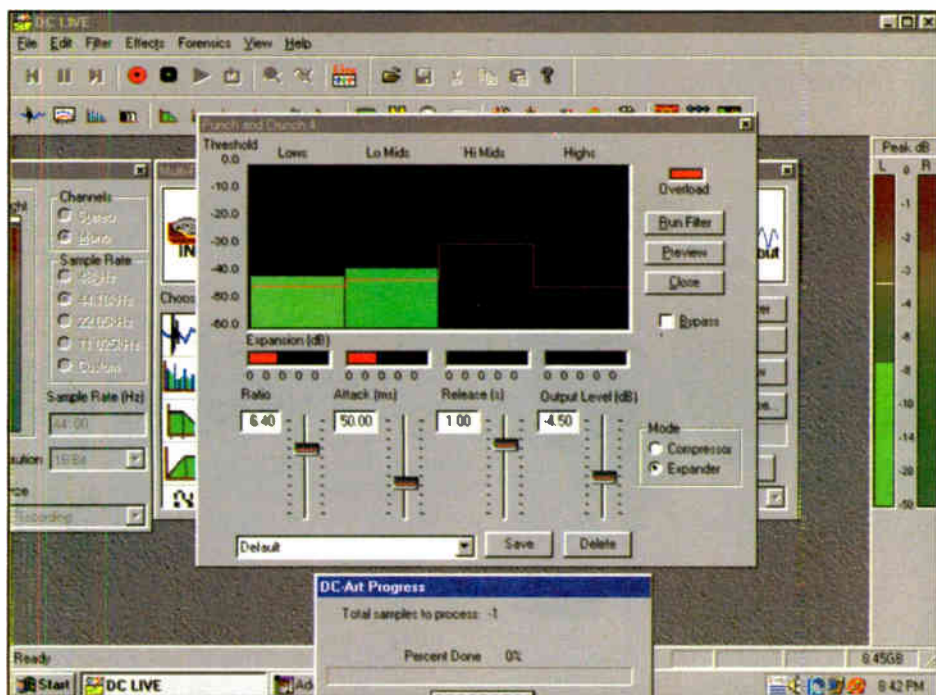
In past reviews I have described the

and Paragraphic EQ filters. Among the effects tools are the reverb, virtual valve amplifier, the dynamics processor and the channel blender.

The Impulse filter has added a new recording type: HQ Mode. According to EnhancedAudio, this new algorithm provides greater control over the variables affecting the detection of noise impulses and the rejection of transient music passages. The type also requires more processing power when using the Live Preview mode.

The company has improved the continuous noise filter by adding a choice of

See DC-LIVE, page 48 ▶



Punch and Crunch window for DC-Live

For collectors like myself, with thousands of old transcripts, LPs and reel-to-reel recordings, this means we no longer need to spend several hours to restore a single recording that may be listened to only once in a blue moon. Anytime I want to hear an old recording, I can drop the needle on the record, sit back and enjoy yesterday's sound with today's fidelity.

Tracing origins

EnhancedAudio has been a leader in the field of digital restoration software with its series of products based on the Diamond Cut Audio Restoration (DC-art) software designed for the IBM PC and Windows operating systems.

In the past several years, the company has improved and expanded this inexpensive restoration software until its features rival those found in soft-

clicks, plus one continuous noise filter and one graphic equalizer filter.

Once all of the filters have been selected, then the "Live Preview" button can be pressed and playback of the analog material as digitally restored sound can be heard through any monitor.

A filter's parameters can be adjusted by double clicking the on-screen icon of the filter. This action brings up the menu for that filter. The adjustments are monitored in real time so that each filter's effect can be fine-tuned.

How well does all of this work? Very well. I have spoiled myself listening to old analog recordings restored in real time. The annoying surface noise that characterizes vinyl recordings is gone — as are all but the most egregious pops and clicks.

The software has some latency considerations — i.e. a delay between the

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LINE OUT

Remote Broadcast Techniques

Bruce Bartlett

Remote broadcasts are a popular way to enhance the visibility of a station. Therefore, it seems fitting that I look at some ways to produce several types of remotes.

In a typical situation, station personnel parks a van or large "boom box" PA outside the remote site, such as a mall, fair or restaurant. Then, the talent carries a portable transmitter into the venue.

Marti Electronics makes several 2.5-watt transmitters that are commonly used to send the program to the van, where it is repeated and sent to the studio by a 25-watt UHF transmitter.

Why not use a mic cable from the venue to the van? It is a cleaner set up as there are no cables for cars to run over or for people to trip on. A walkie-talkie is often used to hear communications from the studio.

Usually, the music is played at the station while the remote announcer just does cut-ins, talking to customers or the venue manager. For more elaborate shows, the talent might back-announce records or introduce upcoming events. The music is seldom played at the remote site.

An omni UHF antenna works fine when mounted on top of the van, as usually it can transmit up to a 15-mile

radius. For longer reaches, a directional antenna can be aimed at the studio with the aid of a map and compass.

Remote call-ins

When the station produces a remote call-in talk show, the talent will need a mic, small PA system, telephone and phone coupler. Typically, the announcer uses a telco landline to tell the station when they are ready to go on.

The encoder at the sending end frequency-shifts the signal 250 Hz upward by heterodyning.

The station feeds the announcer a mix-minus signal, which includes the program without the announcer. If the program with the announcer were sent from the station, it would double the live voice on the PA and headphones, and cause a comb filter or a confusing echo.

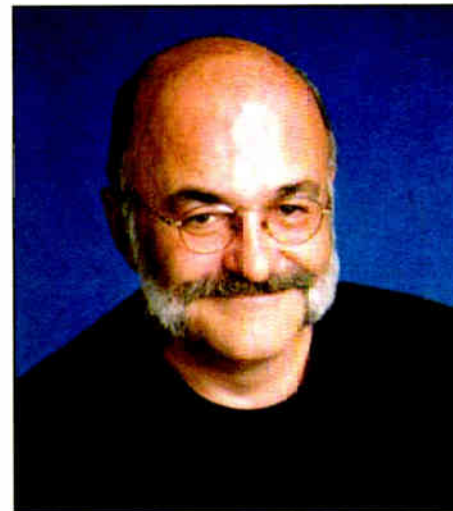
On most call-in shows, the calls are on a profanity delay. In this case, the station feeds a pre-delay program to the talent.

It is possible to send remote audio over a normal 300 Hz to 3 kHz phone line but have it sound full fidelity by using a Comrex encode/decode system.

The encoder at the sending end frequency-shifts the signal 250 Hz upward by heterodyning. In this way, a 50 Hz

signal becomes 300 Hz, which the phone line can handle. That is, a program with a 50 Hz to 2,750 Hz audio spectrum is made to fit into a 300 Hz to 3 kHz bandpass.

At the station, the receiving decoder frequency-shifts the signal down 250 Hz restoring the full program spectrum. Those three extra octaves at the bottom can add a lot of fidelity.



John Gillis does the traffic using a remote set-up in a helicopter

ground and the announcer's hearing needs to be protected from the helicopter noise. So, the announcer needs a noise-cancelling mic, a low-power transmitter and a hearing protector headset.

Harry Sonnheim, an engineer formerly with WHAS(AM) in Lexington, Ky., told me how that station handled the job.

Originally, their announcer used a handheld cardioid dynamic mic and a David Clark headset to block out helicopter noise. The mic plugged into an XLR connector on a custom Bud box. Inside the box was an RDL (Radio Design Labs) Stick-On mic preamp. The preamp output fed a Marti and a two-way radio that sent audio to the ground.

More recently, the station switched to a Bose Aviation Headset X with Active Noise Cancellation that cancels out the helicopter noise at the ears of the announcer. Built into this headset is a noise-cancelling mic with a volume control. The mic and earphones plug into a TRS quarter-inch phone jack for receiving power and transferring audio.

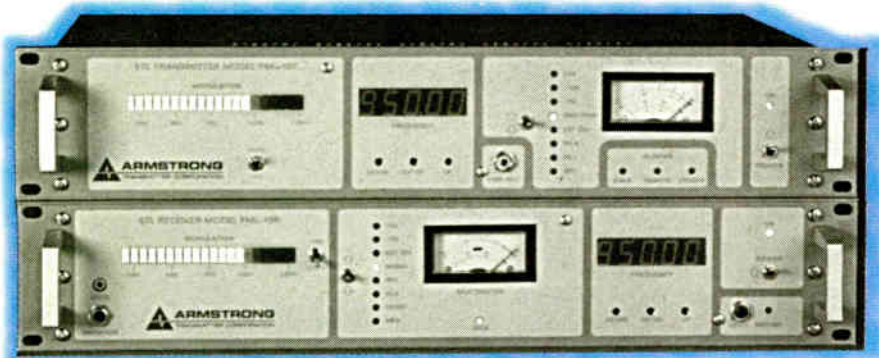
According to Sonnheim, a helicopter audio connection box is not available commercially. Station engineers must build their own custom interface. He wishes that some manufacturer would put all the necessary devices in a single package — an AM/FM tuner, UHF/VHF two-way radio, scanner, mic preamp, mic connector and headphone jack. The device must be small enough to fit under a helicopter seat and it should be modular with plug-in cards for various functions. He thought such a device would be worth \$2,000, if it were ready to go.

Big John Gillis, a traffic announcer and radio personality at WIBC(AM) in Indianapolis, does traffic remotes in a similar way. He uses a David Clark noise-reduction headset and a special box made to interface the radio and TV communications gear with the aircraft intercom.

Gillis said, "Our broadcasts are done using a Motorola two-way system at approximately 450.250 meters. One of our competitors uses a standard handheld mic feeding a Marti. We both use the 24-Volt aircraft power for our gear with interconnects provided by avionics and maintenance folks at the airport to our specifications, so that everything passes FAA safety standards."

Consider trying out some of these remote techniques. Remotes offer a way for more listeners to become aware of a station — and demonstrate a station's involvement in the community.

Bruce Bartlett is an audio journalist, recording engineer and Crown microphone engineer.



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Noise-cancelling headphones and mics help in remote situations

This system can be extended to use two or more phone lines. For example, one unit shifts up while the other shifts down, make a 50 Hz to 6 kHz spectrum pass on two 300 Hz to 3 kHz phone lines. Then the two phone lines are decoded and summed at the receiving end.

The result in sound quality can be amazingly good. Summing the two phone lines should not cause any objectionable phase cancellations.

Traffic 'copter remotes

Another remote application can happen when a radio and TV station employ an announcer to fly in helicopters to report on traffic conditions.

In this situation, several needs must be met: A voice signal must be created that is well above the helicopter background noise; the audio has to be sent to the

Teaching Jocks and Talking Socks

Alan R. Peterson

I am looking at the New Year with the awkward realization that I have not held a full-time gig anywhere since the middle of July 2000.

I guess I am luckier than many other under-employed broadcasters, as I have had a number of fallbacks to tide me over, and I happen to live in an area where there are almost limitless opportunities to make a buck ... unless you are a losing presidential candidate.

Even so, I have to admit that the past few months have found me doing my share of unusual tasks that, had you told me last year I would be doing them, I'd have declared you nuts. But then again, anything for a paycheck.

Hit it, professor ...

I start with my diversion into academia: signing up as an instructor and engineer for the newest campus of the Connecticut School of Broadcasting.

The company, founded in the early 1960s by Connecticut broadcaster Dick Robinson, recently established a new school in Arlington, Va., only a short hop from the Pentagon and a fast swim across the Potomac River from the nation's capitol. The new campus is also a quick stroll from the old Mutual Broadcasting System studios where Larry King used to call the night his own.

How well I remember those years of coming into the station at 4:30 a.m. to begin the morning show and hearing the Larry King Show winding down. The voice of Fred Lowrey would pour forth from the lobby monitor, bearing bumpers, intros and outros to the overnight King program.

More than once, I heard references to "Jefferson Davis Highway in Arlington," which was where Mutual was based. I would imagine the highway as a gold-plated cityscape with tall futuristic buildings and roofs packed tightly with satellite dishes and arrays of antennas.

I was not disappointed to see the actual Jefferson Davis Highway when I finally moved here. But I was somewhat disheartened to find out that the real draw on this stretch of asphalt was not Mutual, but a Krispy-Kreme doughnut stand that packs them in day and night a couple of miles down the road.

But I digress.

I always thought I could teach broadcasting fairly well — I basically do The Big Talk every year at the IBS college radio conference in New York, so why not several times a week? Plus, the campus is well outfitted with Radio Systems consoles, Sony MD decks and PC-based audio editors, so the founders definitely put some thought into the operation.

As it turned out, I had hired a pile of CSB grads back in my mid-'80s CHR programming days and felt good about what they could do. So why not do a little good of my own and take on an educator's role?

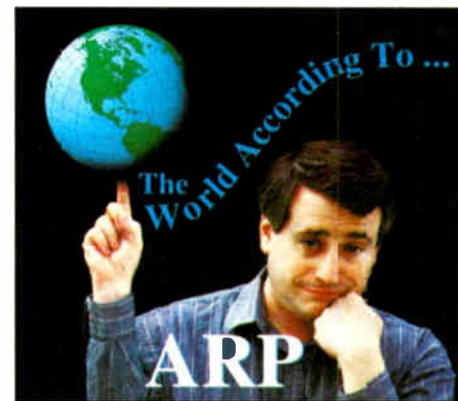
Schmoozing down the river

In between lessons on non-linear editing, running tight boards and how to talk up songs, I am imparting my own special wisdom. Topics include begging for free CDs from the music director, accessorizing one's winter wardrobe with station sweatshirts and leaving jalapeno pepper

sandwiches in the fridge to find out who's stealing lunches. coming up," don't blame me. My students know how to schmooze for free-

In five years, when the experts complain that 'there is no new talent coming up,' don't blame me.

So, in five years, when the experts complain that, "there is no new talent coming up," don't blame me. My students know how to schmooze for free-



fications and credentials that, thus far, have yet to yield any great returns.

Believe me, I am thrilled with having a press tag for my neck that gives me clearance into the U.S. Senate and the House of Representatives. But it is not as if Ted

See ARP, page 46 ▶

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Turntable Systems Maintenance

Tom Vernon

As music on the radio becomes synonymous with MP3 and large hard drives, the lowly turntable has become an auxiliary source in the production room at many radio stations.

While most new music is released on CDs, there are still occasions when the turntable needs to be called back into service.

Many musical nuggets are overlooked by music researchers who compile libraries for CDs. Also, some records will never be transferred to a digital format. While record production is limited in this country, 12-inch discs continue to be a vital medium in the U.K. and Japan.

Polydor is re-releasing older recordings

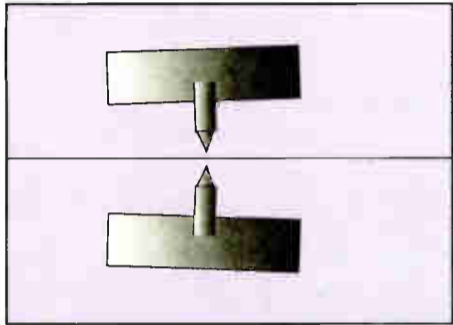


Fig. 1: Proper azimuth adjustment of the cartridge is essential to good stereo separation. In this exaggerated view, the front edge of the cartridge and its reflection are not parallel

on vinyl. Vintage jazz and classical recordings are being pressed in Japan and the LPs sold by subscription.

You may not have given much thought lately to stylus selection, record care and aligning a turntable system for best sound. These are worth consideration.

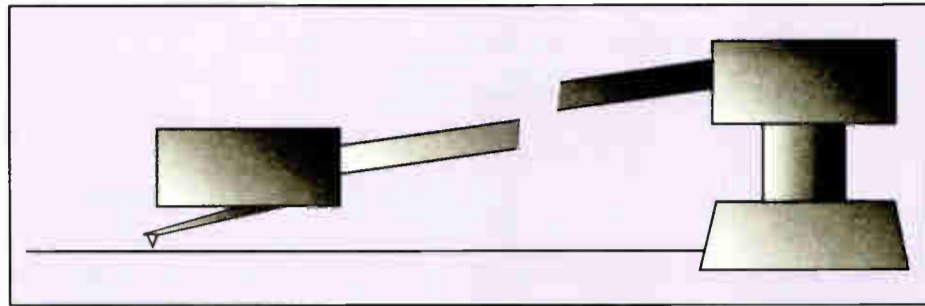


Fig. 2: Vertical tracking angle is adjusted by raising or lowering the height of the tonearm so that the diamond tip is parallel with the record surface

While the Shure SC-35C and the Stanton 680 and 681 series of cartridges have become industry standards owing to their ruggedness, neither has the same clean and transparent sound of an audiophile device.

If you are dubbing direct from disc to hard drive, some possible alternatives might be the Shure V15VxMR and the Audio-Technica AT440ML. A quality external A/D converter is also a prerequisite.

Squeaky clean

Radio stations put far more wear on vinyl than the average user and an aggres-

sive cleaning is called for occasionally.

While cleaning cannot correct for scratches and wear, a surprising improvement in sound quality is possible when really grungy discs are washed. While there are commercial devices such as "Nitty Gritty" that spray and vacuum 12-

inch discs, their cost is hard to justify for infrequent use.

You can wash discs by hand using a mixture of 1 gallon distilled water, 90 ml isopropyl alcohol and 1 gram of dishwashing detergent. You will also need a natural bristle paint brush, trimmed so the bristles are stiff enough to get into the grooves but not stiff enough to scratch the record.

Lay the record flat and pour a small amount of cleaning fluid on the surface. Brush in the direction of the grooves. Spray off the detergent in the sink, do a final rinse with distilled water and let the discs dry in a dish rack.

For more routine cleaning, the Discwasher record care system with D4+ fluid has long been the industry standard. The SC-2 stylus care system and the cleaning system are available at many hi-fi stores and online retailers.

The checkout of a turntable begins with the enclosure. It needs to be perfectly level, isolated and non-resonant at audio frequencies. Using a good carpenter's level, verify proper alignment front to back and side to side.

Most turntable pedestals have floor levelers to make fixing this an easy process. The pedestal must also have enough mass so that the stylus does not pick up footsteps, building vibrations or feedback from monitor speakers. The latter is particularly hideous, as it can cause loss of definition in addition to feedback.

The usual remedy is to load the pedestal with cement blocks or sandbags. It is important to weigh the pedestal down evenly and check for proper level again when finished. In older buildings, be sure the floor can withstand the added weight.

If the pedestal is an enclosure-within-an-enclosure scheme, make sure that the inner cabinet does not touch the outer and that all wiring has sufficient slack.

The tonearm

Check tracking force of the stylus on a regular basis.

Some tonearms are self-calibrating. For these, slide the weight to the 0 grams setting and then balance the arm in a horizontal position using the rear weight. The scale on the arm now will be an accurate guide to tracking force.

For other tonearms, use a stylus force gauge to check tracking. Often, this is a trial-and-error process of adding or subtracting weight and balancing several times. The Shure SFG-2 Stylus Tracking Force Gauge is a valuable tool in this process.

Tradeoffs will be made in adjusting the

tracking force. The best sound usually is achieved by operating as close to maximum specified tracking force as possible. Unfortunately, record wear also increases with tracking force.

At the other extreme, if tracking force is set too light, the stylus can lose contact with the groove walls on high-amplitude passages resulting in record damage.

Next check the anti-skating adjustment. Some of the better hi-fi turntables come with calibrated anti-skate adjustments.

Ideally, if you set the anti-skate knob so it matches the setting of stylus pressure, the anti-skate will be perfect. Most broad-

See **TURNTABLE**, page 48 ▶

ARP

▶ Continued from page 45

Kennedy is about to whisk me aside and offer me a position in his office.

I value my membership in the Audio Engineering Society. But, I wonder when that truck is going to back up to the door with my free Sony Oxford console in it, just because I got the "lucky" ticket when I joined.

And for joining SMPTE, I should at least be able to understand that whole time code thing by now. But at least I am staying busy.

What's up, doc?

Quite possibly, the most curious situation I have found myself in is as a video puppeteer.

I figured as long as I had some free time, I might pursue some work in acting, voiceovers or whatever other performance-based work may come my way. Once I put out the word I was available, a few nibbles came along. Among those that nibbled, the folks producing a cable TV show called "Ten Acre Park."

This is a kid show done with puppets, stressing ecology and the repercussions of carving massive housing tracts out of the wilderness with little regard to its native woodland inhabitants. All I have to do is talk in a funny voice and stick my arm into a sock stitched together to look like a rabbit. As the Muppets got their start on Washington television back in the day, I reasoned lightning might strike twice and it would be fun to be there for the ride when and if the show took off.

By the time this is published, we are hoping to have two shows in the can and be underway with at least four more before any single episode hits the air. The producer wishes to get the Ten Acre Park tapes "bicycled" to other cable systems in our area in need of relevant children's programs.

For now, I am pleased to be staying busy to an extent. Nothing would make me happier than punching the full-time clock again in radio, but there is plenty to do to with all of these ancillary projects. Now, besides listing "broadcaster" and "author" on my résumé, I can now include "Capitol Hill correspondent" and "educator," right below the acronyms "AES," "SMPTE" and "SBE."

Oh, and "Hops the Puppet Bunny" — Maybe I can put that in really tiny type.

Alan Peterson can be reached at alanpeterson@earthlink.net
No rabbit jokes please. 🐰

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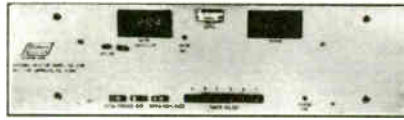
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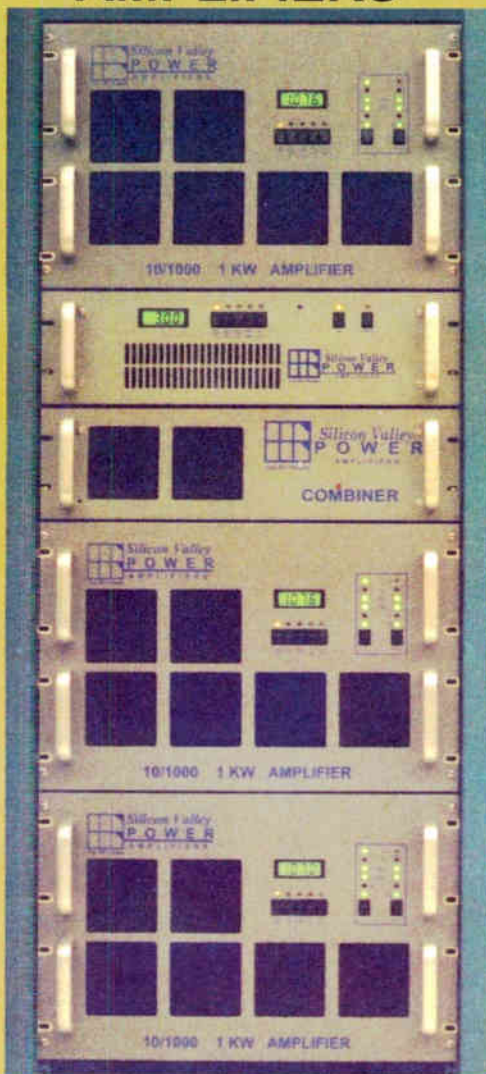
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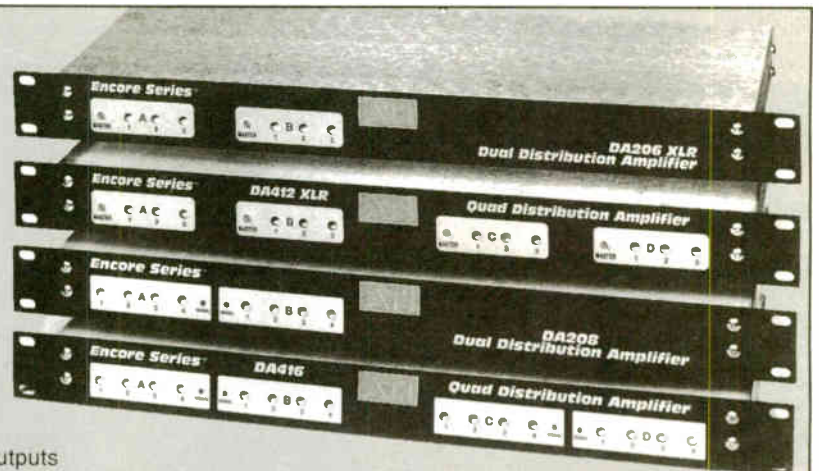
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DC-Live

► Continued from page 43

resolutions for the Fast Fourier Transform (FFT) size. By providing a choice of FFT size, DC-Live breaks the audio spectrum up into more bands, thus increasing the frequency resolution of the filter and giving the filter greater ability to discern between frequency and noise.

In the effects menu, the dynamics processor has an added automatic level control (ALC or AGC) to its existing expander/gate and de-esser functions. The ALC allows widely disparate sounds like that of an interviewer and his guest on the phone or of a baseball commentator and the crowd noise to be automatically set to the same level by bringing all sound below a set threshold up and all sounds above the threshold down.

To test the ALC, I used a recording of an oral history interview that I had made on the phone recently. The ALC balanced my overly loud level with the very low level of the interviewee on the other end of the phone — a nice tool.

EnhancedAudio has an enhancer check box accompanying the Dynamic Noise Filter. By checking this box, the DNF will expand all signals above the set threshold and above the variable high-pass corner frequency.

Since the DNF is attenuating hiss and other noise components below those points, it allows an increase in the brightness of program material without emphasizing hiss. I tested it on an old Armed Forces electronic transcript (ET) disk and it provided a nice increase in the high-frequency content with little or no increase in noise.

Two additional tube types have been added to the Virtual Valve Amplifier: 2A3 Push-Pull and 2A3 Single-Ended. The virtual push-pull tube was implemented at the suggestion of guitarist/inventor Les Paul who used the 2A3 triode in the amplifiers at his home studios where many of his recordings were mastered.

The main menu also sports a new set of colorful VU meters that are always present and much more responsive than the older ones.

No mixed drinks while blending

The Channel Blender tool has been designed to provide several useful functions.

The tool can eliminate turntable rumble while improving bass response without deteriorating mid- and high-frequency stereo separation. It can also reduce FM stereo multi-path distortion, taming the Ping-Pong effect of early stereo recordings and extracting ambiance information from stereo recordings.

The feature accomplishes these processes through variable right and left channel sliders, plus an option to blend to mono above or below a certain set frequency. Additionally, the application has the ability to invert one or both of the channels. While fairly simple and straightforward to use, the Channel Blender provides an excellent means to deal with some common and annoying problems.

At the bottom of the Effects menu is an interesting expander and compressor called Punch and Crunch. The feature breaks the audio spectrum into four bands and each of them is independently expanded or compressed dependent upon where its individual threshold is set.

This application was primarily designed to improve the intelligibility of forensic

recordings, but can be used for radio station related applications including uncompressing an overly compressed signal, improving the signal-to-noise ratio of noisy recordings or compressing the output to maximize its signal on the dial.

A well-muscled computer and a sound card capable of duplex operation is needed in order to explore DC-Live to the fullest in its Live Preview mode. Initially, I was unable to use the Live Preview mode even though the sound card I used was full duplex capable.



DC-Live Dynamics Processor

I was unable to stop the input and output sound from streaming simultaneously. Eventually, the company provided a sound card that solved the problem.

Early on I used a Pentium-II 350 MHz processor and it was not able to handle all the filters I wanted to use in stereo at 44.1 kHz sampling rate. The sound output would stutter after just a few minutes of processing. When I upgraded to a Pentium-II 650 MHz processor, these problems disappeared.

Kyle K. Betts, vice president of sales at EnhancedAudio, suggests that a Pentium-II 500 is the minimum for using the Live Mode and that Windows 98 SE is a must, which I found out the hard way. I began testing operating on Windows 95 and, although it performed remarkably well, did experience a few crashes that were almost certainly operating-system related.

He also emphasizes that a good sound card is a must and recommends the LynxOne or the WaveTerminal 2496 from Egosys as two good examples.

DC-Live can be purchased directly from EnhancedAudio.com Inc. for \$995. For that money, the customer gets just about every conceivable digital audio restoration tool imaginable plus the unprecedented ability to use them in real time.

Read Burgan is a free-lance writer and a former public radio station manager. He can be reached at (906) 296-0652 or e-mail him at rgb@bresnanlink.net.

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Turntable

► Continued from page 46

cast-quality tonearms have no such adjustment, but a visual check can give a rough idea of what is going on.

Shine a light on the front of the tonearm while playing a record. Notice whether the stylus is centered in the holder or pulling to the right or left. Pulling to either side indicates that the anti-skating is grossly out of alignment.

Adjustment may be made using an oscilloscope in the X/Y mode connected to the L+R turntable outputs and a test record.

While playing back a high-amplitude lateral cut, observe the scope trace. You should see a straight line at a 45-degree angle. Mistracking is indicated if the line is bent at the ends. Adjust the anti-skating for a straight line to indicate symmetrical clipping.

The cartridge

While head alignment is a well-understood maintenance procedure for reel-to-reel machines, adjusting cartridge geometry for best sound is less common, but just as important.

For many of these adjustments, an alignment tool such as Cart Align, once manufactured by Cart Align Research Company of Plainsboro, N.J., is required. I've had mine for many years. A similar product is called the DB Protrac Cartridge Alignment Protractor. If you know of good sources for these devices, write to us at radioworld@imaspub.com

Overhang refers to the distance the stylus extends beyond the center of the turntable. This may be checked either with Cart Align or via the overhang adjustment tool that comes with the headshell. Cart Align has the advantage of taking into consideration the mounting position of the tonearm on the surface.

Some headshells allow the cartridge to slide back and forth, while others have a series of tapped holes where the cartridge may be mounted. In any event, the overhang should be (1/16-inch from the reference line.

good stereo separation.

To adjust the azimuth, check the reflection of the front edge of the cartridge and verify that it is parallel with the line scribed on Cart Align (see Fig. 1 on page 46).

With a small hand mirror, make sure that the front edge of the cartridge and its reflection are parallel. You may need to bend the cartridge mounting ears gently to achieve perfect alignment or mount a small rubber grommet under the cartridge so that the mounting screws function for adjustments.

The vertical tracking angle must be adjusted so the diamond tip is parallel with the record surface when viewed from the side. Raising or lowering the arm height, as illustrated in Fig. 2, adjusts it.

Finally, the lateral angle of the cartridge needs to be adjusted so that the shank of the stylus is parallel with the tonearm tube as viewed from the top or bottom (Fig. 3). Maladjustment will result in a fixed tracking error and added distortion.

Once mechanical adjustments have been verified, it is on to electronic alignment.

RIAA curves

The only accurate way to confirm compliance to the RIAA equalization curve is by using the frequency response bands on a test record.

It is not uncommon to find that response is down 10 to 15 dB at 15 kHz. Usually, the problem is the result of a mismatch in load capacitance and/or resistance between the cartridge and preamp.

While 47 kilohms is the standard resistance value, load capacitance can vary from cartridge to cartridge. When the capacitance of the cables connecting the tonearm to preamp is added in, there is only a slim chance that the loading capacitor of the preamp is the correct value.

A few of the high-end consumer preamps have trimmer caps, which can be adjusted for a flat response at the high end. However, matching the cartridge to load is usually a trial-and-

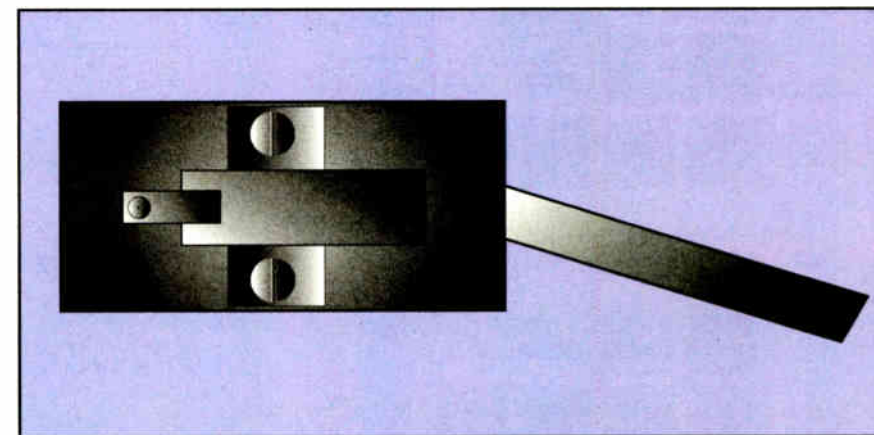


Fig. 3: The lateral angle of the cartridge is adjusted so that the shank of the cartridge is parallel with the edge of the head shell.

Next, the lateral angle of the cartridge must be adjusted so that the shank of the stylus is parallel with the tonearm tube as viewed from the top or bottom. Deviations will result in a fixed tracking error and added distortion.


Cartridge azimuth is defined as the perpendicular angle of the stylus to the record when viewed from the front of the cartridge. Proper azimuth is vital to

error process of soldering capacitors in series or parallel until the right combination is achieved.

While LPs surpassing the sound quality of CDs is unlikely, critical adjustment of all parts in the system can make a difference in closing that gap.

Tom Vernon is a multimedia consultant in Philadelphia. Reach him at (717) 367-5595 or by e-mail at tlvernon@blazenet.net

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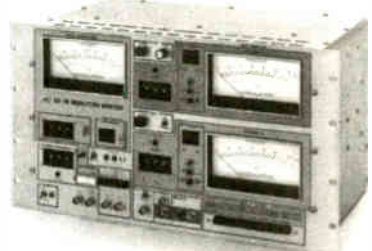
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Continental 1973 831G1 20 kW avail 1/10/01, presently on air, needs some work, \$8000. Earl Metzger, WITZ/WQKZ, POB 167, Jasper IN 47546. 800-206-6605.

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◆ READER'S FORUM ◆

Phone RFI

Dear RW,

I would like to get ahold of the people at K-COM. You ran a story about phone interference by Pete Krieger, the owner, in the Sept. 27, 2000, issue.

*Darcey K. Christianson
Chief Engineer
WUGN(FM)
Midland, Mich.*

Contact K-COM in Ohio at:
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Dear RW,

In regard to the Sept. 27 article on telephone RFI, "Don't Be Called for Interference": I'm in the midst of working with a real estate development taking place next to our FM tower.

The developer had initially supported upgrades on our tower, but became extremely hostile as soon as they opened their temporary office and our station was coming through loud and clear on their phones. Nearby paging and data transmitters were being picked up also, but our music was most easily identifiable.

The telephones were multiline speakerphones with external wall-wart power supplies. The FM station was being picked up by the handset cords. The paging transmitters were being picked up via the power supply cord.

Handset filters from www.sandman.com solved the FM interference on the handsets on three out of four of the phones. Torroid cores from Amidon got rid of the paging noise on the power supply cords. The last phone was helped, but the FM never went away completely as the handset cord was more than 24 feet long and the user didn't want to go to a shorter cord. That phone only had trouble when the cord was stretched

to full length.

Sandman sells filters made for the 100 MHz band and for below 30 MHz. They also have a great telephone RFI troubleshooting flow chart and tech sheets.

In another instance, I just couldn't make a really cheap phone work and just offered to replace it. I purchased a "radio-proof" phone from TCE labs in Canyon Lake, Texas. They will also evaluate and retrofit "fleets" of telephones.

I also got help from engineer Lyle Henry, "The Radio Doctor" from Los Angeles, on identifying the interference and finding appropriate filter suppliers.

*Ron Thompson
Chief Engineer
KLON(FM)
Long Beach, Calif.*

Radio memories

Dear RW,

I really enjoyed Paul McLane's editorial "What Is It About a Radio Station?" (Oct. 25, 2000). Having just returned from a WREK(FM) alumni reunion at Georgia Tech in Atlanta, I could really identify with great memories we all have of our early days in radio broadcasting.

Many of these first encounters were at the college or university student-operated stations. Thirty-two years ago, several Georgia Tech students (myself included) gave birth to WREK, the student-built, student-owned and student-operated FM station that has stayed on the air since.

What a great emotional experience to see many of my fellow "WREKers" after all these years and share our enduring passion for radio broadcasting. Many of the original WREK staff have gone on to broadcast-related careers as I'm sure is also the case for Paul and other members of the WXDR(FM) staff.

It is also interesting to see how many of these student stations had intertwined destinies. These URLs will take you to the story of how the destinies of WREK and WUVT became connected along with future professional relationships of staffers at these stations.

<http://cyberbuzz.gatech.edu/wrek/history.html>

<http://www.tomtwine.com/wuvt/jtml.htm>

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LPFM:
Congress
Steps In

LPFM isn't dead, but it is a shadow of what Bill Kennard wanted.

The vote by Congress sharply curtailing the FCC low-power FM plan is a political response to an issue on which the commission and broadcasters could not agree — exactly how much interference new stations might cause.

We feel LPFM is viable, as long as it does not undermine the technical performance of existing stations. Tests on that question varied depending on who was conducting them. To settle the issue, Congress rejected the advice of its own technical regulatory agency, allowing the commission to allocate licenses but without relaxing channel protection standards.

If the FCC wants to change channel protections and allow more LPFMs, it must seek permission from Congress. Lawmakers also tacked onto an appropriations measure a bill that calls for an independent study of potential interference in various markets. The study must consider how changing third-adjacent channel protection would affect translators, subcarriers and radio's ability to go digital.

The economic impact of LPFM on minority and small-market stations is to be studied as well.

The immediate effect of all this is to reduce sharply the number of potential allocations and relegate low-power to the smallest markets. Yes, there will still be an LPFM service. But this is a notable victory for the NAB and other opponents.

Whether the LPFM process will grind to a halt entirely under a presumably more conservative Bush administration remains to be seen.

Congress also said former radio pirates may not hold LPFM licenses at all. We do not dispute that decision. People who flaunted FCC rules in the past should not be given equal footing with law-abiding applicants for these scarce allocations.

The FCC and NAB regularly butt heads over broadcast issues, but this fight has been emotional, even ugly at times, and it wasn't just a bunch of LPFM fanatics who were flinging the mud.

Bill Kennard's vocal advocacy and the FCC's hasty handling of the matter, combined with the NAB's fierce opposition, will have longer-term consequences.

Many churches and community groups not privileged to have a license may have to shelve their hopes. Cynicism about the power of the media in Washington will mount further.

The idea of NPR joining NAB against the original version of LPFM may have hurt public broadcasters in some quarters and could perturb contributors if they perceive NPR as having helped deny community groups access to the air.

Under the bill, the FCC would have to go back to Congress for permission to allow more low-power licenses — a substantial hamstringing on its regulatory function.

And worrisome is the precedent of Congress overriding the FCC's own experts, issuing technical rulings on matters such as spectrum quality and frequency allocation to solve a political problem of the moment. Certainly the people casting the votes are not highly educated about broadcast technology. Lawmakers discouraged technical terminology during LPFM hearings, and remarks made by one lawmaker about the quality of audio on his shower radio were truly scary.

We hope it won't be necessary to turn to Capitol Hill every time the broadcast industry disagrees with the FCC on an important technical question. The time may come when broadcasters will wish that Congress had not started along that particular path.

— RW

Write to Us

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READER'S FORUM

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Telephone: (703) 998-7600 • Business Fax: (703) 998-2966 • Editorial Fax: (703) 820-3245
E-mail: radioworld@imaspub.com • Web site: www.rwonline.com

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France: Silvia Di Stefano	+39-02-7030-0310	Fax: +39-02-7030-0211	e-mail: sdistefano@imaspub.com
European Sales Mgr., Africa, Middle East: Raffaella Calabrese	+39-02-7030-0310	Fax: +39-02-7030-0211	e-mail: rcalabrese@imaspub.com
Japan: Eiji Yoshikawa	+81-3-3327-2688	Fax: +81-3-3327-3010	e-mail: callem@msn.com
Asia/Pacific: Wengong Wang	+86-755-5785161	Fax: +86-755-5785160	e-mail: wwg@imaschina.com
Latin America: J.O. Lima e Castro	+55-11-3873-1211	Fax: +55-11-3673-1499	e-mail: limcas@uol.com.br

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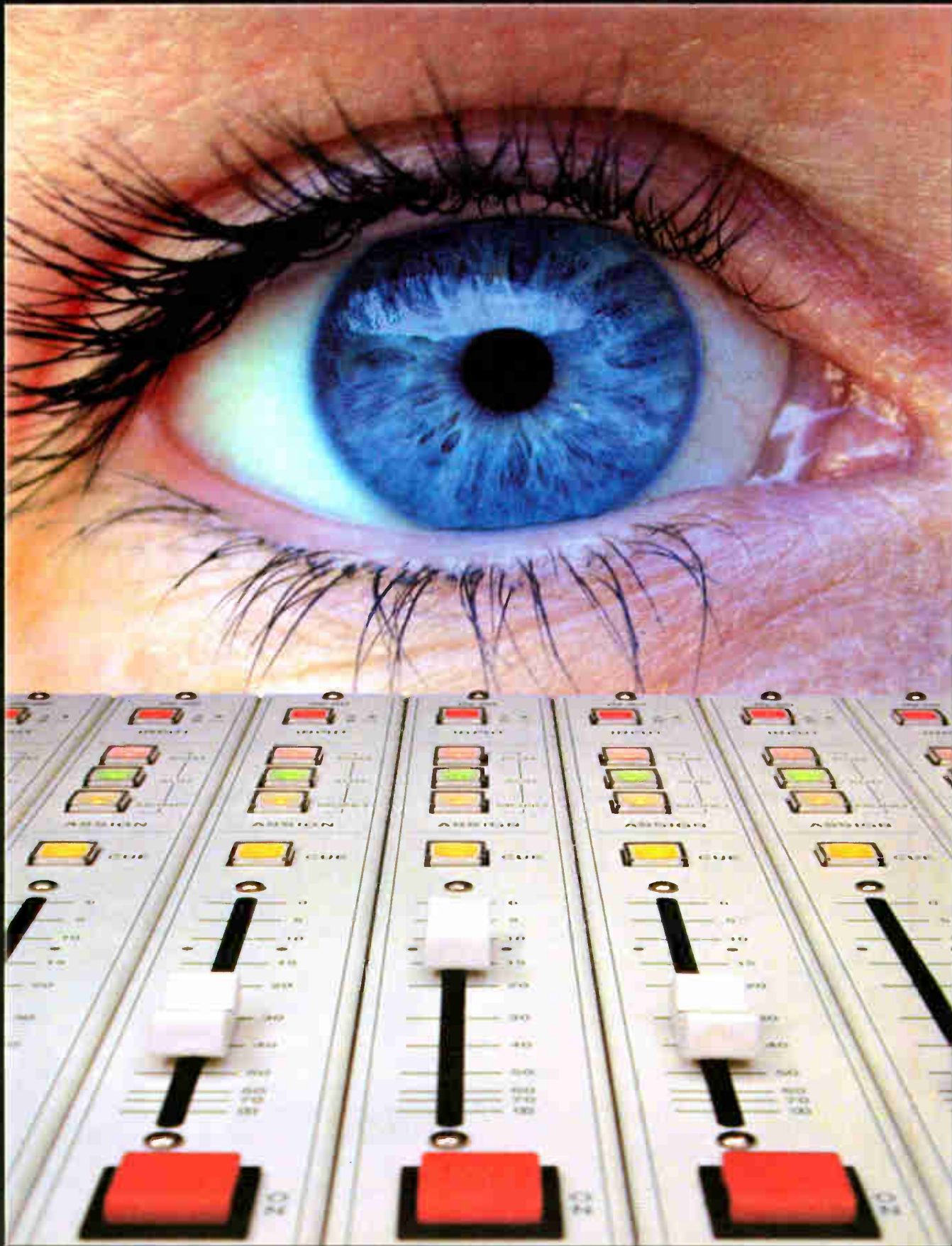
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