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That 'Phasey' Feeling

Dana Puopolo says the movement to reduce AM bandwidth ignores the realities of hardware and human hearing.

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Remote Truck

Workbench makes light work of your next job in the field.

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Radio World

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The Newspaper for Radio Managers and Engineers

January 19, 2005

INSIDE

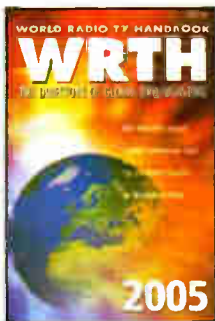
NEWS & ENGINEERING

▼ The NRSC seeks input on RBDS.

Page 2

▼ WRTH's newsprint reference pages are its claim to fame.

Page 20



More DRM Radios Due In 2005

Receivers Coming Late This Year; Group Considers Expanding Into Upper Bands

by Jeff Cohen

DALLAS Look for a major Digital Radio Mondiale non-auto receiver launch in the latter part of this year

The technology also could someday be used in higher frequency bands. The steering board of the DRM consortium has floated a proposal to extend the system to frequency bands up to 120 MHz. Currently, DRM is a digital transmission for the bands below 30 MHz.

The board plans to bring the proposal to the full DRM general assembly when the group meets in March.

Asked what the proposal would mean and what implications it may have for other digital radio systems, a DRM spokeswoman declined comment, stressing that this was "a proposal."

These were the two major developments at a DRM symposium held in Dallas in November.

See DRM, page 6 ▶

Vermont Ruling Favors Broadcaster

After OET-65 Rules Were 'Attacked Head On,' Victory in Tower Dispute Is Seen as Significant

by Randy J. Stine

BURLINGTON, Vt. A dispute pitting neighbors of a radio station tower against a local broadcaster has been resolved. A state environmental board ruled that new scien-

tific evidence is not strong enough to enact more stringent local guidelines governing radio frequency radiation exposure.

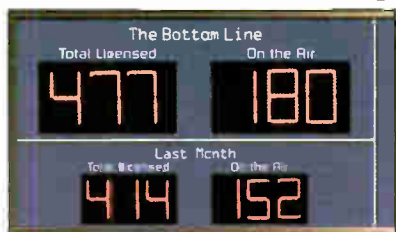
Observers say the tower siting dispute was unique in that homeowners, fearing

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HD RADIO

▼ WFCR is the first station in western Massachusetts to go IBOC.

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▼ HD Radio at Cox, and in Atlanta.

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GM JOURNAL

▼ Help is on the way for a kind of radio few Americans have ever heard: Native American.

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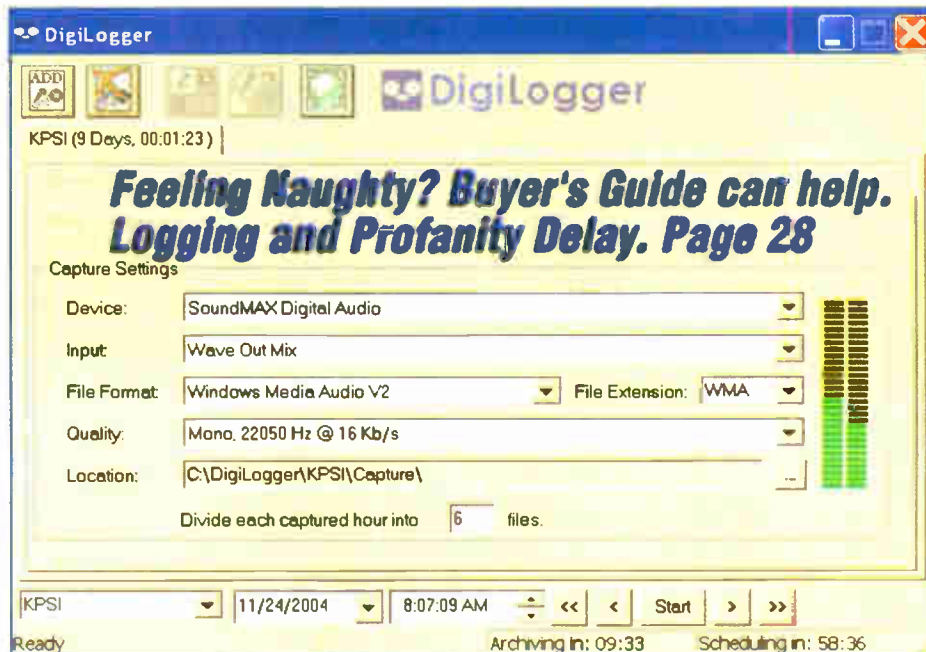
Native America Calling

▼ Radio watchers keep an eye on Clear Channel and 'Less Is More.'

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NRSC Seeks Input on RBDS

WASHINGTON The Radio Broadcast Data System Subcommittee of the National Radio Systems Committee has been working to update a portion of the RBDS standard that concerns text display on a radio. The group is considering two proposals and seeking additional submissions to help it decide which applications should be incorporated into the RBDS standard.

"Proposals will be accepted from anybody, including non-NRSC members," said Senior Vice President of Engineering for Clear Channel Radio Jeff Littlejohn, who chairs the ODA working group of the RBDS Subcommittee.

The NRSC last updated the U.S. Radio Broadcast Data System Standard in 1998.

The standard system for airing subcarrier data in the United States is called RBDS; the U.S. standard, NRSC-4, is largely based on the European RDS Standard. Many users refer to both simply as RDS.

The subcommittee is made up of receiver and broadcast transmission engineers and radio electronics component makers, some of whom supply radios to automakers. The group is trying to imagine how this text dis-

This will allow us to match up what the radio displays for analog and digital.

— Jeff Littlejohn

The RDS signal is a low bit rate data stream transmitted on the 57 kHz subcarrier of an FM signal.

play would work with the varied displays that radio manufacturers use or will use in the future.

The RBDS Subcommittee is developing an Open Data Application for the standard. Members are trying to improve the ability of broadcasters and receiver manufacturers to display song title, artist and other program information associated with FM radio broadcasts.

"This will allow us to match up what the radio displays for analog and digital," said Littlejohn, who said station conversions to IBOC spurred this work. "You don't want a consumer to see one thing (on the receiver display) in digital and then drive into a different coverage area and get something else displayed in analog."

Differences in text format from station to station is also undesirable, he said. Consistency in how the text is displayed is a goal.

The group is looking for ways to parse the RBDS text message stream to allow information categories to be identified and extracted for display based on what data the participants believe consumers would want to see displayed on the radio.

The group expects to include the ODA in the U.S. standard for RBDS. The ODA will be open to anyone who wants to use it, said Littlejohn and David Layer, director of advanced engineering of NAB Science & Technology, who is the association's staff liaison to the NRSC. The ODA will also be coordinated with the IBOC standard the DAB Subcommittee is developing, called NRSC-5.

The group is considering proposals detailing how the ODA would be structured.

"We'd like more people to join the ODA working group," said Littlejohn. Interested parties may submit proposals for accomplishing this to the NRSC by sending them to Megan Hayes of the Consumer Electronics Association at mhayes@ce.org or Layer at dlayer@nab.org.

Although the original deadline for submission was Jan. 15, Littlejohn said the group would consider ideas submitted beyond that date if the matter was still open.

— Leslie Stimson

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Vermont

► Continued from page 1
possible adverse health effects from the electromagnetic radiation of the station's antenna, constructed an environmental legal argument against the transmitter and tower.



Broadcasters and some industry groups who followed the case, which concerned a tower built in 1987, worried about the long-term impact a neg-

RFR from WIZN(FM) will cause no adverse effect," stated members in the report.

The homeowners' group and its attorney claimed WIZN presented undue air pollution caused by the RF, said Gerry Tarrant, the attorney representing the transmitter opponents.

Air pollution is one of the 10 major developmental categories under Act 250 in Vermont that the environmental board regulates, Tarrant said.

"We contend current (FCC) RF exposure standards are outdated and do not take into account low levels of radio frequency radiation absorbed by the body over time," Tarrant said.

The antenna and tower were erected in 1987 on Pease Mountain. The dispute dates to 1995 when residents near Charlotte, Vt., claimed the facility failed to meet Vermont's development

with home appliances.

The environmental board held a series of open meetings in April of 2004 to discuss revoking the broadcaster's permit, and reached a decision in October.

"This was a significant win for broadcasters. I know of no other case where the FCC's OET-65 rules, which set the maximum permissible exposure to radio frequency radiation, were attacked head on," said Fred Hopengarten of WIZN's legal team. "Residents were asking the Environmental Board to set levels dramatically lower.

"We proved that the science doesn't change. In fact, the FCC is always reviewing and updating OET-65," Hopengarten said.

WIZN is licensed to Vergennes, Vt., and operates at 50 kW.

The ongoing litigation eventually caused the radio station's owners to consider moving the tower to an alternative location, Hopengarten said, though none of the options worked out.

The station, owned by Burlington Broadcasters Inc., spent close to \$1 million in defense expenses, said Jay Williams, chief operating officer.

"We are local and committed broadcasters who faced a lot of trumped up and overblown charges. We felt it would have been disastrous for us and the industry to have lost this case," Williams said.

The board concluded that there is no persuasive evidence that RFR can

cause cancer or any other adverse non-thermal health problem, Williams said.

"The small levels of RFR the general public can get from our tower is less than what our opponents got from holding their cell phones to their ears during the proceedings," Williams said.

Despite what he termed the "landmark status" of the case, Williams said neither the National Association of Broadcasters nor the Vermont Association of Broadcasters offered much legal or other support.

"This is an industry problem and is not unique to Charlotte," Williams said. He acknowledged that NAB provided names of RF consultants but said the association didn't provide more.

An NAB spokesman said the association can provide legal or engineering assistance to members, but not financial aid.

Vermont Association of Broadcasters Executive Director Alan Noyes said, "Burlington Broadcasters did contact us originally in regards to this issue," but that the organization elected not to become involved.

"It was our policy and still is our policy not to become involved in lawsuits between two parties."

Tarrant said the homeowners' group plans no appeal.

"The group feels we presented the board with the best information we had and still lost. The judicial process is about the process, not outcomes." 🌐

The homeowners' group and its attorney claimed WIZN presented undue air pollution caused by the RF

ative decision could have on an industry they feel is already coping with harsh tower siting guidelines from communities.

The Vermont Environmental Board ruled in late October that there was not enough evidence to determine that RFR exposure was impacting the health of the station's neighbors.

"While the evidence in this case raises several concerns about the possible adverse health effects associated with RFR, the Board is persuaded by a preponderance of the evidence that

control laws, known as Act 250. The group then attempted to have the board force the broadcaster to move.

A subsequent board decision found that, when the tower was constructed, it had been unclear whether the site required a state land-use permit. An Act 250 permit eventually was granted in 1999. Opponents appealed it.

Lawsuits by the homeowners' group ensued, with as many as six filed before various regulatory bodies at one time, including one that claimed the broadcaster's signal interfered

Group Loses Tower RFR Decision

WASHINGTON The efforts of an environmental group to persuade the FCC to review radio frequency radiation guidelines appear to have suffered a setback.

The United States Court of Appeals for the District of Columbia has denied a petition from the EMR Network that sought to challenge the model of harm from radio frequency radiation upon which U.S. exposure guidelines are based.

The EMR Network describes itself as an education organization working at the federal level to challenge the so-called "thermal model" of harm from RFR exposure. The group wants RFR to be considered in land use hearings, which would require a change in the Telecom Act.

The group argued that the commission's refusal to undertake a rulemaking constitutes an improper delegation of its duties to private organizations and government agencies, according to court records.

The three-judge panel wrote in its December decision: "The FCC appears not to have abdicated its responsibilities ... the commission has an adequate mechanism in place for accommodating changes in scientific knowledge."

Analysts say the court's decision means the FCC is not required to reopen a technical issue simply because a new expert has posed a new theory, or studies cast a small bit of doubt on a prior standard.

"The court ruled the FCC cannot be forced to make decisions that are 'beyond the shadow of a doubt,' but rather, such decisions can only be overturned if arbitrary and capricious," said James Dunstan of Garvey Schubert Barer.

The FCC may rely on the preexisting body of evidence on which the original standard was based in the face of minimal new evidence to the contrary, rather than start all over again and reassess its prior standard every time it is asked to do so, Dunstan added.

EMR Network has connections to a group of Vermont residents who tried to force a radio station near Burlington to move its tower because of fears over ill health effects from RF radiation (see story, page x).

Mary Beth Freeman, one of the original handful of homeowners who sought to revoke WIZN(FM)'s land use permit by appealing to the Vermont Environmental Board, also sits on EMR Network's board of directors, according to the appeals court decision.

— by Randy J. Stine

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RDS Journal: Scrolling, and More

Broadcast Group Puts Up Title & Artist; Explores Translator Handoff Capability

Most of Journal Broadcast Group's radio stations are implementing RDS — 25 of its 28 FMs. I spoke to Vice President of Radio Engineering Andy Laird as part of my occasional series of columns about radio data.

"We think it's important piece and are rolling it out," he said of the analog data service. "We use it to add song title and artist and station slogan to the display."

As a broadcaster, he said, "You're really

said with a chuckle. So did the buzz generated by satellite radio.

When Journal began exploring RDS, it was pleasantly surprised by how many receivers were in the field.

"We weren't really aware of how many RDS radios were coming out of Detroit and elsewhere. Lots and lots of cars have RDS in them now. The receiver base was out there."

Journal is using the FMB80 RDS

three have different challenges. Two of the three we've mastered; the third we're working on."

Laird offers a tip: Talk to your hard-disk vendors and ask what kind of interfaces they have for your situation. As you shop, also ask your RDS vendors if they have clients interfaced to your type of automation, and what kind of software was involved to make it work.

"Getting Audemat talking to the vendors was actually easy, and was part of the way we worked out the interfaces." He complimented the manufacturer on its personal attention, and said the willingness of vendors to talk to one another was an important part of his experience.

Also don't underestimate the planning involved.

"I tasked key individuals to deal with this. It actually consumed a lot of their time. We've done the spade work, but it took some effort. Once we got the interfaces going, now you put it up and dry run it, to watch in a terminal mode, correct this and that, go through the metadata in every cut in the library," he said.

For instance, data had not been entered with the public in mind. "In some cases we had song title and artists spelled phonetically, on purpose. So we had to change all that. Then you throw it up and you're surprised how different it looks because of spaces and commas and such, to make a sensible display."

Scrolling

Journal has experimented with the controversial use of scrolling on the Program Service field, but its policy is not to scroll title and artist unless the user pushes the button for the Radio Text display.

"We agree that we're a large, deep-pocket industry and don't want the exposure to possible lawsuits."

Looking to the future, Laird said he is "very much behind" NRSC efforts to integrate the RDS and HD Radio display experiences, "so as you're driving around in a weak system, the two systems can blend back and forth without a major change in the display. That work is underway, in its infant stages." (See sto-

From the Editor



Paul J. McLane

ry, page 2.)

I asked whether U.S. radio is taking full advantage of RDS, given the many applications that had been touted for it, such as handing off listeners from station to station — or station to translator.


"I'm exploring the handoff idea on KGMG(FM) in Tucson," he said. "I have a translator within the coverage of the main transmitter that will show the same program codes and station codes, so the receiver can pick whichever one it wants. And the translator is better for a third of the population in Tucson."

Interestingly, Laird said, engineers in Omaha learned by accident about the potential for this kind of use.

"We misunderstood a setup code in the encoder. The operations manager did not want the unique call letters to pop up; he wanted the name, not the call letters. As a result of this misunderstanding, he left that field blank.

"We had four of these things going and we started getting calls saying, 'I was listening to KQCH and it popped over to KKCD. What's going on?'" The receivers were picking from the group's multiple FMs and switching tuning.

Stations with translators would not be the only beneficiaries. The same functionality could allow, say, a simulcast of three Class A stations in Los Angeles to provide seamless coverage for listeners.

These are the kinds of uses for which RDS was intended, but which have not seen much use in the United States. Expect that to change now that groups large and small are exploring RDS more aggressively. 

In some cases the group had song title and artists spelled phonetically, on purpose. It had to change that for public consumption.

looking for what differentiates you from someone else; and if you can add a 'wow, cool' factor, this is all part of the perceptual game. Frankly, it's not a big investment for something that is immediately noticeable."

RDS had been running on a few stations that the company had purchased. "In some cases the local engineer kept it going, and basically it was just the call letters," he said.

But Laird had been impressed by a seminar two or three years ago at which receiver makers were talking about research on satellite and HD Radio. When they asked focus groups to try satellite receivers and then took the radios away, one of the things listeners missed most was song title and artist.

That finding "blew me, and our management, away," Laird said. "We thought, 'Wait a minute, we can do that.'"

Another factor was a competitive one.

"Nothing is more compelling to a corporate mandate than having a traveling executive get in a car and see something on someone else's station, and not on ours. That added a log to the fire," he

encoder from Audemat-Aztec at its stations.

Cost/benefit?

The most vocal response to date has been from station staff.

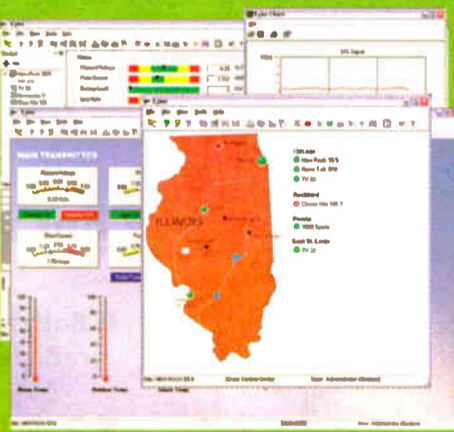
"Everyone says, 'Oh cool, look,'" Laird said. "Can you directly relate that to revenue? Of course not. Can we sell it? We don't know."

But Laird says automation suppliers are talking about interfaces to make those kind of things possible, citing Scott Studios and its new owners dMarc Broadcasting as an example. He also said that RDS is not a costly project, given the awareness it generates. He estimates his cost, including hardware, monitoring and tuners, at about \$5,000 per station.

I asked what challenges they'd encountered. "We had to work with our automation hard-disk storage companies to get the interface to work the way we wanted," he said. "We chose the Audemat encoder because we thought it gave us the greatest flexibility for doing things."

Journal operates three audio storage systems: Scott, Maestro and Dalet. "All


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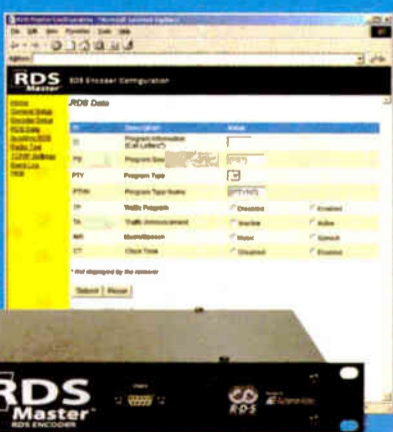
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NEWSWATCH

KCSN Tests IBOC Booster

KCSN(FM), Northridge, Calif. was testing an FM IBOC booster licensed to West Los Angeles in December.

According to NAB's Tech Check newsletter, the Cal State station has an experimental license from the FCC to conduct the tests. The station believes the booster will allow the station to reach an additional 400,000 listeners in West Los Angeles with a current estimated audience of 1.4 million in the San Fernando and Santa Clarita Valleys.

KCSN CE Mike Worrall told NAB the station was characterizing the performance of its booster system and expected to file an engineering report with the FCC.

OMT Notes New Investment

WINNIPEG, Manitoba OMT, which makes iMediaTouch products among other offerings, said it raised \$1.4 million through a private placement offering and financial restructuring. Its stock trades on the Canadian TSX Venture Exchange, which must approve the deal.

The supplier recently posted a net loss of \$284,000 for the third quarter; it called this was a significant improvement from a loss of \$711,000 a year earlier. The company also narrowed its losses year-to-date, from \$751,000 in the first nine months of 2003, to \$560,000 this year.

OMT has said in recent weeks that its management is pleased with the improvement in its performance and is

"strongly focused on closing the balance of the gap to profitability by increasing sales, with a particular emphasis on emerging opportunities for the Entertain Media division."

President/CEO Scott Farr said the investment means the company "will also have sufficient time to discuss further investment from strategic accredited private investors and companies in the USA and Canada." One of its strategic investors, ENSIS, has expanded its investment

The company also has completed redemption of all of its preferred shares.

Audiovox to Buy Terk in Sat Radio Move

HAUPPAUGE, N.Y. Audiovox wants to grow its share of satellite radio equipment and plans to acquire Terk Technologies Corp. for \$13.6 million plus a debt agreement based on future revenue targets. The agreement was described as preliminary.

Terk makes satellite radio antennas. It has a deal with XM Satellite to provide and develop car stereo aftermarket products.

The companies estimate Terk will have 2004 sales of about \$50 million. Audiovox posted revenue of \$1.32 billion for 2003.

The chairman of Audiovox stated, "Terk brings significant expertise in the specialized satellite radio industry, which we have identified as a fast-growth high-tech market, and we believe it will serve to strengthen our position for future growth in that segment."

Ibiquity Certifies Atmel's IC For IBOC Receivers

COLUMBIA, Md. Ibiquity Digital has certified a tuner chip by semiconductor maker Atmel Corp. for use in car and home HD Radio receivers. The Atmel T4260 RF tuner chip is used to tune the radio and converts the signal into a frequency that the receiver can decode.

Atmel says the flexible IF output frequency enables receiver designers to adapt the IC to various customers' needs.

Ibiquity COO Jeff Jury says the chip will give receiver manufacturers another tuner design option, which will help them get HD Radios to market faster and help reduce manufacturing costs.

BBC Hopes to Delay Analog Sunset

LONDON The BBC has asked the British government for a three-year grace period before lawmakers decide on a date for a radio analog "sunset."

The Guardian newspaper reported that the BBC feels the country isn't ready to drop analog for digital broadcasts and to do so too soon would be disruptive.

The broadcaster has poured lots of money into promoting the Eureka-147 system and has developed special digital-only programming to entice listeners to buy digital radios. Even so, the broadcaster suggested a joint industry plan over three years to ensure a smooth transition, according to the Guardian.

The broadcaster has a plan to allocate five blocks of so-called Band III spectrum to be shared by the entire industry to allow the BBC and commercial radio services to move to digital, according to the account. This is necessary because new spectrum is needed to go digital with the Eureka-147 system.

Analog TV is to be shut off there between 2008 and 2012. Roughly 50 percent of 24.5 million U.K. households receive a digital TV signal; that compares with 4 percent of households that own a digital radio.

FCC Upholds Mt. Wilson RFR Fines

WASHINGTON The FCC reaffirmed fines of \$10,000 to three stations for exceeding the Radio Frequency Radiation exposure limits from towers located on Mt. Wilson, near Los Angeles.

The commission levied the fines in 2003. See NEWSWATCH, page 6 ▶

Two Killed When Plane Hits KFI Tower

LOS ANGELES A small plane crashed into the 760-foot tower of KFI(AM) in Los Angeles in December, killing a husband and wife aboard a Cessna 182 and temporarily knocking the Clear Channel station off the air. The single-engine plane struck the tower at about 9:45 a.m. and the tower collapsed.

The plane was headed to Fullerton Airport from El Monte when it crashed. It was about a mile from the airport when it struck the tower in a commercial area of La Mirada, Calif.

Retired KFI Chief Engineer Marvin Collins said the tower was completed and put into service in 1948. New guy cables had been installed and the tower repainted in August of 2004. In the early 1960s the tower was struck by another small airplane that crashed to the ground in a parking lot across the street, Collins said. The tower was not damaged in that crash.



The top half of the base insulator is seen, still attached to the bottom of the fallen tower. The insulator pair supported the 400,000-pound steel KFI tower.

The December crash was "a direct hit that appeared to shear off the top 10 feet of the tower and cause the tower to collapse," he said. The antenna tuning unit house was destroyed by the crashing tower.

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DRM

► Continued from page 1

Participants from North and South America attended what was billed as the first such meeting on this continent, according to DRM.

"We are ready for you if you want us," Senger Chairman Peter Senger told some 90 attendees from the United States, Canada, Mexico, the Caribbean, Chile, Peru, Brazil and Ecuador as they took part in a day dedicated to a technology that permits high-quality mono and stereo radio, free from noise and fading, on the bands currently used for short-, medium- and long-wave analog transmission.

Speakers from eight countries that belong to the DRM consortium stressed its potential for local, national, regional and international broadcasting and for a revitalization of wavebands (such as shortwave) that no longer pull in the mass audiences now listening on FM.

Shortwave and digital

The attendees included radio stations, principally holders of AM and shortwave licenses, as well as regulators and manufacturers of transmission equipment and receivers.

Jan Hoek, vice chairman of DRM and acting director of Radio Nederlands Wereldroep, chaired the event. He discussed the progress made since DRM was unveiled six years earlier at a ceremony in China and described it as "arguably the fastest technology ever developed."

Professor Douglas Boyd of the University of Kentucky said a suggestion he made to a group of broadcasters sparked the initial consideration of digital transmission in the AM bands, earning him the title of "grandfather of DRM."

Transmitter manufacturer DRS Broadcast Technology (formerly Continental Electronics) hosted the symposium and four days of DRM internal meetings that preceded it. Addressing the audience, DRS Vice President Adil Mina said that DRM has the answer for broad-

casters wanting to enter the digital age.

Senger said in addition to the new, non-auto receivers coming to the market at the end of this year, the DRM consortium predicts about 1 million radios with

best migration path for existing analog broadcasters would be for them, where possible, to simulcast in DRM on the adjacent channel but with DRM power far lower than analog.



the ability to decode DRM signals will be used by the end of 2006 and 4 million by year-end 2008.

According to Senger, the consortium expects transmission hours to grow from the current 350 hours a day to 700 hours per day in 2006, and 1,600 hours per day in 2008.

Senger also said that when a station upgrades to DRM transmission, it pays off the upgrade costs in a decade thanks to electricity savings.

Migration path

As for the proposal to extend DRM to higher frequency bands, Senger said he thought it unlikely that the FM band used in Western Europe (87.5-108.0 MHz) would be used for DRM in the foreseeable future, but believed that bands that have fallen into disuse, such as 66-74 MHz in Eastern Europe, might well be used.

Don Messer of the International Broadcasting Bureau, the chairman of the DRM Technical Committee, gave the audience a basic DRM primer, describing how the system works and what it is capable of.

He predicted that the 21 MHz and 26 MHz broadcast bands would support local transmission while the 9 MHz to 17 MHz bands would be used for intercontinental services and the 7 MHz, 6 MHz and 4 MHz bands would be ideal for national and regional broadcasters who want to cover vast areas.

On the AM band, he suggested the

During the gathering, several broadcasters carried out demonstration transmissions to the conference in Dallas.

Temporary licenses

These included Christian Vision from Santiago, Chile; HCJB/World Radio Network from Quito, Ecuador; Radio Canada International from Sackville, New Brunswick; TDF from Issoudun, France; and RNW from Bonaire. The DRS factory in Dallas conducted a local 750 W transmission on the 26 MHz band.

The transmission powers for the international transmissions varied from 4 kW to 50 kW in both mono and stereo.

The day ended with a roundtable discussion that included Jeff White of WRMI(FM) in Miami, the founder of the DRM USA Group. He said the FCC is issuing temporary licenses for DRM operation to shortwave stations in the United States.

Fernando Borjón Figueroa, from the government agency that regulates broadcasters in Mexico, told the group that that it expects to start testing DRM in Mexico soon, along with the ongoing Eureka-147 and Ibiquty HD Radio DAB systems.

Closing the meeting, Senger urged the Americas to consider adopting the non-proprietary DRM international standard for digital radio. "There is no question mark," he said, "we are here and you can use our open standard."

Newswatch

► Continued from page 5

against Radio One, licensee of KKBT(FM); Infinity Broadcasting, licensee of KRTH(FM); and Telemundo, licensee of TV station KWHY(TV).

A fourth station, KBIG(FM), a former AMFM station and now a Clear Channel facility, paid its fine.

If the exposure limits are exceeded due to emissions of multiple transmitters, the FCC says all the licensees share the responsibility to get the RF emissions down to an acceptable level.

During an inspection in 2002 the FCC found the main antenna farm was not fully fenced or gated. The public can get close to the site because it's near a park and post office, said the agency.

"Conservatively, the RFR fields exceeded the ... limits for the general population by over 50 percent," said the commission in its decision.

The licensees installed fencing, but on a subsequent inspection in 2003, field agents found the gate open.

In its reply, Infinity said the field agents did not tell KRTH they thought it was exceeding the RF exposure limits. Infinity also said it had no legal right to control the non-compliant area. The company wanted the fines divided up by the percentage over the RFR limits for which each station was responsible.

Radio One said that in its own studies KKBT was not over the limit. Telemundo said the field agents couldn't be certain of their measurements "because the margin of uncertainty is too great given the broadband methodology used."

The commission rejected all the arguments. It encouraged licensees to work together to mitigate high RF emissions.

The Mt. Wilson licensees could ask the Media Bureau to reconsider its decision or request that commissioners overturn the bureau's decision.

FCC: Satellite Radio Remains Free Of Indecency Rules

WASHINGTON The FCC still considers satellite radio exempt from broadcast indecency rules, and the agency isn't moving to change that.

In a letter from FCC Media Bureau Chief to Saul Levine, president of Mt. Wilson FM Broadcasters in Los Angeles, Media Bureau Chief Ken Ferree reiterated that "subscription-based services do not call into play the issue of indecency" and "the commission does not impose regulations regarding indecency on services lacking the indiscriminate access to children that characterizes broadcasting."

Ferree stated in the December letter there was no basis on which to revisit this decision.

This theme follows comments Chairman Michael Powell made in an opinion piece in the New York Times. Powell said the Supreme Court affords media other than broadcasting stronger constitutional protections.

Levine had asked the agency to change the satellite radio rules to include an indecency provision.

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Information is provided by suppliers and users. Tell us about your unusual or prominent purchase or sale; send details and photos to radioworld@imaspub.com.

Broadcast Electronics said **Entercom Communications** ordered 14 HD Radio transmission systems to expand HD Radio into five more markets. The purchases include transmitters for five stations in Portland, five in Kansas City, two in Indianapolis and two in Denver.

Transmitters include seven high-powered FMi 703 as well as lower-powered FMi 402, FMi 301, FMi 106 and FMi 73 with associated equipment.

Separately, public station **WIUM(FM)** in Macomb, Ill., used CPB financial support to order two **Broadcast Electronics** HD Radio transmitters and a BE Big Pipe wideband STL that will prepare it for secondary audio and datacasting, the supplier said. The transmitters were ordered through **RF Specialties of Missouri**.

The station and its repeater are licensed to Western Illinois University. Engineer Greg Manfroi said the station is now completely digital from control room to exciter. BE also is providing upgrades to the station's AudioVault for PAD fields and provisions for Tomorrow Radio and ContentDepot. ...

Dielectric Communications said its HDR Series Interleaved Antenna System was installed at **WNNK(FM)** in

Harrisburg, Pa. The antenna permits simultaneous transmission of analog and HD radio signals from the same antenna aperture.

The station chief is Dave Supplee. ... For a radio studio in his home, Sean

Hannity used **Harris Broadcast** to customize and install a custom studio. The studio feeds **WABC(AM)** at Penn Plaza in New York. It includes a Harris VSDM, VistaMax Digital Mixer and equipment racks. The facility is wired with CAT-5 unshielded cables for AES/EBU digital signals. **Neutrik** provided the XLRs, RCAs and Speakon connectors using EZ series male and female XLRs. ...

CSN Radio ordered 17 FT-1AP receivers from **Fanfare Electronics** for use in translator reception applications. Separately, **Family Life Network** used six of the units.

The supplier also published information about field tests conducted by CSN, which can be viewed at www.fanfare.com/PDF/CSN-comment.pdf. ...

Prism Sound provided a Dscope III test system to **Namtai**, a Chinese audio

manufacturer that needed to test a USB audio product with two jack inputs and a USB output for a games console manufacturer. The user needed to produce 6,000 units per day, in a test time of 7 seconds per unit, including a suite of tests at two sample rates (44.1/48 kHz). Results were transferred to an Excel file. ...

Media Monitors said it signed an agreement with **Clear Channel** to provide its online broadcast monitoring services to 130 of the group's stations in 25 major markets.

Separately, **Entercom** is buying monitoring services from **Media Monitors** for stations in Boston. The group will use it there as a sales tool.

The supplier delivers same-day broadcast data online via the **AirCheck** service. ●

TECH TIPS

Take EAS Decoder Offline When Servicing

Bob Schroeder, communications and warning officer for the New Jersey Office of Emergency Management, shares a tip with Radio World readers:

An incident occurred today regarding our monthly RMT that prompts me to offer this piece of advice for all LP stations.

Our current LPI station was correcting an audio problem with its EAS chain when an accidental RMT was broadcast which contained a snippet that station's program. While some downstream stations were able to stop the re-broadcast, the RMT did air on a number of stations. There was quite a bit of consternation when the LPI's program got aired over several competing stations!

Lesson learned: When servicing your EAS encoder (e.g., changing the time, length of the window, etc.) it is highly recommended that you take the encoder offline so that it doesn't accidentally trigger an RMT — or worse, air an unintentional event code that could alarm the public.

Write to the author via e-mail to lpp-schrr@gw.njsp.org.



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Workbench

Radio World, January 19, 2005 Past columns are archived at www.rwonline.com/reference-room

Infrared Cameras Can Catch Vandals

by John Bisset

Reading about our site security suggestions, Douglas Thompson, DOE for Minnesota Public Radio, writes about an idea he's used at remote transmitter sites. The solution will not necessarily stop vandals but it may help catch them.

Infrared-controlled snapshot cameras are used to photograph wild game and are sold at hunting and outdoor outlets like Gander Mountain and Cabella's. These cameras can be mounted in areas where you expect the activity to occur. The cameras are automatic, triggered by movement and IR energy — heat. Most come with a flash, but that feature can be defeated if you want to snap pictures covertly. An IR illuminator can be used to provide a light source without tipping off the vandal, and it provides the equivalent of a monochrome picture.

Their results: they've snapped a few pictures of deer, fox and even a cougar — not common in the metro of Minneapolis and Saint Paul! — but no vandals yet. Douglas and his crew have been lucky, but maybe the Houston engineering community could use this method to identify the people responsible for the many break ins at their sites.

Douglas Thompson can be reached at dthompson@mpr.org.

Maybe vandals will think twice if the word gets out that every station is installing these infrared cameras.

Perhaps there is some money — and good will — to be had in this idea for a smart broadcast supplier who adds IR cameras to its line. And buying and installing such cameras might be a good contract engineer project for your client stations. Let me know if you're

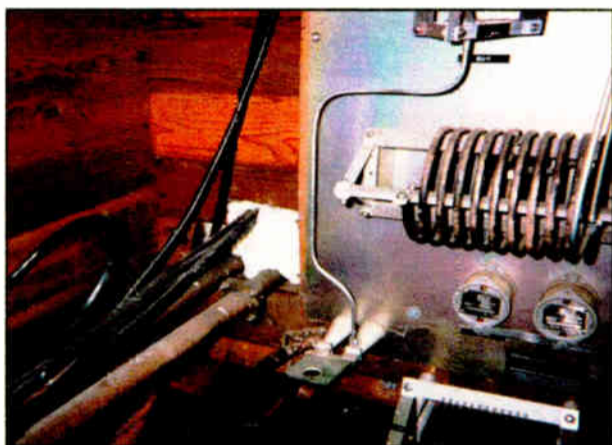


Fig. 1: Use steel wool and expanding foam to seal cable entries in coupling unit buildings or enclosures.



Fig. 2: Invest in a heavy-duty hand truck for moving remote gear — or heavy jocks!

successful in marketing this service.

★ ★ ★

As you plug and seal openings in the walls of transmitter buildings or

especially mice, will eat the cured foam.

Unless you lace the foam plug with steel wool, foam alone is not the best way to stop rodents. The foam will stop insects, and the steel wool will stop rodents. See Fig. 1. This tip is also useful in sealing cabling inputs to equipment racks and transmitters.

Curt can be reached at curt@gwis.com.



Fig. 3: The Mega Mover Folds up for easy storage.

coupling networks, keep in mind this tip from "Cowboy" Curt.

Curtis Flick provides technical services in the Akron, Ohio, area. Although a can of expanding foam will keep weather — as well as insects and rodents — out of the transmitter building, note that rodents,

★ ★ ★

While clearing off his desk the other day, Dale McCubbins, program director for WCVK(FM) and WJVK(FM) in Kentucky, saw our suggestion about using an old EV mike case to hold a news reporter's "grab and go" kit. Dale's stations use an older version of a Walkman MD, so he went to Wal-Mart and purchased a two-pistol carrying case.

See HEAVY, DUDE!, page 10 ▶

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"ProFiler solved a particular problem for us with WAXY because we needed to keep this 'logger' off our house LAN and give access to it to non-employees whose computers live on a totally separate network. ProFiler fills the bill nicely!"

→ Gary Blau, Jefferson-Pilot Miami ←

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Dennis Eversoll, Susquehanna Indianapolis

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MIKE TOCCO, SBS NEW YORK

There was a notice of proposed rulemaking, so I decided to install **PROFILER** just in case the Commission decides to require it - it's a good defensive move. ProFiler's doing great: it's effective, it's easy to access audio... It does the job!"

Jeff Zeismann, WNKR-FM

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— GEORGE SEIFERT —
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"We'll have internal audits required by the University, or a University official will get a request for a transcript, so we use ProFiler for long form logging and skimming. I use removable drives & get a year's worth of audio; when one's full I just pull it out and store it."

— Jeff DePolo, WRTI-FM
Temple University, Philadelphia

"We use our hard-drive playout system to record and re-air portions of our morning and midday shows. We use ProFiler as a backup recorder as well as for logging and skimming, and it's saved us a few times! Plus, when the jock says 'I did the greatest bit in the world!' it's nice to have an immediate high-quality version for promos or archiving."

>> Erick Steinberg, KFOG, San Francisco <<

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Listen to the World — With Someone Else's Radio

*There's No License Required to Use the Internet
And User-Controlled Online Tuners*

by Jim Southwick, N7HFK

This article first appeared in Popular Communications Magazine.

Have you thought about getting a shortwave radio to listen to distant stations, whether broadcast, pirate radio or ham radio? Maybe you'd like a scanner to cover a broad range of frequencies and modes. In theory, it sounds quite easy to just purchase a radio and start listening.

The problem is, as we all know, the radio is only as good as the antenna system it's connected to. This is an additional cost and hassle many fail to take into account. It can even be prohibitive, depending on your location and limitations. And if you want to listen to a broad range of frequencies in various modes (for example, AM, SSB, FM, CW, etc.), the cost for these receivers can be fairly steep.

User-Controlled Online Tuners

Fortunately these days, you don't need to worry about the radio or the antenna system if you have a computer connected to the Internet. Even a dial-up line will work fine.

Welcome to the world of the user-controlled online tuners, which we'll refer to

here as simply UCOTs. Essentially, with a UCOT someone has already gone



Author Jim Southwick standing on his roof with a few of his antennas above him.

through the trouble and expense of buying the receiver and antenna system, along with the software needed to make it available through the Internet. This

allows you to tune the radio in real time, as if you were sitting right in front of it.

Of course, the down side is that you may have to share this radio with other users, but you'll find that you often have a radio to yourself at various times throughout the day and night.

Are there many UCOTs around?

Although these public online systems have been around for some time

The good news is that there are some long-time sites still offering full access to the public and, yes, they are completely *free*. And many of these free sites are actually *superior* to the paid sites, as they are offered by ham radio operators who share their radios and antenna systems and who enjoy providing the service for free. My site, jimandleah.com, was started on just that premise (I'll list other sites to check out later in this article).

Kinds of UCOTs?

There are various software "styles" of online radio systems.

Some of the oldest programs have been written privately and have a more "manual" feel, meaning they don't provide real-time feedback, such as signal strength or graphing and chat capabilities. You basically enter the frequency and mode and then listen. However, the station quality is very good on the sites I've seen that use their own written software.

The others, as we'll see, provide a host of information to the user in real time. Two of the most popular public versions that provide realtime feedback and are easy to use are JavaRadio (www.javaradio.com or dxtuners.com) and VisualRadio (www.visualradio.de).

Both versions almost never require you to download anything and will usually work as soon as you access the page. They also offer real-time chat rooms so users can converse and share thoughts while using the tuners. The chat window is a great place to meet people with common interests.

The JavaRadio network consists of many radios worldwide (mainly in Europe) and is very user-friendly for the online listener and rich with features. You can tune many parameters of the radio,

See TUNERS, page 12 ▶

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in various formats, they have never really taken off because they're expensive to set up, run and maintain. So, although there are sites coming online now and then, many other older sites have ceased to exist or have gone private.

Also many of the remaining sites have gone to a pay status in order to recoup some of the costs of running the systems.

Heavy, Dude!

▶ Continued from page 8

For under 10 bucks, there's room enough for the mike, cables, MD, batteries and even a headset if you want — without any foam trimming. Just make sure you put enough bumper stickers on the case so security officers see it's not holding a deadly weapon!

Dale can be reached at dale@christianfamilyradio.com.

★★★

I've written about interesting products that showed up at the recent Bos-Con convention, including a free wiring guide from Clark Wire and Cable offered by Jeff Rosenberg of Modulation Magic.

Bos-Con featured another "find" for any engineer handling remotes. Jim Peck of the Northeast office of SCMS rolled in with the mother of all hand trucks. Meet the Wesco Industrial Products' Mega-mover. You can view the hand truck at www.wescomfg.com.

It's not cheap, but how many twenty-buck hand trucks have you bought for remote gear over the last couple of years only to have them fall apart? With pneumatic tires and a sturdy welded design, this truck will handle 500 pounds, as seen in Fig. 2.

O.K., I don't weigh 500 pounds, but the photo shows the rugged design.

The lip of the hand truck is large enough to hold plastic bins or speakers, and the pneumatic wheels make maneuvering easy even with a full load. Fig. 3 shows SCMS reps Matt Cauthen and Jim Peck with the

Mega-mover in its folded position.

Contact your SCMS rep (www.scmsinc.com) to order.

★★★

Newer high-power transmitters have some sort of three-phase power monitor built in. Usually, the device simply monitors phase loss.

If your three-phase transmitter doesn't have this kind of monitor, or if you are looking for a means of monitoring your transmitter site's three-phase voltage, we've got a solution for you.

SSAC, probably best known for solid-state tower light flasher modules, has developed the WVM series of microcomputer-controlled three-phase Voltage Monitors. SSAC has packed a lot of features into this little box, which measures 4-1/2 by 7 inches.

Start with a 10 fault non-volatile memory, 10 amp isolated relay contacts and both a manual or remote reset. Using front-panel rotating pointers, the WVM can be set to select line voltage, phase unbalance, trip delay and restart mode. Obstruction lighting specialists UNIMAR has these monitors available. Reach them at (800) 739-9169 or www.unimar.com.

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is the Northeast Regional Sales Manager for Dielectric Communications. Reach him at (571) 217-9386, or john.bisset@dielectric.spx.com.

Submissions for this column are encouraged, and qualify for SBE recertification credit. 🌐

After All, Isn't Peace Of Mind What You Really Want?



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Tuners

► Continued from page 10
get signal strength, access a directory of stations and chat.

The sites on JavaRadio feature exclusively the ICOM PCR100/1000 receivers. Basically the network offers a free service, but a user can "upgrade" their free account and use more sophisticated radios/sites at more exotic locations.

There are also a couple of sites that feature very elaborate antenna systems, which alone are worth the cost of admission, especially if you're into TV and FM radio DXing.

The VisualRadio network is primarily for commercial users, but on their main Web page at the very right is a click-on for "The Radio Servers" and "Advanced Web Receivers," which are free — no demo, no time limits, etc. VisualRadio also tells Pop'Comm that in the near future it may be offering other online receivers for non-commercial users (radio enthusiasts!) for about \$250.

This network supports any type of computer-controlled radio on the serving end and offers two different formats: Java (although they are not JavaRadios) and Active/x. The VisualRadio Java format basically gives you tuning capability, an S meter and a chat room. It is quite basic compared to the feature-rich format of JavaRadio. However, the Internet user downloading the free software (available on the main site or my site) can take advantage of the Active/x functions of VisualRadio, which gives exclusive advanced features like signal vs. time graph, DX cluster and a sophisticated display spectrum.

The latter allows you to view a group of signals simultaneously for a segment of the band you're listening to and then choose the signal you want by just clicking on the graph.

Now let's move on to the actual operation of a UCOT once you get there.

The first and foremost rule on any public UCOT is to ask before tuning! This is simply done by typing "May I tune?" in the chat room. Even if you think you're the only person on the radio, the actual owner of the radio may be using it at the time.

This is just a common courtesy, and you'll find that someone will yield the control to you in almost all cases. If you experience problems with this, the owner of the UCOT will certainly want to hear about it. When the system is busy, you may enjoy just listening to what others users are tuning.

Know the system you're using

Each system is unique. Some may be designed for listening to VHF and UHF; others may be designed mainly for listening to the HF spectrum. It doesn't do any good if you're tuning for WWV and the UCOT only has an antenna good for UHF.

A simple inquiry in the chat window will usually get a response from those familiar with the system. Often the Web page will tell you a lot about the UCOT and what it does.

Since the majority of UCOTs are ICOM PCR1000s, you'll be able to tune from .100 to 1300 MHz (cellular excluded) and use all modes (CW, FM, USB, LSB, and AM). This is a lot of frequency spectrum. The type of antenna the owner has installed will be pretty obvious depending on where you tune.

Many owners have chosen to use a discrete antenna, which gives decent coverage of the VHF/UHF spectrum (50 to 1200 MHz), but really falls short on the HF spectrum (0 to 30 MHz). Because I'm a ham radio operator, I already had the antennas in place for the receiver. For my online tuner, I primarily use a tower-mounted inverted V with a 45-foot apex, giving me fairly broad coverage across the HF spectrum. I also use a tri-band beam at certain times of the day. For the higher frequencies, I feed the receiver simultaneously with a UHF/VHF Yagi. This would be a disaster on transmit, but fortunately, in this case, we don't have to worry about that when combining antennas.

For even better performance from this combination, you can purchase a splitter, which minimizes the effect of one antenna detuning the other.

Who uses UCOTs?

The UCOTs lend themselves to a host of applications.

Ham radio operators often use the receivers to see if they're being "heard" at the host site and, if so, to determine their signal strength. This is useful for getting real-time feedback on band conditions and audio quality.

Other users listen to the air traffic control broadcasts. Many of these broadcasts are carried on shortwave radio, so a good UCOT can pick up these signals for hundreds or even thousands of miles. With various sites that allow a listener to watch the progress of a plane in real time, you can actually follow flight of a loved one from origin to destination, all in real time, an aspect of the hobby that grew out of 9/11.

Still others like the public service broadcasts in the VHF/UHF spectrum. Unfortunately many of these have gone to a trunking system, which is not available on the UCOTs.

Some people enjoy late-night AM broadcast radio DX. If a site has a decent antenna for the low portion of the HF band, it will generally work quite well for AM DXing.

A few JavaRadio sites actually feature large antenna arrays, allowing users to listen to tropospheric ducting, meteor scatter and other interesting conditions that mainly affect the VHF portions of the bands. These are usually people who just enjoy general listening across the bands, whether for checking out the local FM radio stations or armchair shortwave listening.

My own site has attracted a group of people who gather each night to tune into late-night radio personality Art Bell, as well as a group of ham radio operators who get together on the HF frequencies.

Setting up your public UCOT

Setting up a public UCOT can be an expensive endeavor, but believe it or not, a few people have set up tuning and transmitting capability UCOTs (though these systems are beyond the scope of this article).

You can, however, fairly easily set up a receiving UCOT. Your receiver won't be much of a service, though, if it doesn't have decent reception or is very limited, such as offering AM mode only. Word spreads fast and you'll find your site is only good as a chat room for you and your friends.

JavaRadio has the advantage of the software being free. The downside is that it requires a Linux OS-based system, which most computer users are not set up for or familiar with. If you are, though, you're in luck!

Remember, you're limited to an ICOM PCR100/1000 receiver with this software, so you'll need that before you even get started. You can go to www.javaradio.com for more details about what is involved and how you can get started.

VisualRadio has the advantage of working with the Windows OS format and practically any type of ham radio/receiver that can be controlled by computer. Many people, especially hams, already have radios that can connect to their computers.

The downside here is that the company no longer sells the software for the basic amateur. Instead this software is marketed for commercial users, so while it offers the sophistication of a commercial release, it is well beyond what most basic users would ever need — and so is the price. However, as of the date of writing this article, I am told they are considering offering it again to the "amateur" user at a substantially reduced price.

I have operated a VisualRadio UCOT for over two years now and found the software flexible with many features. The Java format is straightforward and easy to use. However, connecting to the Active/x format offers a whole new world in online radio features. You can go to www.visualradio.de or my site

for more information.

Another format being used is RATS by Kingsmith Software (www.kingsmith-software.com). This is also feature-rich and can be run with Windows Net Meeting. The software is inexpensive, but accessing it is not as easy and straightforward as VisualRadio and JavaRadio, and only one person can use it at a time. A site located in Hong Kong has set one up under this format



The most popular user-controlled online tuner is the ICOM PCR1000, shown here with a couple of antenna switches, one manufactured and one home-built. Don't forget to ground the system (white wire in left of photo).

at <http://vr2hf.tripod.com>.

Last but not least, if you can write your own software — and many people have chosen to do just that — one of the oldest self-written sites (operating since 1995) is still available at www.chilton.com. There is also a fairly complete list of most of the UCOTs in existence at the DX Zone site at www.dxzone.com/catalog/Internet_and_Radio/Online_Receivers.

Setting up the audio

The other aspect designing a UCOT is, of course, providing the audio. This is a biggie, as it can require large upload bandwidth if you're going to offer decent audio to many people simultaneously.

There are various encoding styles you can choose from, but suffice it to say, a full-time high-speed connection is practically mandatory.

JavaRadios mainly use Real Audio as their encoder and VisualRadios mainly use Windows Media Encoder. Both formats are available for free from the Web.

I currently am able to stream simultaneously to about 25 people using Windows Media Encoder, but because I sometimes exceed this number, I also stream the audio through live365.com. This can allow practically unlimited simultaneous listenership at a very high bit rate, but also requires a monthly fee from the UCOT owner, depending on how many streams you want to provide for free or for a membership fee from the listener.

If your site gets to this point, you are definitely doing this as a labor of love; you may want to at least ask for donations to offset the cost a little. Just be aware that your outlay is going to far

See TUNERS, page 17 ►

Control Solutions

Model RFC-1/B Remote Facilities Controller

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- programmable control by date and time
- optional printer and modem adapters
- programmable telemetry alarms
- integrated rack panel



Model RAK-1 Intelligent Rack Adapter

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- internal modem for data transfer
- front panel status indicators
- battery backed power supply
- rack mountable chassis
- accessory package for RFC-1/B



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Scott Studios



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Scalable, flexible, reliable... pick any three.

An expensive proprietary router isn't practical for smaller facilities. In fact, it doesn't scale all that well for larger ones. Here's where an expandable network really shines.

Connect eight Axia 8x8 Audio Nodes using Cat-6 cable and an Ethernet switch, and you've got a 64x64 routing switcher. And you can easily add more I/O whenever and wherever you need it. Build a 128x128 system... or 1024x1024... use a Gigabit fiber backbone and the sky's the limit.

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Nobody loves cable snakes. Besides soldering a jillion connectors, just try finding the pair you want when there's a change to make. Axia Audio Nodes come in AES/EBU and balanced stereo analog flavors. Put a batch of Nodes on each end of a Cat-6 run, and BAM! a bi-directional multi-channel snake. Use media converters and a fiber link for extra-long runs between studios — or between buildings.

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<...> 100/1000

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FIRST PERSON

WFCR First in Western Mass. to Go IBOC

Univ. of Mass. Station Chooses High-Level Combining to Upgrade its Transmission Plant

by Charles Dube

The author is chief engineer of WFCR, Amherst, Mass.

AMHERST, Mass. In early 2003, WFCR(FM) General Manager Martin Miller left a newspaper article on my desk describing the field-testing of Tomorrow Radio, a method of using HD Radio technology to "stream" multiple programs to specialized receivers.

His enthusiasm regarding the promise of having multiple programs originating from one radio station was not lost on me. But why and how IBOC broadcasting might fit into the world of WFCR was uncertain at the time. HD Radio could be seen as a stepping-stone to Tomorrow Radio; but everything being so new, we were interested to see how this was going to progress.

WFCR broadcasts music and news on its 88.5 MHz service, also providing talk radio programming to a local AM station with a limited reach, WPNI(AM) in Amherst on 1430 kHz. The prospect of providing a similar coverage area for both formats is appealing.

However, in early 2003, WFCR's expansion plans were focused on a proposed new studio building and IBOC just

didn't seem to be a priority. But as John Lennon once stated, "Life is what happens while you are busy making other plans," and we soon learned that WFCR was eligible to qualify for a CPB grant that was developed to assist financially CPB-qualified non-commercial stations in Ibiqity Digital's seed markets. This would provide about 65 percent of the funding for WFCR's total conversion cost of roughly \$115,000.

In the winter of 2003, I was given charge to plan and implement WFCR's digital conversion. Delivery of equipment came in the late spring of 2004, and I had the luxury of assembling the hardware piece by piece over time, targeting to have everything in place for activation in early October. This kept on-air FM analog interruptions to a minimum and my blood pressure in check.

Combiner choices

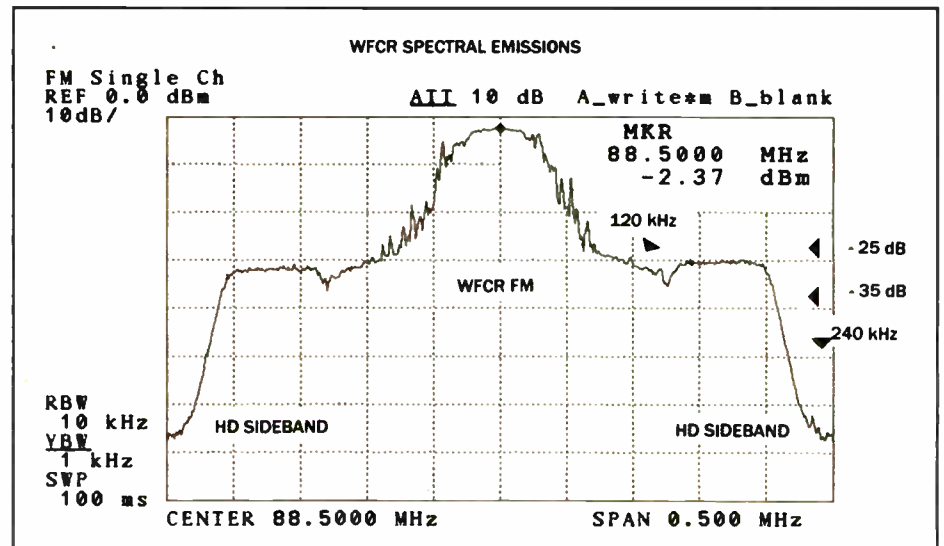
Upon being confirmed as a grant recipient, we immediately sat down to the task of discovering what methods were available to broadcasters to realize digital transmission, and what hardware was available to facilitate these choices. At the time, there wasn't a wide range of products, and the choice of transmission method was pretty much relegated to

low- or high-level combining.

Generally speaking, low-level combining is a good choice when your FM transmitter is on the verge of replacement, you are running a TPO of less than 14 kW or you have space constraints in the trans-

detectable to the trained ears of the programming department. And it is a product designed to meet the needs of a 1990s audio chain.

Developments in digital signal transmission have led to new products capable of transmitting an uncompressed digital bitstream within the RF bandwidth limitations of the licensed STL path. The Moseley Starlink STL system is one such



Spectrum Analyzer Snapshot of WFCR Analog and HD Emissions

mitter building. High-level combining is a good choice if your existing FM transmitter has sufficient headroom, is not being considered for replacement soon or has a TPO of more than 14 kW.

Seeing that we had the floor space for the addition of a smaller IBOC transmitter and that our existing FM transmitter, a relatively young Broadcast Electronics FM-20B, was easily capable of the additional power output necessary to overcome injector losses (an extra kilowatt was needed), we decided on high-level combining in the spirit of augmenting our transmitting plant as opposed to changing it completely.

But like so many things in life, the change of one thing creates the necessity of changing associated items. In our case, we understood that we needed to create conditions favorable for HD Radio broadcasting along with simply generating the RF.

This meant revisiting so many of those things taken for granted as sufficient: the studio-to-transmitter link, the audio processing, air conditioning, building security, grounding issues, commercial AC power capacity, and on and on. It was easy to see that the transition to HD would provide the impetus for upgrading a few items, and one of the most obvious of these was the STL.

WFCR had relied upon its tried-and-true Moseley DSP 6000 for more than a decade, and in doing so had allowed it to become somewhat outdated. The DSP 6000 system at WFCR is a first-generation version, replete with the original converters and software.

It was surely the cause of some of the distortion products that have been mildly

product, capable of creating a high-quality 20 kHz audio bandwidth digital path to the transmitter. Starlink also is capable of being field-expandable for additional audio channels within the constraints of the RF bandwidth limitation.

Once the Starlink's bitstream (44.1 kHz) arrives at the transmitter site, it would have met an older Orban 8200 audio processor. Generally, we were happy with the 8200, and if we were limited to the purchase of just an HD Radio only processor, worse things could be imagined.

One box

But a lot has changed in DSP technology since the 8200 was designed. A processor upgrade that addresses both the FM and the HD signals would maximize the "blending" benefit of the receiver, as well as allow the technological benefits developed for HD Radio processing to also work for the FM side of things.

I believe the Orban Optimod-FM 8400HD does this effectively with its implementation of high-speed DSP, look-ahead limiting and flexible two- and five-band AGC and limiters. Having one box supply the AGC for both digital and FM signals also helps to keep the "sound" of the two services similar.

Another important benefit is the common dayparting of processing settings. One needn't be concerned with syncing time clocks on two separate processors.

Because our FM exciter — a BE FX-50 — remains analog, we needed a way to convert the delayed "FM" AES as issued by the Harris Dexstar IBOC exciter from digital to composite audio.

See WFCR, page 16

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Radio World HD Radio™ Scoreboard

The HD Radio Scoreboard is compiled monthly by Radio World using information supplied by iBiquity Digital Corp. and other sources. The data shown reflect best information as of Dec. 17, 2004. This page is sponsored by Broadcast Electronics. HD Radio is a trademark of iBiquity Digital Corp.

HD RADIO IN: ATLANTA

Station	Freq.	Format	Licensee	On Air?
WABE(FM)	90.1	Nws/Tlk/Clis	Atlanta Board of Education	Yes
WCLK(FM)	91.9	Jazz	Clark Atlanta Univ.	No
WLTM(FM)	94.9	Soft AC	Clear Channel Radio	Yes
WBTS(FM)	95.5	CHR/Rhyt	Cox Radio, Inc.	No
WKLS(FM)	96.1	Rock	Clear Channel Radio	Yes
WFOX(FM)	97.1	Urban	Cox Radio Inc.	No
WSB(FM)	98.5	Soft AC	Cox Radio Inc.	Yes
WNNX(FM)	99.7	Alt/NwRck	Susquehanna Radio Corp.	Yes
WWWQ(FM)	100.5	CHR	Susquehanna Radio Corp.	Yes
WALR(FM)	104.1	Urban AC	Cox Radio, Inc.	Yes
WHTA(FM)	107.9	Urban AC	Radio One Inc.	Yes
WGST(AM)	640	News	Clear Channel Radio	Yes
WSB(AM)	750	News/Talk	Cox Radio Inc.	Yes
WMLB(AM)	1160	AdStd/Oldes	Atlanta Area Broadcasting	Yes
WDPC(AM)	1500	Christian	Word Christian Broadcasting	No
WDCY(AM)	1520	Christian	Word Christian Broadcasting	No

HD RADIO AT: COX

Station	Freq.	Format	Market	On-Air?
WALR(FM)	104.1	Urban AC	Atlanta	Yes
WBTS(FM)	95.5	CHR/Rhymc	Atlanta	No
WFOX(FM)	97.1	Urban	Atlanta	No
WSB(FM)	98.5	Soft AC	Atlanta	Yes
WEDR(FM)	99.1	Urban	Miami-Ft. Laud.-Hollywood	Yes
WFLC(FM)	97.3	AC	Miami-Ft. Laud.-Hollywood	No
WHQT(FM)	105.1	Urban AC	Miami-Ft. Laud.-Hollywood	No
WPYM(FM)	93.1	Rym/CHR/Dnc	Miami-Ft. Laud.-Hollywood	No
WMMO(FM)	98.9	Soft Rock	Orlando	Yes
WPYO(FM)	95.3	CHR/Rhym	Orlando	Yes
WSB(AM)	750	News/Talk	Atlanta	Yes

The Bottom Line

Total Licensed

477

On the Air

180

Last Month

Total Licensed

414

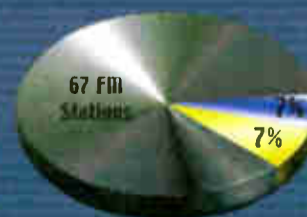
On the Air

152

Market Penetration
United States



HD Radio Among
Cox FMs



■ Licensed by iBiquity
and on the air

■ Licensed by iBiquity
and not on the air

WFCR

Continued from page 14

Because we already had a stereo generator of high quality within the older Orban 8200, I simply enlisted the 8200 as a stereo generator.

I purchased a Benchmark DAC-1 D/A converter to create an L/R audio pair to supply the analog inputs on the 8200. The latter is set for the "protection" preset, which will limit any overshoot (if there is any) created by the Benchmark converter.

The 8200 provides the pre-emphasized composite audio for the FM exciter, and with a preset change can once again be used as a full-blown FM processor (when fed directly with STL audio, of course). Those with digital FM exciters, such as the Harris Digit, can forego this step and route AES from their HD Radio exciter directly to the FM exciter.

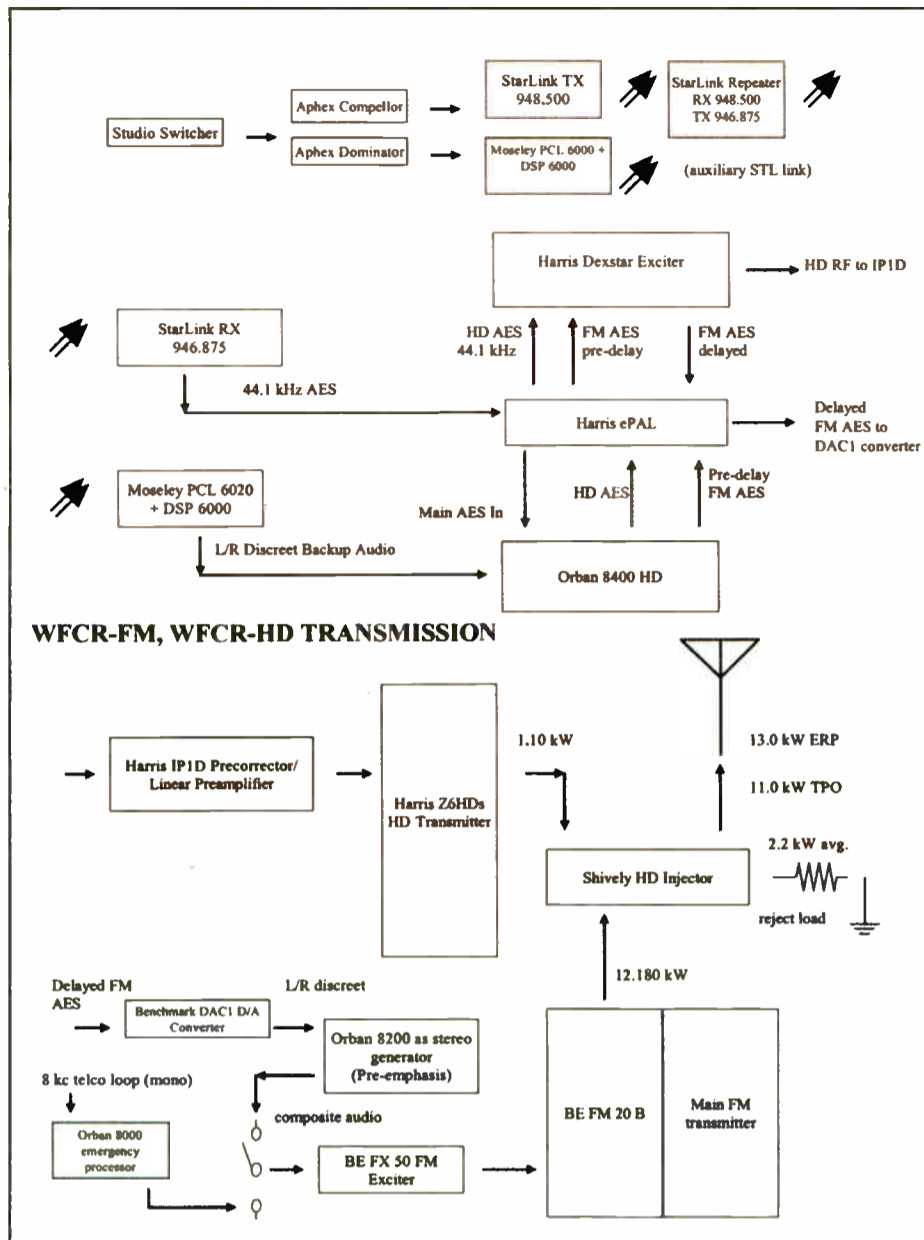
It might seem a little strange to think of exciters feeding exciters, but the Harris Dexstar creates the time-delayed AES signal for the FM broadcast.

To get this carefully designed audio to the public, we needed to select an HD Radio transmitter. WFCR chose a Harris Z6HDs transmitter. Harris displayed enthusiasm about WFCR's HD Radio project and was helpful in designing a package that was purposeful and equitable.

I was impressed with the redundancy and soft-failure design of the ePAL, Dexstar exciter and the Z6HDs. The ePAL is a combination AES distribution amplifier, rate converter and audio switcher. Should a failure occur in the HD Radio system, the ePAL automatically will route your FM's AES audio directly to the FM chain. This would remove it from the Dexstar, where normally the analog signal is looped through to create the FM latency to match the inherent delay in the HD Radio transmission and recovery.

The Harris Dexstar exciter is a Linux-based device with touch screen control and intuitive menus. I found the Harris Z6HDs transmitter to be the easiest piece of equipment to operate.

The basic metering, such as the power



output (in watts or percent), reflected power, voltage and current, is featured with a large LCD display, while a multitude of operating parameters are accessible via another display that is menu-controlled. Status, metering and other values (module temperatures, voltages, current measurements as well as some configuration choices) are to be found here. Though it does take some exploration and practice, it is a detailed as you want it to be.

They must have designed this transmitter with me in mind as they made it idiot proof. Power modules can be hot-swapped or replaced upside down and the transmitter

does not waste it carelessly either. Who knows what space requirements might be made upon this building 10 or even 5 years down the road?

One space-efficient device my assistant Dan Ferreira and I installed was the Shively Digital Injector. The unit measures 20 x 6 x 6 inches — almost the exact length of a section of hard line I already had in the transmission line to the antenna. How often does fate comply with one's wishes so readily? Don't answer that.

All we had to do was remove the hard line section, replace it with the injector and attach the transmission lines connecting the reject load and the Harris HD Radio transmitter. Some creativity was executed in installing a couple of threaded rod supports to stabilize the injector, but this was about the extent of it.

The reject load, necessary to combining the digital and analog RF energy while maintaining a 50-ohm load for the transmitters, did create one concern: heat. The Bird 5 kW reject load accepts about 2,200 watts from the combined efforts of the FM and HD Radio transmitters via the injector. This is dissipated as heat and added significant heat to the building.

Fortunately, the existing air-conditioning system was oversized and hasn't broken a sweat over the increase (on/off cycling of the compressor unit remains about the same as before). But for those considering high-level combining, one must consider the additional heat generated by the additional transmitter, exciter and most important, the reject load.

During a few weeks in October, WFCR road-tested the system, checking our spectral emissions to be sure that they fall within the FCC's compliance figures. They do. We also worked out any tangles in the yarn before we began to discuss our HD Radio broadcasts publicly.

Aside from a couple of Dexstar freeze-ups, a software situation of which Harris is



Joseph and Dorothy Gavin, supporters of WFCR, throw the switch on the digital transmitter. Joe Gavin was vice president and later president of Grumman, and director of the company's space activities program, which designed the Apollo space capsule and lunar module. After 'turning on' the digital for WFCR, he asked, 'Would you believe NASA never let me push any buttons?'

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will continue to perform without incident. Coffee in the blower intake, however, is still discouraged.

The IP1D Precorrector that is integral to the Z6HDs transmitter modifies and amplifies the exciter signal, creates the RF emissions that conform to the required FCC "mask" and forwards this spectral efficient energy to the PA stages.

Although space is not exactly at a premium in the WFCR transmitter building, one

aware and for which it has correcting software, our only minor problem was created by increasing the FM transmitter power.

The transmitter transformers needed to be re-strapped for a higher plate voltage to make the necessary output at what is traditionally a site with often low commercial voltage levels (202-206 volts across phases). In doing so, this raised the plate voltage level, although to a

See WFCR, page 17

WFCR

► Continued from page 16

point well within the operating specs of both the transmitter and tube designs.

Things ran great for several days; but after a while, and always in the middle of the night, the transmitter would alarm due to a lowered power output. Upon investigation I found that, on occasion, at night, the commercial power would increase, plate voltage would escalate accordingly and the power output would rise.

My predecessor had set up a Burk Autopilot routine that would back power down (lower command) for 5 seconds once the power level reached 102.1 percent. With the old plate voltage settings, 5 seconds would put the transmitter into the 94 percent power output area.

But with the new plate voltage, 5 seconds would lower the transmitter to 70 percent, triggering the remote control's alarm at 89 percent on its way down. The solution was to reconfigure the Autopilot software to issue the "lower command" for 2 seconds, once I found out that it was indeed the Autopilot program that was doing this.

I had no knowledge that this routine was written, and was sidetracked briefly, thinking RF at the station's remote control was the problem, as I have seen the remote control do this in the presence of a keyed two-way radio.

The future

WFCR eagerly anticipates what might become of the HD Radio rollout, especially as new receivers hit the market. The station is located in an area with many hills and traditionally has had to simply accept the inherent multipath. At the very least, HD Radio should prove to be advantageous in this respect, based upon what we have seen in the preliminary studies.

I was fortunate enough to ride with Tom Ray of WOR(AM), New York, to get my first taste of our HD Radio in a Connecticut location well outside of our 60 dBu contour. The results were impressive. This was in a challenging area some 45-48 miles from the transmitter.

When the receiver locked onto the digital signal, it was perfectly quiet. When the audio blended back to analog FM, the FM was full of static and pretty much unlistenable. For HD to even lock in with such marginal signal reception gives me great hope that HD will certainly benefit listeners.

I do have concerns that our HD Radio emissions may affect second adjacents in the area and am monitoring this closely. Thus far we have heard of no negative aspects upon commencing HD, and the response from the reading service that inhabits our 92 kHz subcarrier also has been reassuring.

I have purchased an HD receiver, so I will explore the results of our HD transmission in historically multi-path hampered locations. Thus far, we have received only one comment from a listener who was wondering why our NPR news (on the analog FM) was delayed 8 seconds.

WFCR intends to listen carefully to the public response to HD, as well as any perceived enhancement in FM audio quality. And WFCR will watch carefully the developments that will surely come as HD Radio matures as a technology. 🌐

Tuners

► Continued from page 12

outweigh any money coming in.

If you do set up your site and work to provide a free quality service, however, you'll find that the rewards include meeting a lot of great people who take almost as much pride in your UCOT as you do. You may even find someone sets up a forum if you attract a group of loyal listeners who enjoy your system. For example, the *Midnighthams.com* forum was started by a group of dedicated individuals who frequented my site and continue to do so.

You can even go the extra mile and provide other services that practically guarantee people will enjoy visiting your site.

One of the neatest things I've seen was listeners actually using the online radio, in conjunction with software on their computers, to view SSTV (Slow-Scan TV) pictures. These are pictures transmitted by hams that can be viewed on your computer with the proper software.

A UCOT lends itself to this perfectly, so I feature an automatic picture viewing system on my site that doesn't require any software on the listener end. The listener only needs to tune the radio to the SSTV signal itself (usually 14.235 kHz), and the software on my end will automatically capture the image and upload it to my site. The auto ftp upload software is generously available for free from John Benedict, KE5RS, at www.ke5rs.com. This has been a popular aspect of my site that, amazingly, other online tuners to date

have not incorporated.

Providing a chat area is also beneficial. Because your listeners have a lot of common interests, you'll get all kinds of ideas to institute. Feedback is guaranteed if you choose to chat with them.

Try it

Whether you are only interested in using a UCOT or setting one up yourself, you will find that it's really a hobby in itself, one that's still a pretty well-kept secret from the general public. The UCOT numbers are still relatively small, but many of them lie dormant waiting for someone to log on. It's my hope that the word will get out about how useful and fun these are, both to listen to and to operate yourself. Give it a try.

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Digital Radio, Surrounded

Adding Surround Sound to Digital Radio Formats Is Under Serious Debate Worldwide

by Skip Pizzi

There has been substantial discussion recently on the addition of surround-sound capabilities to digital radio. This issue is being considered by the IBOC and DAB camps simultaneously, both of which have been established as stereo-only formats.

The rationale that this sort of qualitative enhancement would add value to digital radio certainly makes sense, particularly as the deployment of surround listening begins to extend beyond the home-theater environment into cars and other systems. Also, because surround sound is not available on AM or FM radio, it adds unique appeal to digital radio formats. But, like any retroactive enhancement that attempts to maintain backward compatibility, the devil is in the details, and some compromises are inevitable.

With this column, we begin a multi-part exploration of the potential for surround sound in digital radio.

It's happened before

Recall that both AM and FM radio began life as monaural formats, but were retrofitted for stereo operation after both were well established. Of course, the history of those conversions is quite divergent, with FM's being extremely successful and AM's serving as a landmark of how not to regulate an industry. So it's obvious that the process followed in attempting such an enhancement can have a substantial impact on its outcome.

Policy matters aside, however, there are technical challenges to consider as well. Both AM and FM stereo systems had backward compatibility as a fundamental design feature (as did the similar introductions of stereo audio and color video for television). In general terms, this was accomplished by the addition of an enhancement sub-channel, which would only be recognized by "advanced" receivers with the enhanced reception capability. Existing receivers, or new ones that were not equipped with the enhancement — let's call them "basic" receivers — would simply behave as the original format dictated.

In the FM stereo case, the broadcast exciter sent a mono sum of the stereo sig-

nal to the main audio channel, while a difference signal (i.e., audio not common to both L and R channels) was multiplexed into the FM channel as a 38 kHz AM sub-carrier, with a 19 kHz sine wave signal also inserted to synchronize the sum and difference signals during recreation of the discrete left- and right-channel stereo audio signals at the receiver. (The 19 kHz "pilot" also provided a beacon to indicate to receivers and listeners the presence of stereo audio content on the channel.)

Because surround sound is not available on AM or FM radio, it adds unique appeal to digital radio formats.

This process is probably well known to readers, but what might require a reminder is that this approach also implies two other important elements: 1) Plentiful content must be available to broadcasters in the enhanced format (e.g., stereo music), and 2) Basic receivers will receive a signal that is *derived from* that enhanced signal (e.g., a mono sum of the stereo program). Therefore the enhanced content that broadcasters air must itself be "compatible" to proper reception in the basic format.

In other words, simply designing a broadcast system that derives an enhancement channel from the original content for delivery to advanced receivers (such as sum-and-difference multiplexed FM stereo) is necessary but not sufficient to claim true backward compatibility. The *content* carried by such a system must also be originally produced in a way that allows proper listening in both the advanced and the basic format.

Discipline

This was not always the case in early stereo recordings. Some readers may remember when LPs were offered in separate stereo and mono versions (the stereo editions usually sold for about \$1 more), and the mono sum of the stereo LPs often

sounded quite different from the mono version. Remember also that the mono recording was the definitive version of the artist's work at the time, while stereo remained a novelty for some time. The well-known Beatles recordings with odd-sounding, hard left/right instrument assignments are a well-known, lasting example of this. At the time, artists and producers would concentrate primarily on the mono mix, often leaving the stereo mix up to the engineers to have fun creating on their own, since most copies sold (and aired) were the mono versions.

As stereo FM broadcasting grew popular, awareness grew for the need of a dis-

The Big Picture

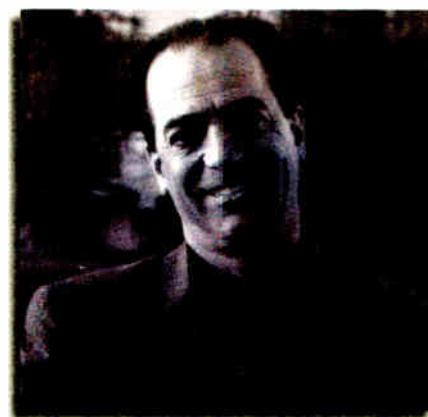


Photo: Gary Hayes, BBC

by Skip Pizzi

important. And of course, many clock and table radios are still full-time mono FM receivers.

Taking the next step

There have been numerous attempts to move FM beyond stereo in the years since, but none have been successful.

Plans for quadrasonic FM went the way of quad records, stopping before a format was actually established. Later, matrixed surround sound (based on the same technology used in SQ-format quad LPs) launched the home theater revolution, and while this has become extremely popular for the FM audio system used in analog television, it has not done the same on FM radio. Part of this is by design, with the primary purveyor of matrixed surround, Dolby Labs, preferring not to license its decoders to FM receivers, due to concern that poor performance under multipath reception conditions would reflect badly on the surround format's reputation.

One advantage of the matrixed surround system is its ability to reproduce relatively strong, stable and consistent surround images via four channels of audio, while only requiring two audio channels for storage or transmission (thus the "4-2-4" terminology applied to such systems). This is particularly true of matrixed surround systems that feature enhanced "steering logic" circuitry in decoders, such as Dolby Pro Logic.

Matrixed surround systems use quadrature encoding of front/rear difference information onto the stereo signal, which provides another layer of backward compatibility to audio signals, allowing a single mix to produce acceptable results in surround, stereo or mono listening —

See SURROUND, page 20 ▶

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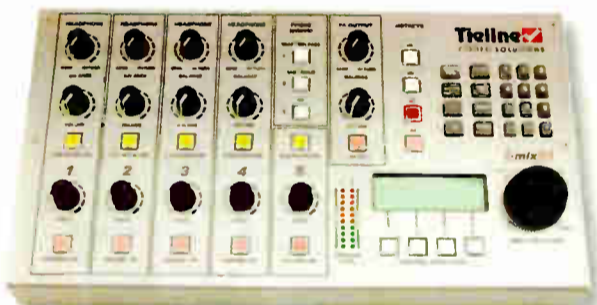
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A Guidebook to the World of Radio

Dedicated Radio Hobbyists Keep Tuning To the 'World Radio TV Handbook'

by James Careless

To radio buffs, it's known as the "WRTH."

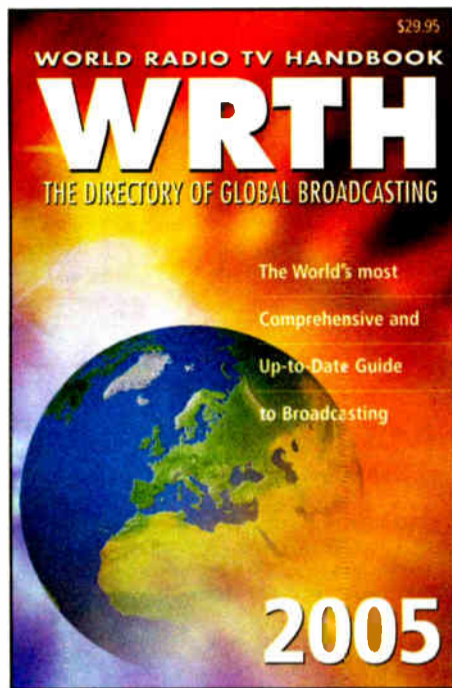
The "World Radio TV Handbook" is an annual compendium of the world's radio and TV stations, including their frequencies, programming and mailing addresses. It is widely regarded as the most authoritative source of its kind. In recent years Larry Magne's "Passport to World Band Radio" has given the WRTH a run for its money. Still, like Rolls-Royce and Chivas Regal, the WRTH continues to enjoy iconic status among fans.

"We print between 30,000 to 35,000 copies annually," said Nicholas Hardyman, the publisher. "Most of them are bought by people we describe as dedicated radio hobbyists. They are shortwave, mediumwave (AM), FM DXers and dedicated radio listeners who like to find stations, tune them in, and sometimes send them reception reports. However, we also have a loyal following among radio managers worldwide." Based on the old Morse code term DX, which means "long distance," the phrase DXer means someone who searches for signals from distant radio stations.

"Sales have fallen over the years as more activities compete for peoples' attention, but sales are now fairly stable," Hardyman said. "The biggest circulation in recent years came at the onset of the Gulf War, when we sold 80,000 copies thanks, in part, to Defense Department procurement."

Whats inside

A densely printed paperback, the 2005 WRTH is a textbook of broadcast information. As in previous years, the new edition provides reviews of the latest newest radios — high-end and portable, PC and digital receivers, preselectors and antennas. (Despite its name, the WRTH is



radio-centric.)

Also provided are feature articles with names such as Ancillary Equipment, Managing the HF Spectrum, Digital Update, HF Conditions 2005, World Music Radio, and Most Suitable SW Frequencies. Add in charts explaining the strange world of SW radio frequencies — different bands work best at different times, due to changing ionospheric propagation — and maps of the world's SW transmitter sites; and the reader has all he or she needs to know to tune in the world.

However, it is WRTH's newsprint reference pages that hold its claim to fame.

From Afghanistan to Zimbabwe, each country's entry includes the names, addresses, frequencies, program formats and call signs of their national radio and TV services. In addition, the WRTH lists the country's local AM and FM broadcasters, including their frequencies and transmitter

powers. Also available are listings for international SW radio stations — again on a country-by-country basis — and a breakdown of the world's AM frequency users by channel, by region.

For instance, in North America, 800 kHz on the AM band is home to KINY Juneau, Alaska; KQCV Oklahoma City, Okla.; CJAD Montreal, Canada; WDUX Waupaca, Wis.; and 31 others. Add Trans World Radio from Bonaire, Netherland Antilles — its 100 kW transmitter punches the North American static through during the evening hours — and one can see why this channel sounds busy after sunset.

Reaction to the Nazis

The WRTH's roots can be traced to the Nazi occupation of Denmark, when listening to foreign stations was forbidden. Many Danes secretly turned into the BBC and other international shortwave stations for reliable news.

After the end of World War II, the Danish penchant for shortwave listening continued, so enthusiast Lund Johanssen started printing SW listings in Danish newspapers.

Aided by fellow journalist Jens Frost — who had caught some errors in the newspaper listings based on his own radio tunings — Johanssen compiled and published the first World Radio Handbook for Listeners in 1947. Originally, this book was only meant for Danish readers. However, such was the popularity of the handbook's listings that it began to be sold internationally. Over the years, TV listings were added.

Over the years, Frost and then SW expert Andy Sennitt served as WRTH editors. During this time, the book was purchased and sold a number of times.

In 1998, it appeared as though the
See WRTH, page 21 ▶

Surround

▶ Continued from page 18
again, assuming the creative-stage mixing follows appropriate rules.

For reasons noted above, matrixed surround has never taken hold in FM radio, but the multipath resistance of digital radio could allow its addition to IBOC or DAB systems without difficulty. Just such an approach has been proposed and successfully used in some cases, although no commercial products actually target this application as yet. ("Some assembly required" for digital radio matrix-surround listening today, requiring feed of an IBOC or DAB receiver's analog stereo output to an outboard surround decoder.)

It is unclear whether future IBOC receivers will ever incorporate surround decoders, due to their reliance on analog FM as a back-up signal. Receivers could be designed to disable surround decoding when the IBOC receiver falls back to analog FM, but receiver manufacturers might not want such a dramatic shift to occur in such cases.

In any case, this discussion is now being eclipsed by a desire to move radio beyond matrixed surround into more recently developed 5.1-channel discrete surround. We'll look at proposals for doing this in a backward-compatible way next time.

Skip Pizzi is contributing editor of Radio World. 🌐



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WRTH

► Continued from page 20

WRTH might be doomed when Sennitt and Managing Editor Bart Kuperus resigned. However, the title was purchased from Billboard by WRTH Publications, which is co-owned by Hardyman.

Now based in Oxford, England, the WRTH is produced by a three-person team: Hardyman, International Editor Sean Gilbert and Technical Editor John Nelson.

Despite only having a small production team, the WRTH has maintained its reputation for providing accurate global information, and convincing major radio vendors such as Eton Corp. (Grundig) to advertise substantially within its pages.

The reason is the WRTH's long-standing team of "contributors." Living around the globe, they take the time to verify what's actually on air and to send that information to the WRTH's offices as needed.

"In addition, many of our contributors have been listening and writing on our behalf for decades," Hardyman said. "They include Svetomir Cuckovic in Serbia, who has been writing for the WRTH since 1954, and U.S. SW expert George Jacobs, who has been with us for over 40 years." Jacobs is a U.S. engineer considered an expert at building SW transmitter sites.

"This kind of depth shows in our reports, and matters to our readers."

Even with the growth of satellite television and the Internet, Nicholas Hardyman sees a place for shortwave radio. The proof is that, for millions of people, SW radio is the only source of information, he said, also noting continuing demand for shortwave frequencies by international broadcasters.

"There's still enough new and different being broadcast on shortwave to motivate people to tune in," Hardyman said. "As long as they do, we'll be here to help."

Information about the WRTH can be found online at www.wrth.com. The 2005 edition is available in the United States for

\$29.95 or less, and can be purchased through Amazon.com. Next year's edition will be WRTH's 60th.

BUSINESS DIGEST

BE Guarantees AV Upgrade Path for ContentDepot

Scott Bridgewater of National Public Radio Distribution, right, visited Broadcast Electronics in Quincy, Ill., to work with the supplier on integrating BE's AudioVault with the new ContentDepot delivery system.

BE recently announced that all AudioVault users will be able to interconnect with the new PRSS ContentDepot system at no charge. It announced a "guaranteed upgrade path" for noncom stations using its digital audio system with the new ContentDepot delivery system, which is being built by NPR's Distribution division. The manufacturer said it would provide software updates to users of current AudioVault and Vault2 systems in the first quarter of 2005. Users of the earlier AudioVault AV100 will receive hardware for the integration.

Shown in the photo, from left, are Gene McAneny, BE Digital Customer Service Engineer; Eric Behymer, BE Digital Customer Service Engineer (seated); Greg Uzelac, BE Senior Design Engineer (Digital); and Scott Bridgewater.



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The STAC system is available in six (STAC 6) and twelve (STAC 12) line versions. Connect up to four control surfaces using standard CAT5 cable — no custom cabling required. Best of all, STAC is incredibly easy to use — anyone can master it in seconds.



Got Calls? Put Comrex On The Line.



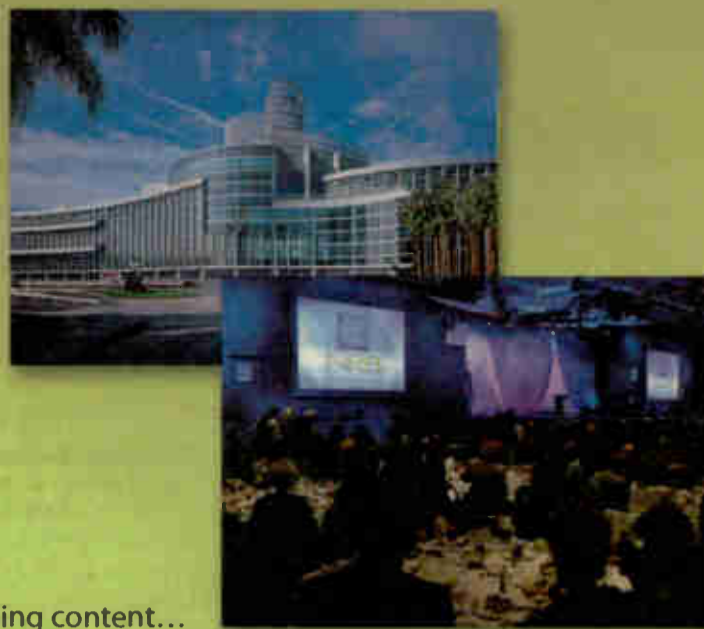
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World Radio History

A Center for Native American Radio

Community Broadcasters, CPB Help Stations Develop Different Models of Financial Support

by John Merli

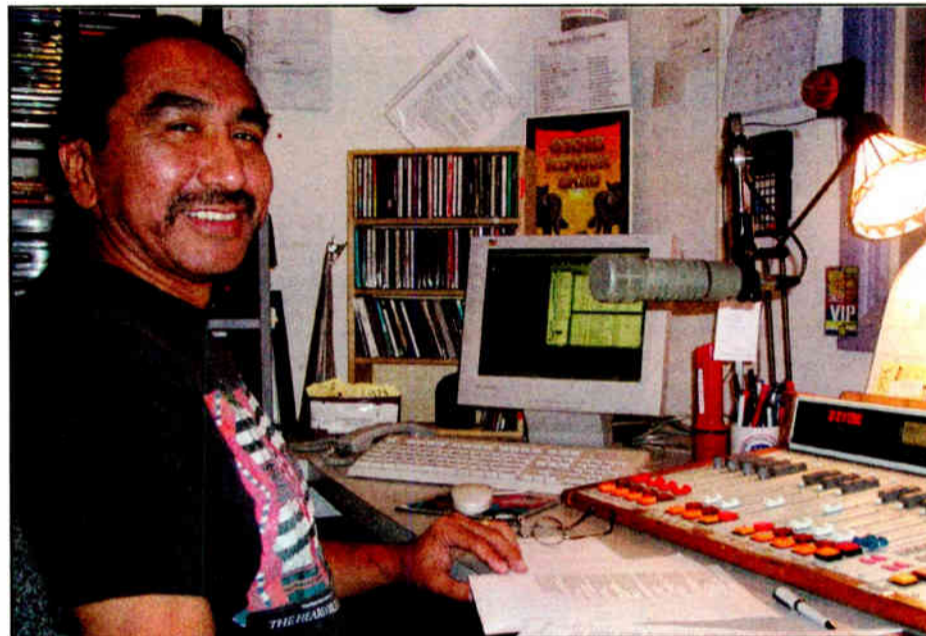
Help is on the way for a form of radio that few Americans have ever heard.

Native American radio, serving mostly isolated Indian reservations in the western half of the United States, recently got a boost: The Corporation for Public Broadcasting earmarked \$1.5 million to establish a Center for Native American Radio. As a result, this largely unknown radio service hopes to better serve communities in a way that no other medium can do as effectively.

More than 30 Native American-run stations in a dozen states from Alaska to Wisconsin will be directly affected by the new center's activities in the short run. In the long run the stations' future fundraising efforts — like much of its programming — could create something different from today's typical public broadcasting model.

Different model

The idea for the resource center resulted from a funding proposal from the National Federation of Community Broadcasters. That proposal, in turn, grew out of a meeting last spring of



David Sam of public station KNBA(FM) in Anchorage, Alaska, hosts the Native American program 'Indigenous Expressions.'

programs." Pierson said the project also hopes to discover new models for generating long-term, sustainable funding.

"Our plan is to do a major feasibility

said her group recognizes that Native American stations "operate in very difficult economic environments where traditional public radio models of support like

pledge drives and underwriting are not generally as successful. We believe the new center can take the lead in developing new financial venues and other sources of support."

She said the center also will provide expertise in accounting, programming, staffing and other necessary assistance that small stations, especially, most require and can least afford.

Many voices

Although there are small pockets of commercial radio operations owned by Native American interests, such as Arizona's Navajo reservation in Window Rock, public radio's approach to securing underwriting grants is more suited to Native American radio's goals of providing a variety of short- and long-form niche cultural programming — formats that usually do not appeal to traditional spot advertisers.

Native American broadcasters believe what makes their programming unique centers on the role it plays in cultural preservation. Most stations provide at least some programs in the native languages of their markets — often several languages — and they say preserving tribal customs and history through educa-

See NATIVE RADIO, page 24 ▶



KTDB(FM) in Pine Hill, N.M., was one of the first Native American stations on the air. From left: founder Bernie Bustos; station manager Barbara Maria; CPB consultant Bruce Theriault; and CPB consultant Felice Tilin of the Teleos Leadership Institute.

Native American public broadcasters.

"One thing that's clear is the model of financial support that's worked for other public stations isn't appropriate for the low-income communities that these Native American stations primarily serve," said NCFB President/CEO Carol Pierson.

"This grant is a chance to identify how to raise significant new money to finance stations' operations and Native American

study of ideas on generating funding at the national level, since it would be very difficult for these local stations to get it, otherwise, from typical public radio (listener contributions)," she said. By not working within a larger, more vocal station group, many individual broadcasters simply would not have the resources and capital necessary to raise adequate funding effectively on their own.

CPB President/CEO Kathleen Cox

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Native Radio

► Continued from page 23

tion and public service are important to listeners who cannot rely on similar services from other electronic media.

Senate Commerce Committee Chairman John McCain, R-Ariz., whose state has four Native American stations, has called local Native American radio services "an invaluable tool that connects listeners with each other and their heritage." His committee held a hearing on the CPB project last summer. The management of KUYI(FM) in Hotevilla, Ariz., testified that local-language broadcasts have resulted in renewed interest in everyday use of the Hopi language.

At KIDE(FM) in Hoopa, Calif.,

recent daily programming included "Native Sounds and Voices" and "Earthsongs," as well as "Different Drums" — along with NPR newscasts and music by the Grateful Dead. Some of the California station's programming comes courtesy of KNBA(FM) in Anchorage, Alaska. Operated by the Koahnic Broadcasting Corp., KNBA(FM) is the only Native American station in the country to serve primarily an urban audience.

Koahnic produces shows that are distributed nationally via satellite, such as the daily one-hour call-in "Native America Calling" and "National Native News," from its production center at the University of New Mexico in Albuquerque. KNBA-Koahnic President/CEO Jaclyn Sallee said a few dozen stations, not all of

them Native American, carry some of their programming.

Sallee said about 10 percent of the nearly quarter-million listeners in the Anchorage market are Native American; she is an Inupiaq Eskimo. She said KNBA(FM) claims about 10,000 weekly listeners.

"We went on-air for the first time back in October 1996 because there was no radio ser-



Jaclyn Sallee is president/CEO of KNBA-Koahnic Broadcasting Corp. in Anchorage.

vice for Native Americans," she said.

Anchorage is a culturally diverse region that is referred to locally as "Alaska's native village," she said, including the tribal cultures of the Aleut, Athabascan, Inupiaq, Jicarilla Apache, Navajo, Ojibway, Potawatomi, Siberian Yupik, Tlingit, Tsimpsan and Yupik. And the common communicator for everyone, Sallee said, often is achieved through music.

"We have many different tribes here all coming together, and we offer a unique service of alternative music that we assemble from independent artists, from the record labels, from all types of sources, for our local and national programs; while other (non-music) programs such as call-ins, news and talk shows deal directly with the issues and problems facing Native Americans in their everyday lives."

KNBA(FM)'s eight-day pledge
See NATIVE RADIO, page 25 ►

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Native Voices

Stations participating in the new Center for Native American Public Radio (all are FM, unless noted):

Alaska

KNBA, Anchorage
KBRW (FM/AM), Barrow
KYUK, Bethel
KCUK, Chevak
KZPA, Fort Yukon
KIYU, Galena
KOTZ, Kotzebue
KSDP, Sand Point
KUHB, St. Paul Island
KNSA, Unalakleet

Arizona

KUYI, Hotevilla
KGHR, Tuba City
KNNB, Whiteriver
KRMH, Teenospos

California

KIDE, Hoopa

Colorado

KRZA, Alamoza
KSUT/KUTE, Ignacio

Montana

KGVA, Halem

North Dakota

KEYA, Belcourt
KMHA, New Town
KABU, St. Michaels

New Mexico

KCIE, Dulce
KABR, Magdalena
KTDB, Pine Hill
KSHI, Zuni

Oregon

KWSO, Warm Springs

South Dakota

KILI, Porcupine
KLND, McLaughlin

Washington

KYNNR, Toppenish

Wisconsin

WOJB, Hayward

Wyoming

KWRR, Ft. Washakie

Wanted: AEs Who Love to Write Ad Copy

by Mark Lapidus

There was a time when account executives in radio were honest about a certain subject: They would almost universally express a dislike of writing spots for clients.

They claimed it was tedious, time-consuming work and that it wasn't really their job. It was the last thing on their list of things to do in any given day, and they would do it reluctantly when the station copywriter was out sick or on vacation or just had too many spots to write in one day.

Like everything else in radio, this negative attitude I used to hear from reps regarding copywriting has changed. Or has it?

I've been poking around a bit, and it appears that honesty about this subject

has gone underground.

At most stations, copywriting for clients is a requirement for account executives; it's made quite clear that those who speak the truth regarding their feelings about this task risk the wrath of management. Why? Because the position of advertising copywriter has virtually disappeared at radio stations.

If you're assuming I'm biased and passionate regarding this subject, you're right.

Some will accuse me of stereotyping when I say that account executives are interested in money and not in a creative pursuit such as copywriting. I will grant you that I have come across a few account executives who loved to write spots and were pretty good at it. Of the

three I can remember over many years, one of them failed as a salesperson. The other two weren't very good at selling either.

There is something in the personality make-up of a great radio account executive that runs against the grain of being a creative copywriter. I'm not certain what that something is; and maybe it's not always the same from person to person. Part of it no doubt has to do with the fact that finding clients who will buy radio advertising is a time-consuming, emotionally draining, never-ending process.

After a rep closes a deal, it can feel concluded to a large degree. Intellectually, an account executive knows that there's more work to do, and

See COPY, page 26 ▶

Promo Power



by Mark Lapidus

Native Radio

▶ Continued from page 24

drive last fall brought in \$65,000, somewhat short of its \$85,000 goal. Sallee expected that another mini-pledge drive this winter, along with help from some statewide and local underwriters, should help make up for the temporary shortfall.

"We currently have 1,200 contributing public radio members who are very supportive," she said. Her full-time staff in Anchorage is usually around 10, with eight staffers working at the New Mexico production facility.

KNBA(FM) routinely shares its engineer and other expertise with Native American stations in Alaska (visits to other stations often take days, given the enormous size of the state). Sallee said she believes the new center will not only help create effective money-raising models unique to public broadcasting, but also help strengthen the training and other non-technical networking of Native American stations in her state and elsewhere.

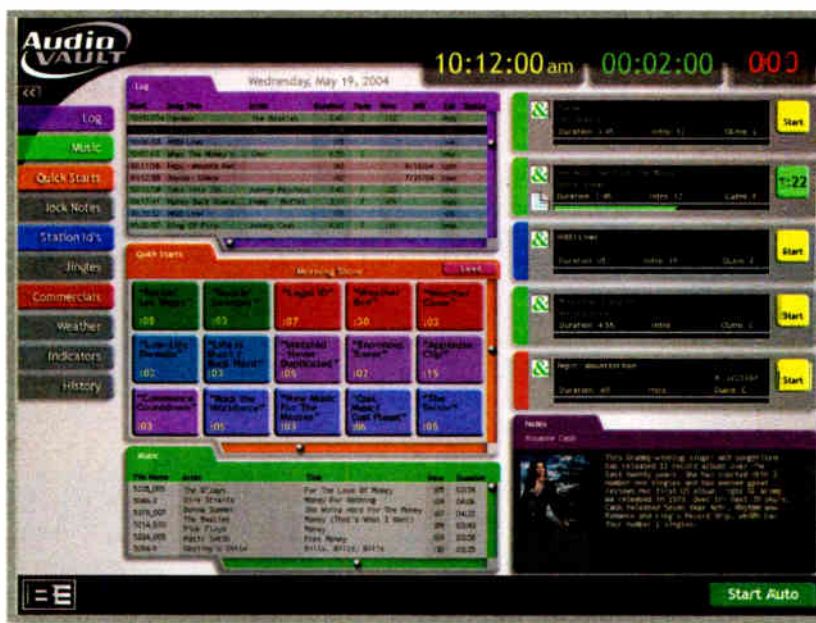
Technically, in a separate initiative, CPB announced a \$365,000 grant in September for the Alaska Public Broadcasting Broadband Initiative, to link 30 Alaska public radio and TV stations, including KNBA(FM), via a high-speed data network.

KNBA(FM), which provides an abundance of additional listener resources on its Web site, streams its programming online at www.publicbroadcasting.net/kbc/ppr/index.shtml.

While some Indian reserves have become quite wealthy in recent years from lucrative gambling casinos, nearly all Native American stations, most of which are full-power FMs, are located in isolated regions of the nation where casinos are not viable options.

The NFCB planned to hire two full-time people for the new resource center and to dedicate one of its current staffers to the project part-time. In addition to seeking new forms of long-term funding, the center will attempt to remain flexible enough to provide whatever aid is needed at any given time.

"We're trying to create the H&R Block of possible radio services," NFCB's Pierson said, "by providing help in any way we can." 🌐



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NEWS ANALYSIS

Industry Awaits Clutter Verdict

Observers Debate Value of 30-Second Spots, Seen by Some as Mere 'PowerPoint Radio'

by John Merli

Terrestrial radio's future in an era of new media competition hinges as much on what it doesn't air, as on what it does.

So holds the gospel according to Clear Channel, as the rest of the industry watches, with mixed emotions, waiting for any telltale sign that the radio behemoth knows what it's doing by turning its back on 60-second ads.

A policy of shorter ad spots and promos — and fewer, too — on its more than 1,200 stations is at the heart of Clear Channel's "Less Is More" anti-clutter campaign, which phased in at some stations a bit earlier than originally planned, in mid-December.

A second, less-publicized aspect of the project is an attempt to raise the creative quality of 30-second spots to increase their effectiveness; the company named a Creative Services Group of consultants last fall to help the cause.

Take-it-or-leave-it

Clear Channel "remains steadfast in its conviction to do this with a take-it-or-leave-it attitude as their position," according to ad buyer Mark Lefkowitz of Furman Roth Advertising in New York.

"The creative community is particularly disappointed and will find it very hard to achieve the goals of Clear Channel's objective. Being able to use a :30 over a :60 while trying to maintain a

Although all things are negotiable, some buyers have said Clear Channel would like to charge up to 75 percent as much for a 30-second spot as it did for a :60, to help

CLEAR CHANNEL RADIO

CLEAR CHANNEL NASHVILLE
Nash News

Upcoming Events

Weddings The Bridal Show
January 8th - Nashville Convention Center. If you're a bride-to-be, you don't want to miss TN's premier wedding event! From cakes to catering, gowns to fashion shows, it's all under one roof. Presented by: Hecht's, Party Place, Bridal Warehouse, American Tuxedo, The Scene, N Focus and Clear Channel Radio Nashville.

Health & Fitness Fair
January 15 thru 16th -

"Less Is More" is now a reality!

You have all heard about Clear Channel Radio's nationwide initiative to cut clutter and create a

Clear Channel Nashville explained the campaign online for clients. Director of Sales Tom English wrote, "This is a fluid process and we have much fine tuning to do but we have effectively started down a new and promising path. We are all glad you are traveling with us."

commercial spot's effectiveness is still very much in question. In fact, the value of using mostly 30-second ads is questionable at best."

held by a creative services director. These were thirty-minute classes held between — you guessed it — client calls.

One account executive was so excited to be in attendance that she fell asleep.

I've laid this article out to make just one point. Our industry needs to invest again in real copywriters. We need to hire women and men who are truly excited about creating commercial spots for our advertisers.

We gotta bring back the kind of person who will barge into your office to read you a new spot they've just written about a local gutter replacement company. They are so excited about the dialogue and description that they have to read that spot to you before it gets produced. I miss hearing those people read copy out loud while keeping their eye on a stopwatch and anyone who might be within hearing distance.

We need people who are bursting with pride about writing terrific advertising copy.

How will our industry pay for a copywriting position? First of all, the salaries for this type of position never broke the bank in the first place. It's not like hiring another sales manager. Also, more results for clients means better retention and at least the possibility of more money for radio.

Look at this way: A copywriter frees up your best people to do what they do best, which is sell advertising time

Got an idea about improving radio copy? Tell us about it at radioworld@imaspub.com.

The author is president of Lapidus Media. Contact him at marklapidus@yahoo.com.

maintain its revenue base — especially since the idea is to run fewer total minutes, overall, per hour. Lefkowitz thinks that strategy makes sense: "If they only charge half the rate for a :30 as for a :60, that would upset the apple cart."

But he argues that advertising's top priority is not simply to save money on ad buys, but to produce and air the most effective spots possible for products and services. And most advertisers, he contends, think the more persuasive messages come in full-minute spots.

"I think other (radio group) companies are going to watch and see what happens here, and let Clear Channel find out on their own how things work out. Other companies will 'go to school' on Clear Channel," he said.

"We all know it's a very transparent industry, and whatever happens will be known rather quickly. They're the big fish in the sea and so they're getting some help from others, from the RAB with things like a new award category just 30-second ads, as well as from other industry groups. So we'll see what happens."

Impact on Automotive

Clear Channel in San Antonio and its PR firm in New York did not respond to numerous inquiries from Radio World regarding the implementation of the anti-clutter campaign. In mid-December, the company was providing approximately 40 links to various corporate services, announcements and charitable projects on its Web site Home Page. No central Home Page link or headline referred to its Less Is More project.

Originally, the general anti-clutter message going out to stations was to cut the typical 12 minutes per-hour (on FM outlets) by a quarter to a third, and axing maybe a quarter of up to 16 minutes on AM talkers during rush-hour dayparts. Stations contacted declined to disclose their ad changes, if any.

Lefkowitz predicts the group owner probably will start adjusting its goals by the second quarter of 2005. "They won't do away with it completely, but they could find they have to do some adjusting. Because I'll tell you that pushing 30-second spots will make the highly important automotive sector run from radio — not run to it!"

Rob Riggsbee, owner of Inside Media Inc. of Cincinnati, agrees. His firm buys time for more than a dozen radio clients.

"We have to remember that Automotive often has to put disclaimers in their spots, and that could easily take up to 15 seconds, half a shorter spot. My clients prefer 60 seconds and so do we."

While Riggsbee thinks less clutter makes sense for both advertisers and listeners, he said the solution lies in reducing the number of overall minutes per-hour, not merely cutting a lot of :60s down to :30s.

"I'm not for cutting clutter at the cost of driving up pricing beyond maybe a reasonable 4 or 5 percent. I think where Clear Channel may be having their most success in converting :60s into :30s is with their direct clients," Riggsbee told Radio World.

"And that's maybe because their direct clients don't know any better."

'Doing something'

Some financial observers have praised the conversion to half-minutes. And while some ad buyers derisively refer to 30-second ads as "PowerPoint Radio" because they allegedly only allow enough time to provide a few "bullet points," not all broadcasters oppose it.

At a New York industry meeting in December, Cumulus and Katz Media reportedly indicated at least some interest in shorter ads among advertisers, and in the potential financial gains of selling two ads for every 60-second window of opportunity. Other groups seem to be taking a wait-and-see attitude.

Mark Fratrick, vice president of BIA Financial Network in Chantilly, Va., credits Clear Channel for its anti-clutter initiative, regardless of its eventual outcome.

"At least it's attempting to do something about increased (new media) competition," said the broadcast properties analyst. "I think it's important to have a major effort by a leading group like Clear Channel to try to solve a problem that they recognize as significant. There is an amazing amount of clutter out there."

Fratrick believes local commercial radio faces "tremendous challenges" in retaining its audiences over the next few years, especially younger listeners, who appear to be migrating rapidly to commercial-free MP3, CD and game players, and gradually, as their incomes rise, to satellite radio — especially with portable albeit, expensive satellite radios beginning to enter the market.

"It's also a matter of changing industry habits as far as advertisers go," Fratrick said. "These guys have been used to producing and selling 60-second ads for a very long time now."

Fratrick said the value of local broadcast properties "remain decent," but because of huge large-market consolidations over the past several years, there are not a lot of major properties for sale at any given time and value fluctuations, if any, can be hard to gauge.

"I think (traditional) radio is still a very viable medium," Fratrick said. "It still pumps out decent cash flow, and I'm predicting radio revenue will increase 4.3 percent in 2005. That's slower than our overall growth nationally, and it's slow even for the radio industry itself over the years. But it is growth."

Copy

► Continued from page 25

that this advertising they just sold has to produce a result for the client. But they also know they've got many other potential clients to close before the week is done.

So what's the priority? Simple answer: To hit or exceed their monthly budget. Where does that leave the spot that has to be written? They still have to do it, so the act is being performed quickly and with little care.

Spots on file

I've seen several attempts in recent years to help account executives with this copywriting issue.

One company with which I worked created a resource of pre-written spots in categories. For example, if a rep needed a furniture spot, they'd peruse the "furniture" category on file and try to locate a piece of copy in which they could insert their client's name. Presto! Instant :60!

Some categories only had a few spots in them and you can guess what happened after the same copy had been used with different names a few times.

Another solution I've witnessed has been to offer account executives help in the form of copywriting seminars. At one I attended, the account executive spent a entire day learning how to write better copy, in between returning and making phone calls to clients they were trying to close. At another, I witnessed a series of brief workshops

If this processor were any hotter...

you'd need asbestos headphones.

The new Omnia-3fm Turbo gives you features you might not find even in processors that cost a lot more. Here's a small sample of what you'll get:

- Adjustable, oversampled three-band limiter and three-band Automatic Gain Control section for smooth, clean sound that's as loud as you want it to be.
- Omnia Bass Management System provides up to 12 db of bass boost using specially designed, time-aligned algorithms for the loudest, cleanest low end ever.
- Remote control your way: standard serial and optional modem and Ethernet connectivity let you tweak your sound from anywhere, any time.
- Famous Omnia non-aliasing, distortion-controlled composite clipper helps you achieve the clean, loud sound you've been dreaming of.
- Full-featured I/O with analog, AES/EBU and composite ins and outs.
- A double handful of format-specific presets to get you up and running quickly.

Announcing Omnia-3fm Turbo.

There's a reason we call it "Turbo." This new Omnia has more than enough DSP muscle to grab and hold button-happy listeners, and burn your brand into their memory. Omnia-3fm Turbo's 3 new bands of AGC, 3 bands of precision limiting, and distortion-cancelled clipping stage work in harmony to deliver bold, thumping low end, crystal-clear highs and the warm, natural, open feeling for which Omnia is famous.

Clients rave:

"We raced Omnia-3fm Turbo against the Orban 2300 and DSP-X, and the Omnia was the loudest, cleanest and best box by far. This processor is incredible! It's like hearing the original Omnia again for the first time."

— Mike Oberg, WGM0-FM

"We installed two Omnia-3s... our competitors have noticed the change in the audio quality, and they are wondering what our stations have that they don't!"

— Allen Osborne Maldonado, Cocatel, Honduras

"We installed the Omnia-3 on KQAK-FM and noticed an immediate difference - so did our listeners! We sound louder, crisper and better than ever before."

— Keith Shipman, KQAK-FM

The new Omnia-3fm Turbo has a US MSRP of \$3,995.00. But for a limited time, you can get it for only \$2,995.00. Call your Omnia dealer for details.

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For AM audio that peels paint off the wall, you want the flamethrowing Omnia-5EX HD+AM, with simultaneous processing for conventional AM and HD Radio™ broadcasts.

Put the power of Omnia in your Windows® PC! Omnia A/X works seamlessly with Real, Windows Media, MP3 streaming encoders and audio production software to make your streaming audio sound fantastic.



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World Radio History



Buyer's Guide

Radio World

Profanity Delays & Logging

January 19, 2005

USER REPORT

OMT Logs Air Signal, Shows for WMET

The Company's iMediaLogger Offers Four Recording Modes, Archives Content

by **Brian Rose**
VP of Engineering & Technology
WMET(AM)
Liberty Broadcasting

NEWARK, N.J. Back in 2001 I moved the Las Vegas headquarters of Talk America Radio Networks (now Liberty Broadcasting) to Newark, N.J. There was a timeline given for the move and not much other instruction from the new owners. I talked with the operations and production staff members to determine their specific needs and what could be automated to take some of the tedious details out of the network's operations.

After speaking to three or four automation providers and their clients, we went with OMT's suite of automation products, including their iMediaLogger digital logger.

iMediaLogger is a software-based audio logging, skimming, content archiving and storage system, suitable for compliance logging for stations legally required to log program content; time shifting and delayed broadcast; auto-recording without spots for "Best Of" shows; and digital archiving.

Four recording modes are offered: Digital Logger is designed for continuous logging of material; Mic Skimmer records only when the talent mic is on; Reverse Skimmer records only when the talent mic is off; and Time-Shift recorder is used for scheduled recording with time and/or network/satellite queues.

The logger's use at Liberty Broadcasting has grown from one channel and three feed schedules to four channels and more than 150 scheduled events. Its interface is easy to use, and the recordings and schedules can be adjusted easily. The most recent version of iMediaLogger has enabled us to copy feeds as opposed to making new ones, saving us time

top of the hour and playing it back as a dead roll in the following hour on our backup iMediaTouch on-air system in the main



The author uses iMediaLogger to log WMET's air signal and shows, and then play back segment-by-segment overnight without staff involvement.

in setting new and temporary feeds.

Lifesaver

Since our first iMediaLogger, we have added over 250 GB of storage to its server to expand its capability. The iMediaLogger's reliability and ease of use has increased with each release, as we have seen improvements in the three years we've been using it. When we first started using the system we used just a single feed, and it worked well. As we started adding feeds, we had a few glitches and crashes, but we were able to get the system back up and running after working with OMT support.

One of the features for which we use iMediaLogger is recording the news at the

studio. It is rare that we go to it, but it's a lifesaver if you need it.

We log our air signals 24/7 on both our network channels, and logging is done in both a high-quality feed that can be re-aired and used for segments, and a low-quality feed we use for archive purposes.

The low-quality feed is used as an audio affidavit for the sales department, air-check for hosts and show producers and for the possible proof needed for indecency accusations. The high-quality stream can be broken up as demo segments or used by affiliate sales to send out an immediate air check if a station requests a specific show from that day. These are broken up at the hourly boundaries.

Additional feeds have been added as new shows and new features are added to the network. We also like to capture segments from weekday shows that are replayed on the weekend. The segments are recorded directly into our OMT audio server and automatically added to the database, where they are available for replay in the on-air studios minutes after they finish recording. All recorded segments go in our dead roll category and are automatically named according to show, time, date, and segment number.

As noted, we have over 150 distinct feeds and schedules across four audio sources that use both time and closures to start and stop recordings. iMediaLogger has a purge feature that we have tried to use, however it is the one feature we have had trouble getting to function.

We are using a separate four-channel iMediaLogger system at WMET(AM), our flagship station. We log the air signal as well as other shows and then automatically playback segment-by-segment overnight without any staff involvement. This has allowed us to reduce overnight staffing.

There is another use for iMediaLogger in conjunction with OMT's LogTools Module. When a board operator makes a mistake on-air that either misses spots or causes dead air, we can go to the LogTools Module and determine what keystrokes and changes were made in the control room and then listen to the result. This can be useful in training and in providing proof of error. With OMT software, our operations and engineering staff don't wonder what caused a discrepancy on the air.

OMT's iMediaLogger is a useful tool in our facility for reducing costs, staffing, increasing efficiency and proof for indecency issues that may arise. OMT has worked us through the few reliability issues, and done thorough testing to ensure that new versions have increased uptime and overall reliability.

For more information, including pricing, contact OMT Technologies in Canada at (204) 786-3994 or visit www.omttechnologies.com.

TECH UPDATE

BSI Skimmer Records in Loop to Keep Files Fresh

Broadcast Software International describes its Skimmer audio logging system as a tool for program directors and air talent to check themselves and the competition. The program records audio by time segments, enabling the user to check any second of any hour, or compile and export different hours to create "best of" shows. Small clips can be exported for promos and liners.

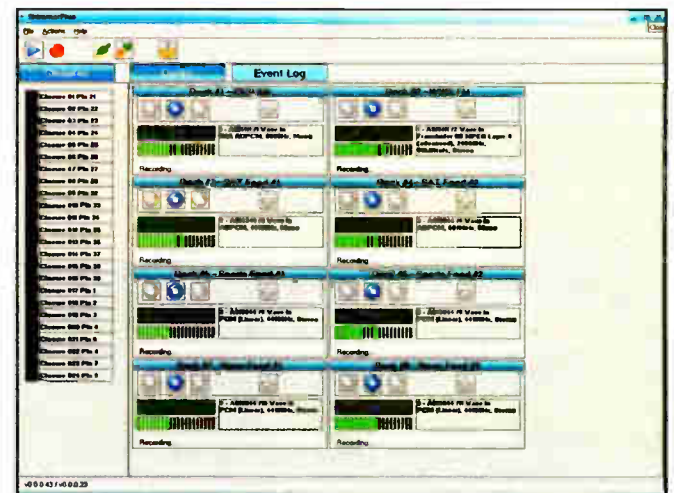
The company says one of Skimmer's best applications will be in countries that require a period of a broadcast to be recorded and stored for legal reasons. Skimmer records in a loop, so that once the hard drive is full, the oldest files will be erased to make room for new ones. Media services can use Skimmer for verification purposes, as the system records any audio stream.

Features include the ability to create compressed or non-compressed files and save files by time and date; 32-bit Microsoft Windows software; and file integration with MS Windows Explorer. Additionally, the program records until the user tells it to stop.

System requirements include a Pentium 200 CPU; 32 MB RAM; 10 MB available space drive; ATAPI or SCSI CD-ROM; and MS Windows 98 SE, NT 4.0 workstation or 2000 Pro.

Skimmer software can be downloaded from the BSI Web site.

For more information, including pricing, contact Broadcast Software International at (888) BSI-USA1 (274-8721) or visit www.bsiusa.com.



TECH UPDATES

Prophet DigiLogger Offers Access to Logged Data

DigiLogger is Prophet Systems' standalone audio logging and digital archiving program, which the company says allows broadcasters to retain audio using compressed or non-compressed audio formats, including MP3, MPEG 1 Layer 2 and WMA.

DigiLogger is expandable, enabling simultaneous recording from one to 16 sources (mono or stereo), with multiple bitrate storage per recording channel. Recording lengths and times are configurable.

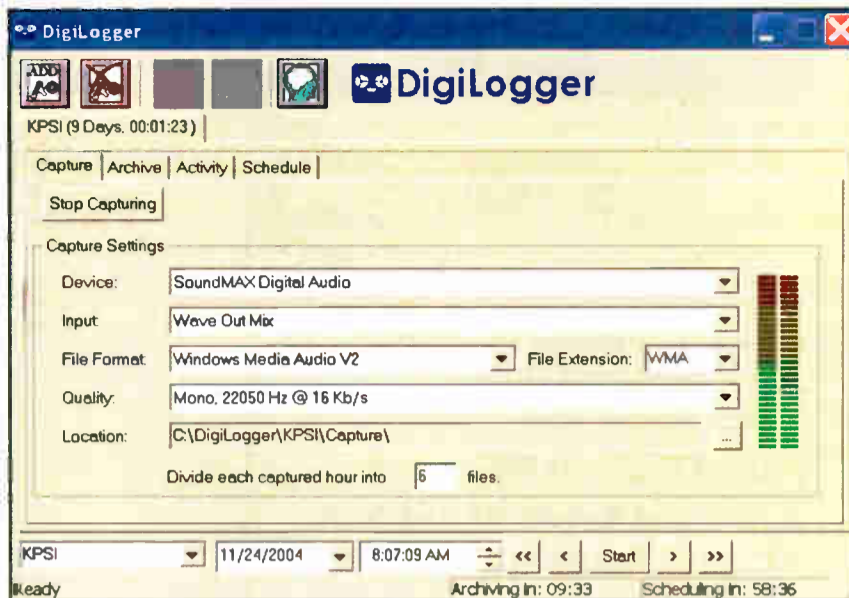
Recordings can be organized by channel or time, and can be accessed via network or remotely via Web page, with direct playback from a Web browser, which allows the audio to be reviewed from the desired location. VU metering displays the current status of the recording. Logged data can be accessed to pinpoint a specific

break, bit or spot for review from an Internet-ready computer.

Minimum hardware requirements include P4, 2.4 GHz or 120 GB, and either Windows 2000 or XP Professional operating platforms.

The DigiLogger base license allows recording if a single audio channel using standard audio cards. DigiLogger also can use multiple-input cards, including the Echo Layla3G and the AudioScience family of cards.

For more information, including pricing, contact Prophet Systems Innovations in Nebraska at (308) 284-3007 or visit www.prophetsys.com.



Air Tools 6100 Delay Offers Editing Features

The Air Tools 6100 broadcast profanity delay is a 24-bit unit that Symetrix says is suitable for live or syndicated broadcast that prevents unwanted profanity or comments from reaching the airwaves. The 6100 offers up to 40 seconds of user-definable delay at a full 20 kHz range of stereo bandwidth, useful for music and speech.

Features include an automation control interface; ESE TC89 time code input and output to allow for real- and delay-time displays; AES-3 digital I/O; and RS-232 and RS-485 control ports.

The 6100 works by first connecting the main programming output from a studio console. When the show begins, press Start, and the unit begins digitally stretching the program, creating up to 40 seconds of user-defined delay. If a guest makes an unwanted comment, or the operator wishes to delete content, press the Dump button and continue on with the program. The unwanted material, up to the last 40 seconds of the broadcast, disappears.

Another way to get rid of unwanted content is with Cough. In the middle of a broadcast, a host may need to say something off-air to guests or have a drink of water. The Cough button enables the station to edit out unwanted airtime, then release it when finished. The broadcast picks up again.

The 6100's automation control interface offers a network syndicator the ability to trigger automation changes or control a router with "delayed" contact closures. Four TTL logic inputs digitally tag the audio on input and close the corresponding relay when the tagged delayed audio reaches the 6100's output.

At the end of the program, pressing the Exit button enables the unit gradually to leave delay mode until the show is in real time.

Air Tools also offers a model 6000 broadcast profanity delay. This unit is similar but does not feature the AES-3 I/O; word clock input; ESE TC89 code input; RS-232 and RS-485 control ports; TTL contact closure inputs; or automation/router relay outputs.

For more information, including pricing, contact Symetrix in Washington state at (425) 778-7728 or visit www.airtool-audio.com.

DSPX V2 now available

V2 software of the UK designed and built FM - DAB - NET digital audio broadcast processor is now available

- 18 24-bit DSP's provide over 1 GIGA-MIPS of processing power
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USER REPORT

BD-500 Gives Stern Warning

'The Bone' Opts for Eventide's 40-Second Delay After Picking Up the Dicey Morning Show

by **Jeff Smith CEA, CBNT**
Director of Broadcast Systems
Nassau Broadcasting Partners LP

PORTLAND, Maine Imagine you are in the middle of rebuilding studios at a newly acquired radio group, and the vice president of programming tells you that one of the most controversial syndicated morning shows on the air today will be starting on that station in two weeks. With that said, we know we must install the maximum indecency protection available, and it has to have multiple layers of delay and be easy for the board operator to use.

In the past, achieving multiple layers of delay meant you were cascading delays, which is not the optimum solution.

We looked at all the available options and came to the conclusion that the **Eventide BD-500**, with its 40-second delay, was the only route for us. We had used the 8- and 20-second versions of this delay in the past with great success, but this would be our first experience with the 40-second version.

Our initial concerns with a delay this long are its build-up and ramp down. We were concerned that creating a 40-second delay would take a long time and sound obvious on the air. However, we were relieved when we discovered the unit could build a 40-second delay in about 240

seconds, and without being noticeable on the air. Additionally, we liked the fact that the BD-500 could ramp to zero in about 120 seconds without being noticed.



The author is shown with the BD-500 (bottom).

The unit was simple to configure and many of the factory default options never need to be changed. We needed to tweak the output attenuation so that switching between bypass and online was not noticeable, but other than that all the default settings worked just fine for us. From a board-op perspective, the unit cannot get much simpler — although as an engineer, you realize some of the complexities of the unit.

About five minutes before the start of the morning show, the board op hits the Rebuild button and the delay slowly starts to build until it reaches 40 seconds. Again, this takes about 240 seconds. The listeners do not notice any pitch change or any of the digital artifacts heard with other delays while the delay is building. Once the delay

reaches a set minimum amount of delay — the factory default is four seconds — the Dump button will illuminate.

When the show is over, all the board op has to do is hit the Ramp to Zero button and the delay will slowly diminish to 0 seconds. This takes about 120 seconds to accomplish and is not noticeable on the air.

Since installing the Eventide BD-500 at WHXR(FM) 106.7 and 104.7 The Bone in Portland, Maine, in January of last year, we have had zero problems with it. The BD-500 has continued to provide us the protection we desire and is unnoticeable to the listener. It really is

The unit can build a 40-second delay in about 240 seconds, without being noticeable on the air.

reaches a set minimum amount of delay — the factory default is four seconds — the Dump button will illuminate.

At this point the user knows the delay is operational and the Dump button could be hit if needed. The delay will continue to build to 40 seconds, which is the maximum amount of layered protection.

One of the best features of the BD-500 is that even though the delay is 40 seconds, when the Dump button is hit, it does not dump all 40 seconds. You can set how much time you wish to dump. This feature gives multiple layers of safety with one delay. The factory default dump time is 3.0 seconds but can be set

what the engineers at Nassau Broadcasting look for in a device — easy to install, easy to operate and dependable.

The Eventide BD-500 comes standard with a 20-second delay; the 40-second delay is an extra-cost option available when the unit is ordered. If you already have a BD-500 in the 8- or 20-second flavor with digital I/O, the unit is field-upgradeable to 40 seconds. If your unit is fully analog it must be sent back to Eventide for the upgrade, which will include the digital I/Os.

For more information, including pricing, contact Eventide in New Jersey at (201) 641-1200 or visit www.eventide.com.

USER REPORT

ReeLogger, RL2000 Archive Content

KTC Technology Offers Digital Audio Logging Software for Single, Multi-Channel Applications

by **Cliff Wheeler**
Chief Engineer
Technical Supervisor
CKGY(FM)/CIZZ(FM)

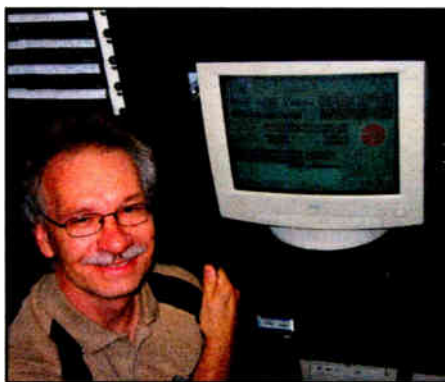
RED DEER, Alberta In 1999, my reel-to-reel logger machine was due for replacement. A new reel-to-reel logger and 32 reels of tape amounted to a substantial investment. When I factored in the maintenance of a tape logger

had recorded material was to rewind the tape and play it back. Not knowing if the last six to eight hours of material had been recorded was a huge drawback.

I needed something that would run 24/7, have low operational costs and could be monitored instantly.

I decided to give a computer-based digital audio logging system called ReeLogger by Alberta-based **KTC Technology** a try. Could a computer be

ReeLogger is capable of storing up to three months of a station's audio without user intervention. At the month's end, the system "rolls over" automatically, elimi-



nating the need to change tapes, etc. It uses an industry-standard audio storage format, and is flexible in accessing audio log files, either in-house via LAN or via remote access.

The two mono "off air" feeds of our stations are recorded by splitting the stereo input of the sound card, one in the left and one in the right. The output from the sound card monitors what was just recorded. The only problem experienced with the software was during daylight saving time, and this was rectified quickly.

No more expensive tape media to buy. No more head cleaning. No more pucks to service. It just runs. ReeLogger is now a standard throughout our chain of radio stations, and I now have a second ReeLogger

that has replaced the old VCR machines.

The ReeLogger software works on all Windows operating systems (Win 95 OSR2 and up), and allows you to record at 30, 60 and 90-day intervals. It uses RealAudio as its audio format.

The program also has a skimmer/scheduler mode. The skimmer is controlled through the game port and the files can be named and stored according to when or how they are recorded. If audio is to be sent out, a simple program completes the ReeLogger software package and copies the files onto a CD.

Share the files on a network and operators can retrieve that great interview they forgot to record or that great bit they just did on the air. Set the codec to a high-quality setting and they will have "better than skimmer machine" audio. ReeLogger also can be used to record the competition.

For those that have more than two stations, KTC has software called RL2000 that will record four stereo streams simultaneously.

KTC Technology calls RL2000 an evolution of ReeLogger, as it works as a multi-channel radio station logging system in a box, a multi-channel aircheck skimmer in a box or a combination of the two. RL2000 runs on most off-the-shelf personal computers.

The ReeLogger software has convinced me that a computer-based system for logging audio is possible. A casual glance at the monitor screen lets me know all is well.

For more information, including pricing, contact **dcsTools** in Minnesota at (952) 949.9450 or visit www.dcsTools.com.

ReeLogger is capable of storing up to three months of a station's audio without user intervention.

machine and occasional tape replacement costs, it was obvious that I could no longer log the radio stations on tape medium.

I was already using VCR machines as a second logger device, but they did not allow monitoring of what had just been recorded. The only way to ensure you

reliable enough to be a logger? I was willing to find out. I purchased a PII/400 computer from a local vendor with 32 MB of RAM running on Windows 98. I installed the ReeLogger software, configured the amount of days to record and what codec to use, and the unit started automatically.

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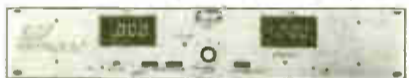
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TECH UPDATES

Net-Log Adds G.729 Algorithm for Speech

Sonifex says its Net-Log audio logger is the most recent in its line of equipment for radio station output recording, following the Sentinel in 1995, which recorded to DDS data DAT tapes, and a later model that recorded to hard disk before streaming to DAT.

"It wasn't long before our customers were asking us for a different system, one where audio playback could be made from any desktop and preferably across a standard IP-based network," said the company's Marcus Brooke.

Sonifex says Net-Log was designed as dedicated recording hardware with an internal IDE drive, which means there is no PC inside the unit.

"While PCs are fantastic for interfacing and audio playback, we didn't feel that we



could rely on a PC-based system to record 24/7 for 365 days a year," Brooke said.

Net-Log is a four-channel device offering MPEG compressed audio, compatibility with existing systems and automatic operation with accompanying software. Audio created by Net-Log is Windows Media Player-compatible, so files can be e-mailed to colleagues and customers, and played out on PCs with a sound system.

Recent enhancements since its 2001 debut include the addition of the G.729 recording algorithm for speech-based audio. The company says it implemented the algorithm because the amount

of data required for spoken language recordings can be reduced by a factor of between three and six, which enables longer recordings to be made on the internal disk, lower network traffic when archiving audio to a server and rapid playback across the network.

A software transcription package, D:Scribe, was added to so that recordings made in Net-Log can be archived and transcribed using a foot-pedal to control playback.

For more information, including pricing, contact Independent Audio in Maine at (207) 773-2424 or visit www.independentaudio.com.

ProFiler 2.0 Offers Multi-Stream Recording, 'SmartSkim'

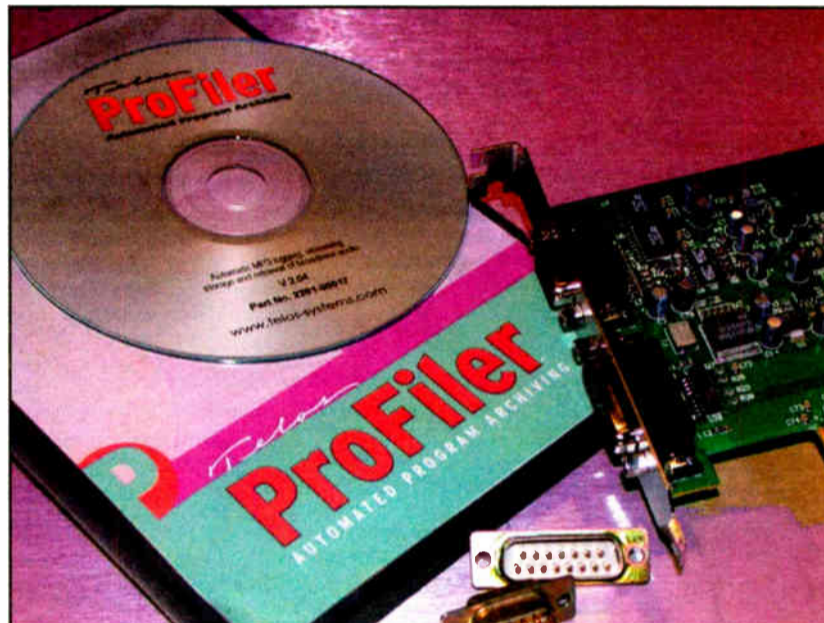
ProFiler 2.0 automated program archiving software from Telos Systems logs program audio to time-annotated files using MP3 compression with a range of bit rates. Users choose to store logged audio on a local hard drive, a Web or FTP server or networked drives for remote auditioning of archived content. Stored audio is time-stamped and stored in 15-minute blocks.

The company says ProFiler offers a suite of skimming tools to capture programs for rebroadcast, and to facilitate quick assembly of airchecks and composites. The "SmartSkim" mode allows users to archive non-critical programming, as low-bitrate logging switches to a user-specified higher bitrate for captures when talent is on-mic. Additionally, remote users can audition secure audio streams via LAN, WAN or the Internet during capture, which Telos says works well for remote listening by managers, program directors and consultants.

Features of ProFiler 2.0 include support for recording multiple simultaneous program streams using multiple audio cards, as well as mono stream support using a single stereo audio card; expanded GPIO support; and file export controls. An integrated logging scheduler enables capture at user-determined times.

ProFiler runs on a standard PC under Windows 2000, and comes with a Telos professional balanced-I/O audio card. Applications include government-mandated content logging, program archiving for rebroadcast or Internet streaming, commercial playout verification and recording live events and contest lines.

The ProFiler Live Player Software, included, lets the user listen to audio over an IP connection as it is being encoded, dependent upon the available bandwidth. The



Archive Player software, also included, allows auditioning of logged audio via LAN, WAN or the Internet. Locally stored audio can be auto-archived to an external drive or device including network storage drives, CD-ROM or other removable media.

For more information, including pricing, contact Telos Systems in Cleveland at (216) 241-7225 or visit www.telos-systems.com.

Digital Jukebox Says: Log Yourself, Or Log 10 Stations

Digital Jukebox says it offers two audio logging software products: the first for logging one station in stereo or two in mono; and a second that records up to 10 radio stations on one PC in mono.

The Digital Audio Logger enables the user to set up the hours and days of the week for logging, the sampling rate and bit rate for low-quality logging. Additionally, the user can tell the software to record certain hours on certain days of the week for "best of" shows.

The company says Digital Audio Logger is suitable for stations that are required to log program content. It works with a Windows standard-issue audio card, and saves files as MP3 files, which can be listened to on a Windows MP3 player. Files recorded are one hour in length.

The MLogger program records up to 10 radio stations using one PC. The user can run up to five instances of the MLogger on the computer, and use up to five audio cards or a single multi-channel record card.

MLogger allows the user to record segments of 15, 30 or 60 minutes in length. After the files are recorded, the software splits the left and right channels into separate audio files. Digital Jukebox says MLogger is suitable for media monitoring companies and radio stations that want to log their own radio stations along with the competition's.

For more information, including pricing, contact Digital Jukebox at (740) 282-SOFT (7638) or visit www.digitaljukebox.com.



Logitek Consoles Support Profanity Delays

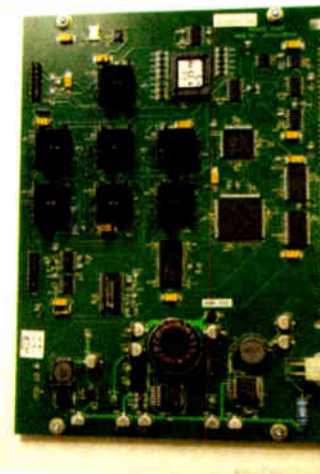
Logitek says users of its digital consoles can now integrate multiple profanity delays into their console system with the optional SharcAttack multi-DSP card, which allows several 10-second delayed audio feeds.

The SharcAttack DSP card is installed in the Logitek Audio Engine, an audio router, which the company says acts as the hub of its digital console systems. The system is then programmed to provide delay build-up during normal programming. The user has the option to dump half of the delay, five seconds; reserving another five seconds for quick use if necessary; or dump the entire 10-second delay, using a programmable button on the Logitek console or other interface.

The company says a recent purchaser of its console systems used this capability for providing multiple sports feeds for fall football. The customer purchased four Audio Engines with a combination of analog and digital I/O cards and three Remora consoles. Five SharcAttack cards with extended delay capabilities were provided so that the customer could feed

six 10-second delayed stereo streams from each card. Logitek President Tag Borland created a software interface for controlling the delays.

For more information, including pricing, contact Logitek at (800) 231-5870 or visit www.logitekaudio.com.



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Collins 21E, 5KW tuned to 1250 Khz, PCB's removed, spare tubes, makes full power, located in New Hampshire, BO. Lou Muise, WXRV, 30 How St, Haverhill MA 01830. 978-374-4733.

DB Electronica 2.5 KW FM transmitter on 93.5. Approx 8 yrs old. Exciter completely reworked recently. Working when removed from service in 6/04. Some extra parts and 3 tubes, BO. Call Gordon or Travis, KLEY, 338 South KLEY Dr, Wellington KS 67152. 620-326-3341.

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Jim Hoge
 President and GM
 WPOZ/WEAZ
 Orlando, Fla.

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◆ READER'S FORUM ◆

Radio World, January 19, 2005

View From the Trenches'

As the general manager/chief engineer of a "small-market" station operating in the shadow of one of the largest markets in the country, I have been dismayed about the whole IBOC/degraded AM band arguments of late.

The direction in which the AM band appears to be heading seems totally out of control from a small/medium-market standpoint. It looks as though the entire AM industry will be decided by those who own the most stations, without any regard for us "local" boys who have been servicing our markets with real live, locally produced content.

I really get a chuckle listening to the big guys worry if John Q. Public will be able to hear their mass-produced program from station X several states away. Try competing with more than 30 higher-power stations with a daytimer of 500 watts. We are here in the trenches providing daily news and community information at the local level, which can't be found on any of the regional stations. We are 80 miles north of Seattle on Whidbey Island, and of course are totally "covered" by the station groups in the big city.

Because we are just a daytimer, we get a lot of inquiry from our listeners wanting to know when we will be able to stay on all night and continue with their local news, traffic conditions and weather forecast. I wish I had an answer for them. In doing tests, we have found that, even using 250 watts, none of the big city stations would know we were here. There are enough other signals around at night that we would only cover our immediate island, about a 20-mile radius — more than enough to satisfy our core listeners.

I have even explored the "nighttime waiver," but alas, the FCC has things to worry about other than some little daytimer out west. Bottom line, if you don't have big bucks or a big corporate voice, not much is going to be done in your corner. I have yet to figure out where all this "localism" interest is really going with the FCC, as it doesn't seem to involve us local-market stations.

I guess I should define "local market." We only cover news of a local nature, i.e. the immediate small towns we serve — city council news, service organizations, chamber news, school news and sports, etc. We leave the national and world news to our news service, CNN. If you want to know who was doing what in town or the latest high school scores, we have it.

My two cents on the Howard Stern impact? Peanuts. It's about time the groups woke up and realized just how much the general public is sick and tired of the irresponsible programming that has plagued our industry. Howard won't lose a thing. Those who wish to listen to his type of show will gladly subscribe to the service that will carry it.

Regarding "Stern Makes Radio Look in the Mirror" (Nov. 17), it's ironic that the author is wondering where we are going to find the new talent for their live local product. Look to the small-market stations. The farm system is still here — it never went away. Most talent get their start at stations like ours. Whether they are college or v-tech graduates, they will cut their teeth here.

Do you want good fresh talent with dedication to the show that comes through on the air? Then by all means check out the rest of the dial at the local level.

Rick Bell
General Manager & Chief Engineer
KWDB(AM)
Oak Harbor, Wash.

Save What's Left of AM

So Clear Channel is not content with lowering the quality of programming and local service on their radio stations, now they are lowering the technical quality on their AM stations by reducing bandwidth to 5khz. And if that's not enough! They propose that all AM stations do the same!

I was further disappointed to see Radio World applaud this bone-headed idea.

AM radio needs reduced bandwidth about as much as Clear Channel needs another radio station. I do not know who these people are that Mr. Littlejohn says cannot hear the difference. I have a hereditary hearing impairment and I can hear the difference, quite noticeably thank you. Why bother with the expense of high-end digital boards, storage and workstations, RE-20s, Sennheisers, etc. if no one can hear the difference?

The radios I listen to primarily include a Mopar RB-1 in a 2004 Grand Cherokee, which has atrocious AM quality, though I can still hear the difference; an old GE Superradio-1; an old Sony ICF-9740; and an old Realistic AM-Stereo radio in another car.

When my local Clear Channel station reduced its bandwidth, I mistakenly assumed something like STL troubles, and that they were feeding the transmitter via backup phone line. I sought out an out-of-market station for the two syndicated talk shows I enjoy. Yes, I put up with a little more noise, but at least there is a little high-end there and it doesn't sound like listening over the telephone. Now that I know this is a permanent decision, perhaps it is time to check out what Sirius and XM have to offer.

In the case of my Jeep, it is Sirius-ready. I think Clear Channel's initiative will sell a lot of radios. I'm considering selling mine.

Don't be surprised if next, Clear Channel lobbies to change channel spacing to 5khz, making it possible for them to double their AM count.

Those who want to "improve" AM radio by reducing the technical quality of the signal, please — do yourself, your company, the broadcast industry and the listening public a favor. Get out of the business now while there is still something to save. Let those of us who still give a damn about quality try to save what's left.

Allen H. Dunkin
Atlanta

Thanks, Mom (and Pop)

Excellent piece on KPYK(AM), Mom and Pop ("KPYK Is a Real Mom and Pop Station," Oct. 20).

Always refreshing to hear and read about people who just plain love being in radio.

Robert E. Richer
Farmington, Conn.

Our readers have something to say

"As a station owner/operator, broker, consultant, former broadcast engineer and broadcast veteran of 40 years, I read many publications. On top of my reading list for over 20 years has been Radio World... These guys write the way I read!"

Mike Rice
Willimantic, Ct.

Radio World

The Newspaper for Radio Managers and Engineers

GUEST COMMENTARY

'Let's Keep AM Sounding Good'

The Movement to Reduce AM Radio Bandwidth Ignores the Realities of Hearing and Hardware

by Dana Puopolo

I have been reading the discussion about reducing AM audio frequency response to 5 kHz. First Clear Channel implemented it, then Crawford. Now even Radio World has endorsed it.

Right now AM bandwidth is fixed at 20 Hz-10 kHz. This is the result of the NRSC standards that were set over a decade ago. Prior to this standard, AM stations had no limit on their high-frequency response, which caused problems due to the 10 kHz spacing between AM channels.

The NRSC studied the problem and came out with a sane answer: a 10 kHz steep audio roll-off.

Group delay distortion

The 10 kHz bandwidth reduction is achieved through a steep-slope low-pass audio filter just before the transmitter that cuts off everything above 10 kHz.

Unfortunately, steep-slope filters can cause audible artifacts. Their biggest problem is called group delay distortion. To understand what this is, let me explain.

We all know that playing an "A" on a piano sounds drastically different then setting an audio oscillator to 440 kHz. What makes them different is that the piano not only produces the fundamental frequency, it also has harmonics added.

The harmonics extend past the limits of human hearing, which is 20 kHz. Each and every sound has its own unique harmonic structure. To recreate any sound accurately, the reproduction equipment must have flat frequency response, low distortion and noise and a flat time response.

Group delay is exactly what it says: delay. As you approach the cut off frequency of a fil-

ter, the frequencies begin literally to slow down as they go through the filter. This means that they arrive after the fundamental and other harmonics.

We usually perceive group delay as a "phasing" to the audio. Group delay gets worse with the complexity of the filter. This is why audio purists prefer gentle-slope filters to steep-slope ones in crossovers.

Another characteristic of human hearing is that it is not flat — the average adult has a broad peak in his hearing response centered at 3 kHz. This is why a small adjustment of the 3 kHz band on a graphic equalizer makes such a big difference compared to the high- and low-frequency bands.

Now let's see what happens when we move the frequency response of that NRSC 10 kHz audio filter down to 5 kHz. First the bandwidth reduces to 5 kHz. Next, group delay distortions are now occurring at 3.5 kHz.

Some engineers with good intentions have replied to me saying modern computer digital filter design can produce audio filters that have low group delay response right to their cutoff. This is quite true. But there's a second filter that is in cascade with the audio filter over which we have no control: the filter in the receiver.

Frequency response

It's well known and documented that most AM radios have terrible high-frequency response. Manufacturers do that because it is a cheap way of improving selectivity in the radio.

We've all seen the frequency response measurements of a "typical" AM radio — audio response down 6 or more dB at 4 kHz. Let me clue you into something else: the IF filters in the radio also produce group delay. This group delay can multiply with the delay in the audio

Will You Submit?

News is a conversation, not just a lecture. That's how media executive Jeff Jarvis sees it, according to an interview with the Poynter Institute's Steve Outing.

They were discussing online blogs; but the point is valid for us in the print media as well, even those who cover radio. "The story doesn't end when it's published," Outing wrote, describing Jarvis' view, "but rather just gets started as the public begins to do its part — discussing the story, adding to it and correcting it."

Radio World has long held this view. That's why we so often encourage readers to write to us. We've endeavored over the years to create a marketplace of ideas in these pages. In 2005 we encourage you to be an active part of it.

Do you find yourself muttering about something in RW? Do you want to say, "Yea, right on" or "H-o-o-ld on a minute" after reading a quote or a letter? Tell us about it.

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Take a photo. Got a tech tip? Did you solve a problem in an unusual way? Is the station engineering staff rigging a new antenna, wiring a studio, moving a transmitter? Take a digital or print snapshot and send it to us.

Propose to write a researched story. Non-opinion articles written on assignment for RW are paid, and a nice addition to a professional résumé.

Whatever you do, don't sit silent. We want to hear your strong opinions — about bandwidth, surround sound, digital radio, consolidation, programming, satellite radio, indecency, whatever is in your craw and that pertains to the U.S. radio broadcast industry.

News is a conversation. Talk to us at radioworld@imaspub.com.

— RW

filter causing severe audio artifacts. The NRSC realized this when they set the cutoff frequency of their filter above the response of the typical AM radio. Now some want to put it right in the middle of the typical AM radio's response.

This is a disaster waiting to happen. If you don't believe me, listen to any AM talk station that's implemented these filters. Here in Los Angeles it's KFI(AM), and their phone calls sound far better then their announcers do. Why? Because the phone is steep-slope filtered at 3 kHz, well below the frequency response of the audio filter.

In the early 1990s I was chief engineer at WHDH(AM) 850, Boston, one of the two big talk stations there (now known as WEEI). Our directional pattern was designed in the late 1940s and protected KOA in Denver. Unfortunately, the metro had grown west quite a bit, and listeners west of the transmitter in Needham used to complain they could not get us after sunset.

One feature of the unit enabled the user to change the response of its audio filter. Over a period of several months, we experimented with audio responses of 4 kHz, 5 kHz, 7.5 kHz

and 10 kHz. The entire radio and TV station was involved; even interns listened on air and gave their input.

The results were that audio responses of 4 and 5 kHz caused a "phasing" sound that most did not like. The effect was minimal at 7.5 kHz and could not be heard at all at 10 kHz. We settled on a final audio response of 7.5 kHz.

To me, this confirmed in the field what's predicted in the lab: Steep-slope audio filters with cutoffs at or below the typical response of an AM receiver should be avoided. Yet this is exactly what the proponents of limiting bandwidth to 5 kHz propose to do.

If you truly need the extra quarter dB of loudness, a good compromise is to employ a cutoff frequency of 7.5 kHz.

Over 20 years ago, I remember reading a sentence in the back of the original AM Optimod manual. It said, "The future belongs to the quality conscious." To me at least, that's even more valid today. Let's keep AM sounding good. Let's set AM technical policy based on solid engineering study and measurements, not "junk science."

Dana Puopolo is the market chief engineer for Los Angeles-based Multicultural Radio Broadcasting Inc. He lives in Santa Monica, Calif.

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