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'Great, Right? No!'
Your letters about AM HD Radio.
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The Elephant & the Oak Tree
An old joke reflects a growing realization about IBOC.
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Radio World

$2.50 | The Newspaper for Radio Managers and Engineers | October 24, 2007

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▼ David Rehr looks into the future as NAB announces its "Radio 2020" initiative. Coverage of industry news and digital radio developments from the NAB Radio Show.

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Citadel Re-evaluates Nighttime AM HD-R

Interference Complaints Leads to Nighttime HD-R AM Suspension

LAS VEGAS Citadel Broadcasting halted AM nighttime IBOC operations in early October after receiving interference complaints.

Citadel Director of Corporate Engineering Martin Stabbert said his company is taking a step back and evaluating the situation. The company's 10 AMs stopped nighttime HD-R operations as of Oct. 1. They are still broadcasting in HD-R during the day. Overall, 16 of Citadel's 66 AMs have converted and four more were in-process earlier in the month.

An excerpt from his memo to staff reads: "... In response to the lackluster performance, the limited benefit, and various reports of significant interference, Citadel is suspending nighttime AM HD operations at this time. Please reinstate your previous procedures for daytime-

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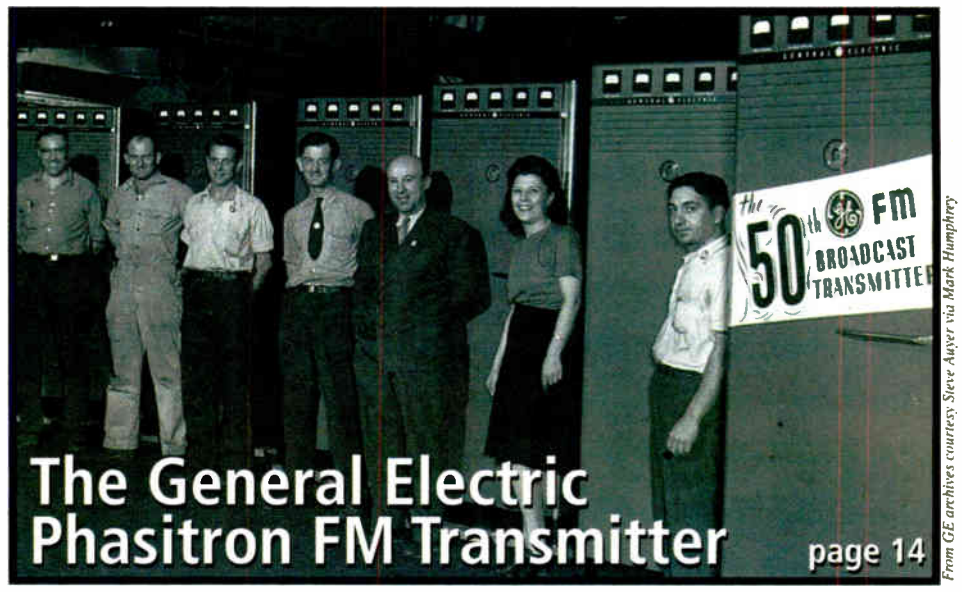


The General Electric Phasitron FM Transmitter
page 14

From GE archives courtesy Steve Auyer via Mark Humphrey

Rehr Seeks an Early Start to the Party

'Radio 2020' Is New Initiative; NAB Convention Also Debates Royalties, Translators for AMs

by Leslie Stimson

CHARLOTTE, N.C. "Victory or death."

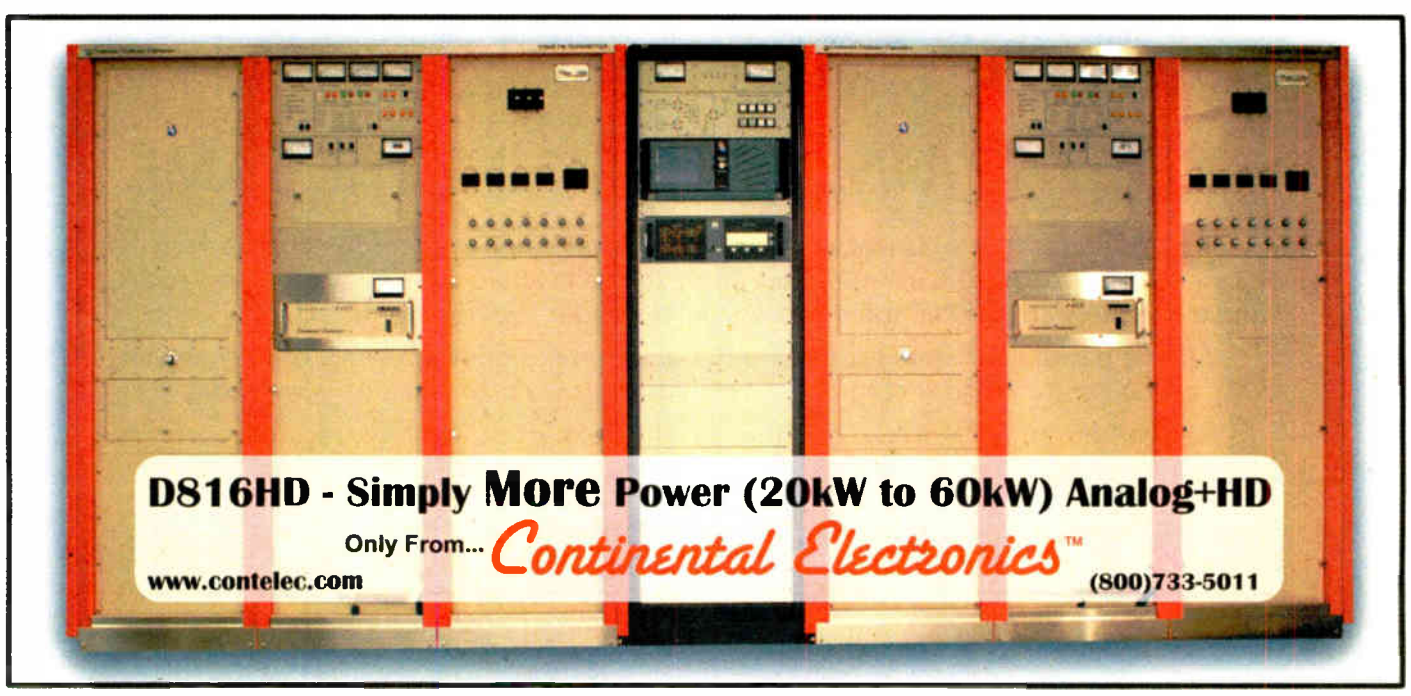
NAB President/CEO David Rehr conjured visions of General George Washington leading his troops across the Delaware River to fight the British as he rallied the radio industry to face radio's future assertively.

"Radio's value lies in the fact that it's accessible — it's everywhere and portable. If we don't tell this story, we let our critics voice their negative opinions about radio," said Rehr.

"That must end."

At the NAB Radio Show, Rehr came out swinging against a performance "tax" on radio by the record industry, the proposed satellite radio merger and the

See CHARLOTTE, page 3 ▶



World Radio History

NEWSWATCH

Shareholders OK Clear Channel Privatization

SAN ANTONIO, Texas Shareholders gave the go-ahead to Clear Channel to accept a buyout offer. The deal is expected to close by year-end, pending regulatory approval.

"Management and the new owners have incentive to close the deal soon, as shareholders are entitled to additional cash compensation if the deal does not close by Dec. 31, 2007," stated JP Morgan Analyst John Blackledge in a note to clients.

Investors approved the $19.5 billion buyout by a private equity group headed by Thomas H. Lee Partners LP and Bain Capital Partners LLC. The enhanced deal was at $39.20 per share in cash or stock.

AP reported that the current shareholders could end up with as much as 30 percent of the new company, which was seen as a concession in the bargaining that led up to approval.

According to preliminary figures, about 98 percent were in favor of the buyout, Clear Channel said. The buyers also take on $8 billion in debt.

Stanford Group analyst Frederick Moran stated the news "points in the direction of a positive completion to the Clear Channel privatization" and said recent stock market volatility as well as the credit crunch may have encouraged shareholders to vote yes.

News Roundup

SOUNDEXCHANGE said it reached agreement with 24 small Webcasters to continue operating through 2010 with "essentially the same terms" they've had since 1988. The agreements are retroactive to Jan. 1, 2006, the beginning of the current rate period. SoundExchange represents artists and recording labels; at its behest, in March, a three judge panel of the Copyright Royalty Board raised the royalties Webcasters pay to SoundExchange. As part of the agreement, small Webcasters would pay 10 to 12 percent of revenue. Noncommercial Webcasters also reached agreement on streaming royalties, however there's still no agreement for commercial radio Webcasters.

CPB awarded $235,000 to The Development Exchange, a public radio fundraising and marketing service organization, to create a "Major Giving Plan" for public radio stations. The program is modeled after a CPB television initiative. "The plan will devise strategies to raise the proficiency of major giving activity at stations, increase the number of major gift donors to stations and increase net revenue for the stations," the organizations stated.

DANIEL PLANTS of Triadelphia, W.Va., fell to his death in September while working to dismantle a storm-damaged tower in East Deer Township, Pa., a suburb of Pittsburgh. According to press reports, Plants was an experienced tower climber who worked regularly on tower sites in the area over 30 years. He was working alone and about half-way up the 200-foot WGBN(AM) tower when he fell. OSHA is investigating.

VERMONT PUBLIC RADIO became two distinct services on Oct. 1. VPR is providing news and information and public radio entertainment, while VPR Classical is a 24-hour classical music network. With the acquisition of WOXR (FM) in Burlington/Plattsburgh, VPR Classical is available to two-thirds of the state via analog and state-wide via VPR's HD Radio signals. "As we promote these programming changes, HD-R has become a key part of the message," station executives stated.

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Charlotte

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Copyright Royalty Board's decision to raise Internet streaming royalties.

The trade association was lobbying lawmakers and ran an ad protesting the "performance tax" in several Capitol Hill publications in late September that reads: "If it walks like a duck, and swims like a duck, well, you know..." NAB argues the performance royalty is a tax on radio that would force stations to pay twice for the music they air — ignoring the benefits that airplay brings to new artists.

The record labels say other audio entertainment media, such as satellite radio, pay the performance tax and terrestrial radio should too.

As for the proposed merger, still under reviewed by regulators in September, "NAB threw down the gauntlet," Rehr said. It characterizes the proposed merged entity as a "government-sanctioned monopoly" and argues that the "a la carte" pricing/channel options offered by both companies would actually cost consumers more money. The trade association will continue its efforts to oppose the merger, he said.

The 138-percent increase announced earlier this year by the Copyright Royalty Board for streaming royalties continue to concern the association. Rehr said the increase "threatens to bring a dramatic stop to a new medium still in its infancy: that NAB and our partners, RAB and the HD Digital Radio Alliance, will champion," said Rehr.

The alliance's job as part of "Radio 2020" is to promote HD Radio. NAB has joined that effort by spearheading a campaign targeting automakers and dealers.

The next phase of the campaign includes marketing through national and local radio and print ads. The groups are also "assessing initiatives" to get new talent in the creation of those ads, according to Rehr.

It sounds like the FCC is preparing to fine the satellite companies for the overpowered devices that XM and Sirius marketed in 2005–06. FCC Chairman Kevin Martin told attendees that while no more of those radios are being sold, "some may still be out there," and "the FCC hasn't released a financial penalty order on that yet."

It's unclear whether the devices continue to interfere with listening. Sources tell Radio World listener complaints about the issue have dropped off.

Photo © NAB

FCC Chairman Kevin Martin traded light-hearted digs with NAB Radio Board Chairman Russ Withers.

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radio streaming."

He said NAB was disappointed when SoundExchange, which distributes royalties to artists for record labels, dismissed what Rehr termed a "good faith" offer. The trade association supports a comprehensive approach to the issue of how to compensate artists for their work that's streamed over Internet radio, he said.

Here's a roundup of other notable news at the fall convention.

'RADIO 2020' CAMPAIGN BEGUN

Many listeners take radio for granted, do not consider it to be portable and believe its programming is not diverse.

Those are findings of the NAB, RAB and the HD Digital Radio Alliance in a research project that involved polling some 5,000 listeners.

"Radio 2020" is the industry's effort to turn around these public "misperceptions" about the medium, Rehr promised in his keynote address.

"As we near commercial radio's 100th anniversary in 2020, this initiative will be our road map to building radio's future. Where we go from here is being packaged into a cohesive, branded program

Rehr laid out the key parts of the campaign, beginning with the need to ensure that radio is part of new technologies and to address consumer demands for playlist variety and format diversity.

"But," he said, "We need to do a better job of informing listeners about the great variety that radio already provides."

Building for the future is also a key part of the plan, Rehr said. "We must continually seek ways to meet the demands of our consumers — encouraging more variety and diversity, spurring more innovations in electronics, and helping marketers develop even more innovative and compelling advertisements."

OVERPOWERED FM MOD FINE IN THE OFFING?

Remember the problem of over-modulated FM transmission devices that made headlines last year?

In some cases the devices overpowered the incoming signals of radio stations and listeners heard Howard Stern and other satellite radio programming.

NAB complained to the FCC, which looked into the issue. Subsequently XM and Sirius retooled some devices and took others off the market for a redesign.

MARTIN: SATCASTERS HELD TO 'HIGH THRESHOLD'

Separately, the FCC chairman said the commission is holding Sirius and XM to a "high threshold" when it comes to determining whether their proposed merger is in the public interest.

NAB Radio Board Chair Russ Withers said more than 80 members of Congress have, at the NAB's behest, written to the commission to oppose the deal. He asked Martin how much the agency takes such comments into consideration when scrutinizing a proposal.

Martin quipped, "The commission pays attention when a member of Congress writes," referring to an earlier mention of Sen. Harry Reid of Nevada, who appealed to the FCC on behalf of a station and garnered a waiver for that facility. More seriously, Martin said, "The FCC is a creature of Congress. They want to make sure we pay attention when they express their views."

"In the XM-Sirius context I think in general there's a high threshold" for merger approval, said the chairman, referring to a rule that prohibits one satcaster from merging with another. The agency has a separate proceeding underway to

See CHARLOTTE, page 5 ▶

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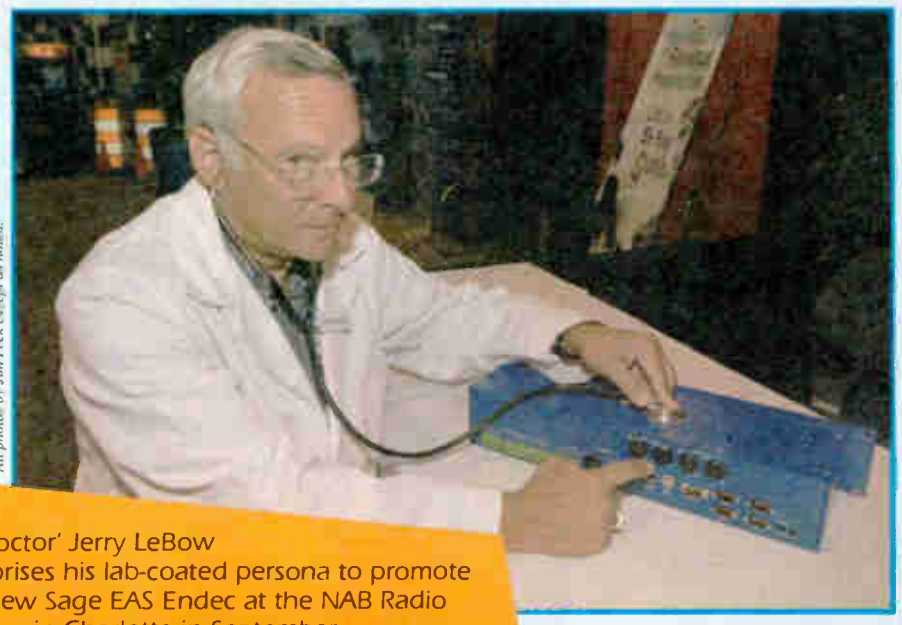
World Radio History

FROM THE EDITOR

A Taste of NAB Radio in Pictures

by Paul McLane



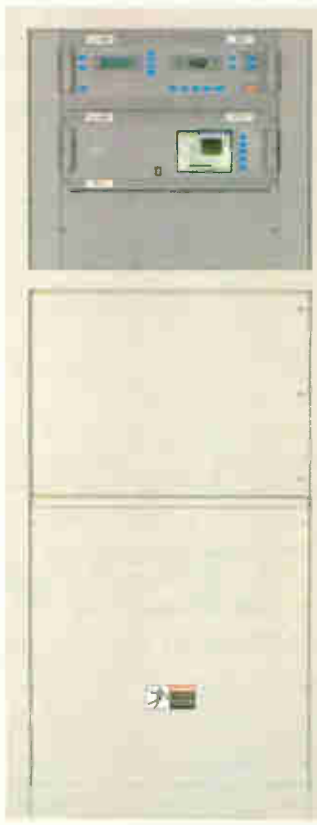
All photos by Jim Peck except as noted.

'Doctor' Jerry LeBow reprises his lab-coated persona to promote a new Sage EAS Endec at the NAB Radio Show in Charlotte in September.

Nicolas Boulay and Christophe Poulain of Audemat-Aztec celebrate the sale of the 500th GoldenEagle HD monitor by going head to head on a NASCAR Challenge game. They did not finish in the top 10.

Patrick Appleson of Appleson Studios talks with Rolf Taylor, newly hired by APT, and David Neal of The Weather Channel near an APT WorldNet Oslo Codec display.

Hail to the chief: SBE President-Elect Barry Thomas, center, DOE of Lincoln Financial Media, hangs with Jerry Dowd of WBT Radio Charlotte and Geoff Steadman of 25-Seven Systems.



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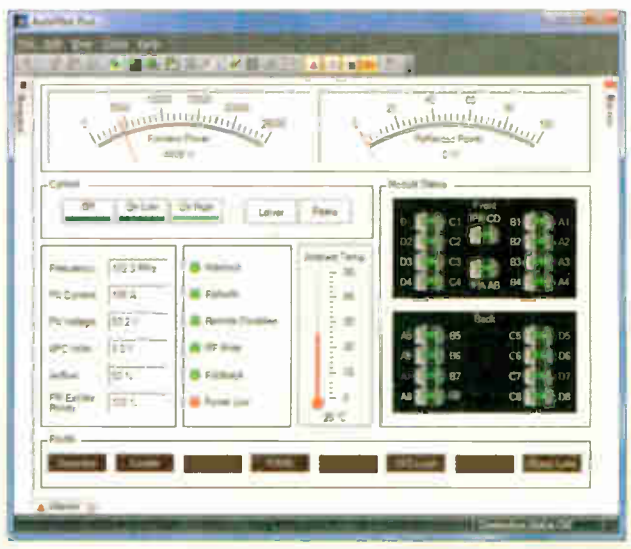

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World Radio History

Steve Palm, the president/CEO of NewBay Media, new owner of Radio World, walked the exhibit floor and met readers and vendors. He's in our booth with Carmel King, executive VP of the NewBay Video/Broadcast Group; RW Publisher John Casey; and me.

Bob Mercer of Delmarva Broadcasting emphasizes a point in a chat with Maria Stokes of WideOrbit. Bob gave me my first full-time radio job (and this look on Mercer's face usually meant I was in for more work).

Photo © NAB

It was a big Marconi night for WWL(AM) in New Orleans, which won as Legendary Station, Medium-Market Station and News/Talk Station of the Year. Diane Newman is at the podium as NAB's David Rehr looks on.

George Pupala of Sound Integrity Services and Chuck Leavens of WDUQ(FM) take advantage of Bob Cauthen's hospitality at an after-hours event hosted by SCMS, Wheatstone and Moseley.

Charlotte

▶ Continued from page 3

determine if the rule should be upheld, changed or dismissed.

Referring to a la carte pricing/programming proposals, Martin said the satcasters "have come forward with ways for consumers to still be protected." The commission will analyze the proposed material carefully, he said.

The commission's goal is to review the deal within 180 days, which suggests a December decision. Womble Carlyle attorney John Garziglia told a legal session at the show that based on past merger reviews, the commission is not likely to issue a decision this year. The Justice Department is also reviewing the merger.

At that legal session, attorney Frank Jazzo of Fletcher, Heald and Hildreth said the FCC doesn't pay much attention to the day-to-day handicapping of merger approval, predictions issued by industry "experts," some of whom used to work at the commission, he said.

Opinions of consumers/listeners do have an impact, he said. "Volume size *does* matter here," referring to the overall number of comments.

COPPS: MERGER NEEDS 'POWERFUL' DEMO

Although he wasn't in Charlotte, FCC Commissioner Michael Copps questioned whether the proposed $13 billion satellite merger is in the public interest.

According to the Wall Street Journal, Copps, one of two Democrats on the commission, said, "Someone's going to have make a pretty powerful and potent demonstration to me that this is in the public interest," referring to the a la carte programming/pricing options set out.

He said detailed talks had yet to take place among FCC commissioners about whether to approve the merger.

TRANSLATORS FOR AMS LOOKS DOABLE

The concept of allowing AMs to use FM translators under certain conditions to fill in their nighttime service got a nod of approval from the commission chairman.

NAB has lobbied heavily for the proposal, saying that AM nighttime signal coverage is challenged by ever-increasing man-made noise.

If approved, AMs would be able to air programming on FM translators overnight. The 60 dBu contour of the translator could not extend beyond the 2 millivolt daytime contour of the station, according to Audio Division Chief Peter Doyle.

NAB filed a petition on the issue in July 2006 and the FCC released a Notice of Proposed Rulemaking this August.

Asking Martin about the issue at the Chairman's Breakfast, Withers said he

See CHARLOTTE, page 8 ▶

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World Radio History

Arbitron: PPM Compliance Is Good

Higher-Income Listeners Spend More Time With Radio, PPM Shows

by Leslie Stimson

COLUMBIA, Md. Arbitron says most of those who are asked to wear the Portable People Meters comply. Also, recent data from Houston and Philadelphia highlight key differences between diary-keepers and PPM-wearers, giving radio more insight into the make-up of its listenership.

Most panelists take the PPM out of its dock in the morning and carry it all day, as they are asked to do, according to Bob Patchen, chief research officer for Arbitron, speaking at a programming consultant panel in August.

The company detailed its efforts to make sure listeners are using the PPM correctly. A panel "compliance group" works to get to know panelist families and what is going on in their lives; it keeps in touch with panelists via calls and e-mails, he said. Telephone is its primary method of communication.

The compliance group makes sure all users are carrying the meter, and coaches and re-trains panelists. Members have advised women about how to wear the meter with seasonal clothing. A bride once called her compliance specialist to say she wore the meter in her garter belt.

Garter belt compliance

Compliance specialists make house calls to be sure senior citizens understand how to use the meter.

Some professionals, such as nurses and teachers, say they can't wear the meter because of their jobs. Nurses say they are reluctant to wear the meter around medical monitoring equipment or cannot wear it in a sterile environment. This does not exclude them from being panelists; however their "carry-time" is limited.

Panelists are asked to wear the meter from "rise to retire." A panelist may have a meter for as long as two years, although the average amount of time someone is a panel member is nine to 10 months.

Panelists may drop out because they move; others may wish to stop, or are asked to stop because they don't undock the meter and wear it. The top reason panelists cite for not undocking the PPM is "I forgot."

During meeting breaks, Arbitron posted a slide show, "Most Frequently Asked PPM Questions." One question: "Can you tell if I have given the PPM meter to my dog to wear?" The answer was yes, but company executives didn't explain how.

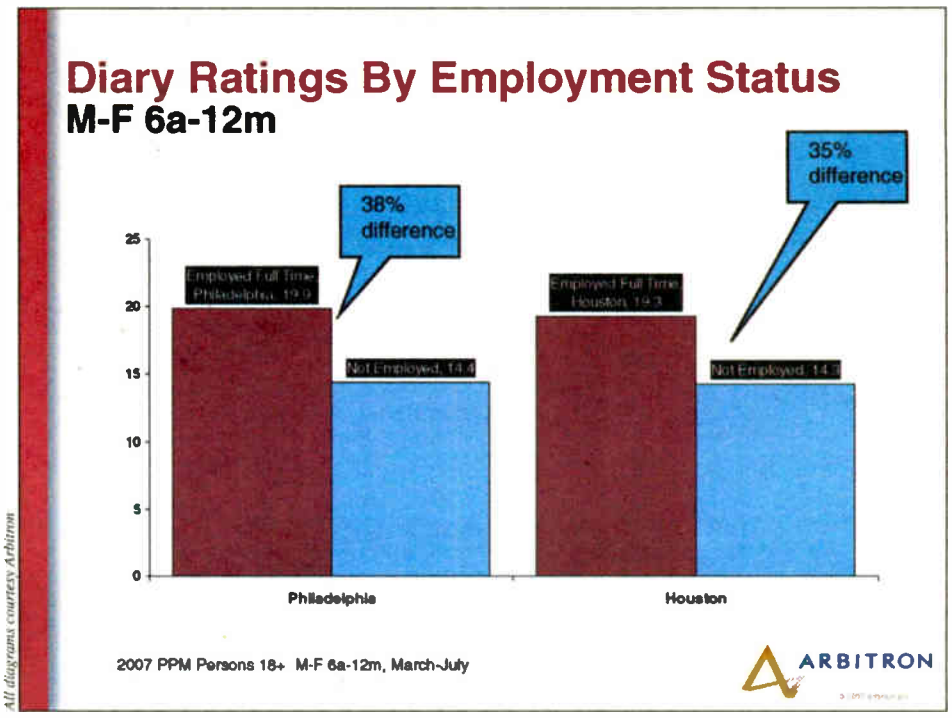
Do people listen less to radio on holidays? Employed listeners drive listening because of commuting. Holidays reveal drops in listening levels. Data showed this on Memorial Day and Independence Day.

Employed people undock the PPM device earlier each morning — in Houston, for example, at 6:50 a.m. compared to 7:35 a.m. on average.

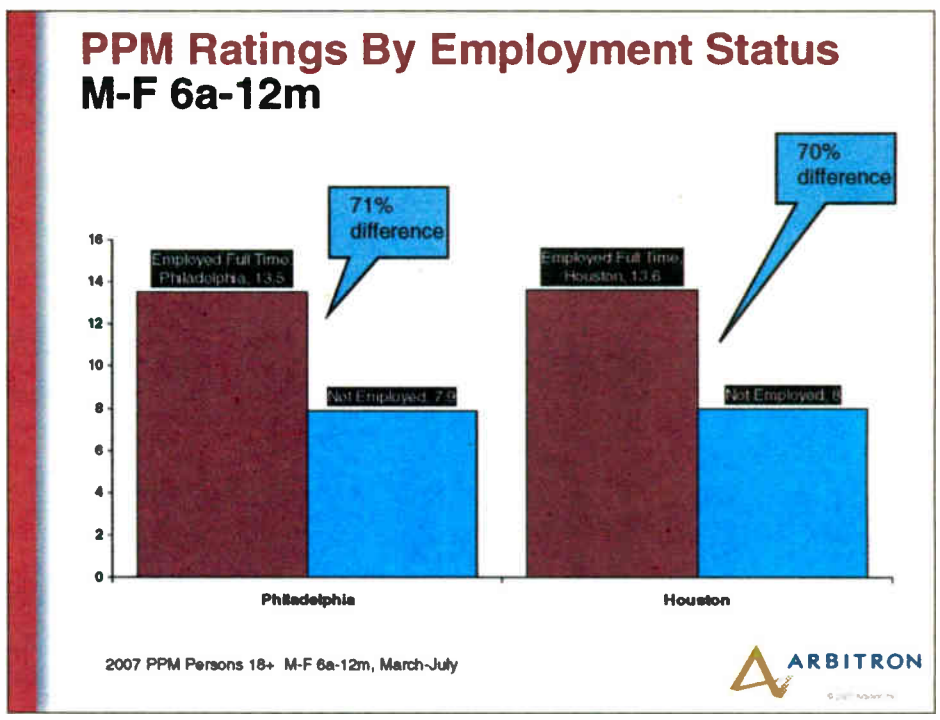
TV viewing levels are higher among the unemployed.

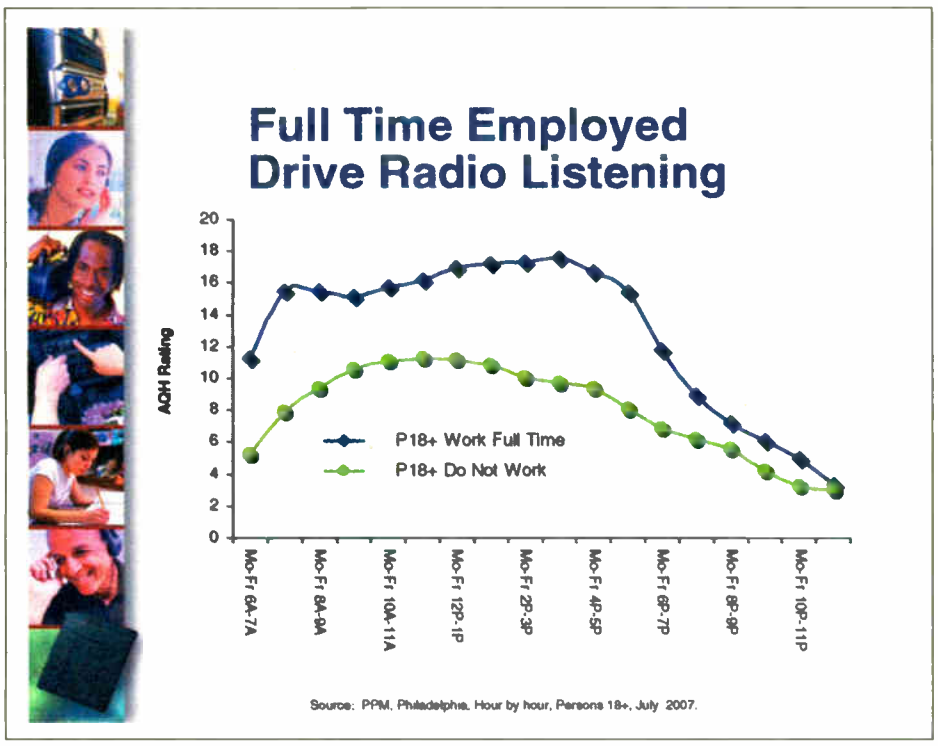
Minute-by-minute data on all-news outlet KYW(AM), Philadelphia shows a downtick when traffic and weather come on. News stations typically promote the regularity of their traffic and weather ("traffic and weather on the ones.") Why the downtick? There are two commercials right before each traffic and weather break. The solution: move the spots to after the traffic and weather.

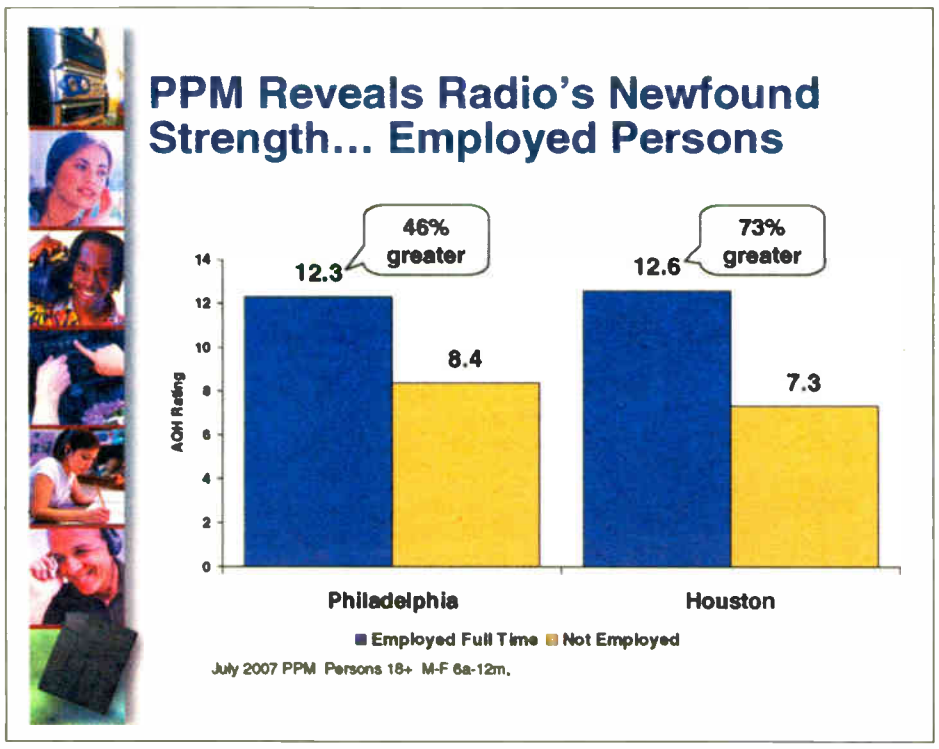
While listening habits between the genders aren't that different for diaries, Average-Quarter-Hour is close.



All diagrams courtesy Arbitron







Results differ

Data from the Houston and Philadelphia PPM ratings are helping to break some long-held beliefs about who fills out diaries vs. who wears a meter, according to Arbitron Vice President of PPM Implementation John Snyder.

Higher-income persons generate the highest amount of listening. While diary ratings generally found that listeners who made $25,000 per year or less had higher time spent listening numbers, with the PPM, this category posts the least amount of listening, and those in the $50,000–$75,000 per year bracket listen to the most radio.

PPM indicates there are significantly higher AQH ratings (percent of listening population) for people employed full time and working during the day compared to those who work part-time or are unemployed.

Can you tell if I have given the PPM meter to my dog to wear?

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World Radio History

Charlotte

▶ Continued from page 5

has an AM station that is licensed at 10 kW day and only 4 watts at night.

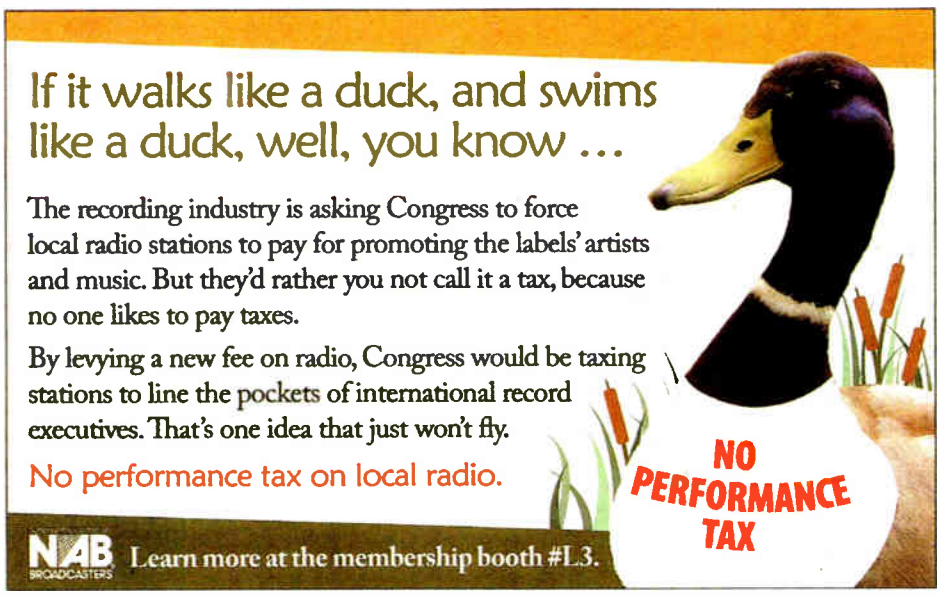
Martin said, "It's a good thing" because translators would help AM broadcasters to provide local content; he said the commission "is trying to move fast on it." He said the agency has allowed some AMs to use FM translators at night in some instances via special temporary authority.

Switching to a discussion of digital AM, Martin said it would take a while to phase it in for AM stations; he commented that the difference in sound quality between analog and digital "is striking."

"In the meantime, giving AMs the ability to use FM translators (at night) is a good opportunity and we should try to facilitate that."

Photo © NAB

David Rehr unveiled an initiative called 'Radio 2020.'



NAB says the performance royalty is a tax on radio that would force stations to pay twice for music they air.

FM MOD APPROVALS DELAYED BY LPFM CONCERNS

LPFMs apparently are enjoying more clout at the commission lately.

The FCC has identified some 25 of the low-power stations that could be displaced by modifications that full-power FMs want to accomplish under the FCC's new streamlined city of license rules.

Full-service FM modification applications are being held up if the change could threaten the service on an LPFM, FCC Audio Service Division Chief Peter Doyle confirmed in response to a question by an engineering consultant.

The issue is important because LPFMs are licensed as secondary services and normally must yield to new or improved full-service stations. Though there's been no policy change, Doyle said, the commission is seeking solutions to keep those LPFMs on the air.

FCC actions might be "on our own," through channel searches, or the agency "might be going to full-service stations and seek their consent" to allow an LPFM on a second-adjacent channel, he said.

The commission has yet to resolve a push by LPFMs to be considered a primary service or whether the ban on LPFMs on third-adjacent channels of full-service stations should be lifted. The commission has had a "six-month freeze" on FM translator applications pending for nearly 2-1/2 years, he noted, due to the related LPFM issue.

Meanwhile, bills have again been introduced in both houses of Congress to lift the third-adjacent channel restriction. NAB has favored that restriction, citing interference concerns.

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SUPREMES COULD REVIEW INDECENCY — A 'DEATH KNELL' FOR FCC POLICY?

Outcomes of two indecency cases are expected to decide the fate of the FCC's broadcast indecency policy.

The Bush administration will ask the Supreme Court to reinstate a broadcast indecency policy that was invalidated by a lower court. In June, the Second U.S. Circuit Court of Appeals struck down the FCC's nearly zero-tolerance policy covering the broadcast of certain expletives, even if they were fleeting and unscripted. Now the U.S. solicitor general will seek a Supreme Court review of the decision, according to several accounts.

Chairman Martin said he was pleased with the decision of the solicitor general.

Under Martin's tenure, the FCC ruled in 2006 that almost any use of some expletives was indecent, even in live, impromptu situations. The case stemmed from language on the 2002 and 2003 Billboard Music Awards. The Second Circuit majority decided the FCC's policy was "arbitrary and capricious." In July, a Senate committee voted to give the commission explicit authority to make "a single word or image" indecent under any circumstances.

In another case, the Third Circuit Court of Appeals is deciding whether to grant CBS its appeal of the FCC's $550,000 fine against its TV stations for Janet Jackson's "wardrobe malfunction" during a Super Bowl half-time show.

As a result of these cases, the FCC hasn't levied an indecency fine against radio since March 2006, said Womble Carlyle attorney John Garziglia in a session. He believes the commission is waiting to see how the courts resolve the two cases.

Experts have said appealing to the Supreme Court is risky and could result in the FCC losing its authority to regulate broadcast content.

Regarding the Fox Second Circuit case, Garziglia said, "The FCC's taking context into account in its decision. The court says context is content by another name." If so, "this case may be the death knell for the FCC's enforcement of indecency."

STATIONS WARNED ABOUT PERFORMANCE ROYALTIES; BERMAN TO INTRODUCE BILL

Rep. Howard Berman, D-Calif., planned to introduce a bill that would require over-the-air radio stations to pay performance royalties for the music they play.

Broadcasters have paid royalties to composers and music publishers for decades, but unlike satellite and online radio operators, they haven't had to pay the performance rights holders, generally record labels, of recordings they air.

NAB vowed to fight the effort. "The big record labels are spinning the same old tune to Congress — asking them to impose a tax on radio to line the pockets of international record executives," said NAB President/CEO David Rehr. "We can't and won't let that happen."

During a legal session, NAB spokesman Dennis Wharton said, "It wouldn't surprise us if the bill gets out of the copyright committee." Berman chairs the House Judiciary Committee Subcommittee on Intellectual Property, the Courts and the Internet.

RAIN publisher and Internet radio operator Kurt Hanson said, "If the performance royalty turns out to be what the Copyright Royalty Board gets from Internet radio, it might be as much as 30 percent of station revenue."

Peggy Binzel, speaking on behalf of the new Free Radio Alliance, said the bill would affect not only large broadcasters. "They are clear their ultimate goal is to tax anyone who plays recorded music."

We need to do a better job of informing listeners about the great variety that radio already provides.

— David Rehr

ATTENDANCE UP SLIGHTLY FROM DALLAS

The official attendance figure from NAB was 3,127. The number is based on pre-registration and does not include R&R Convention registrants.

Several vendors in the exhibit hall told Radio World the fall event is becoming "more like a regional show" in terms of attendance.

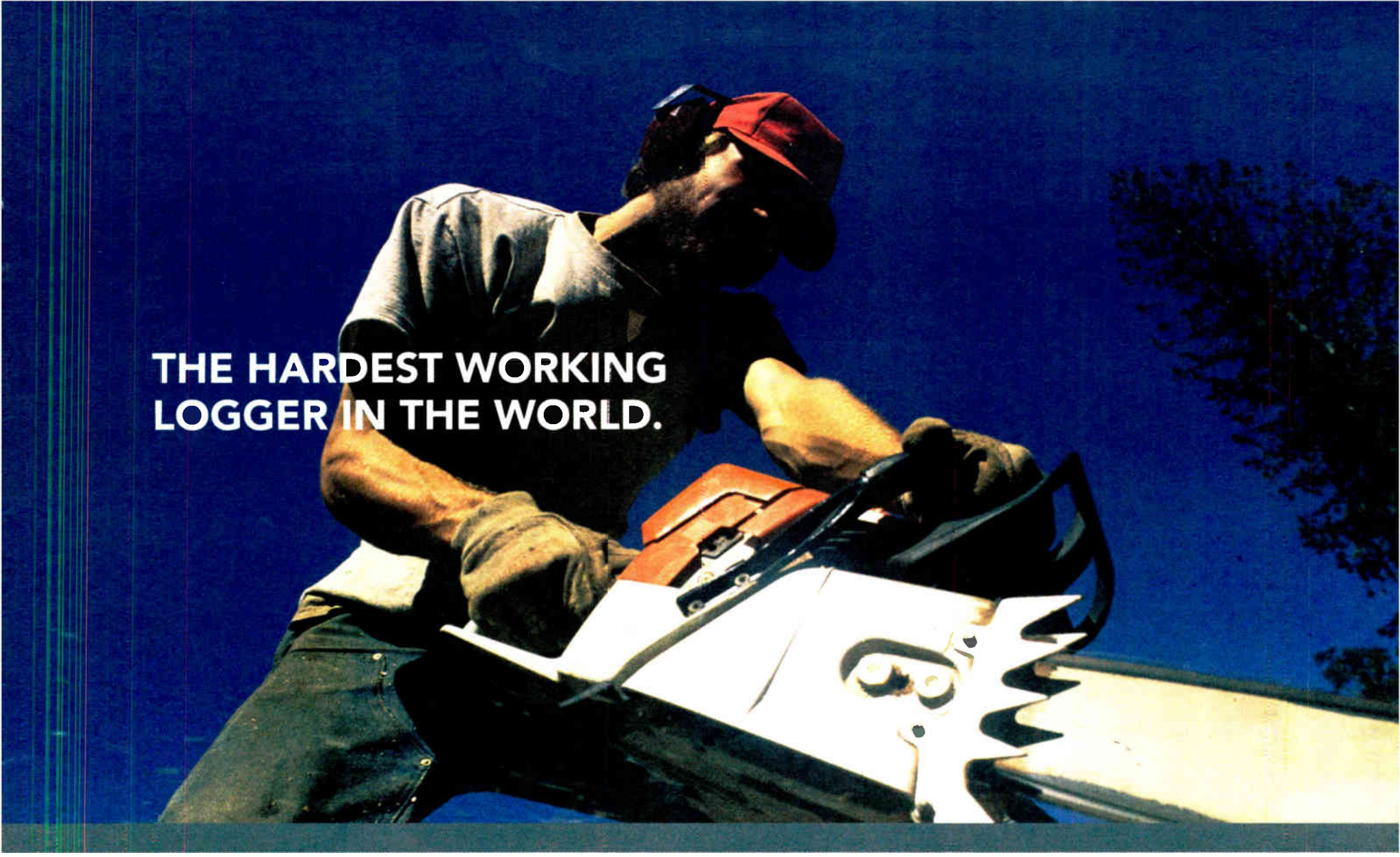
Charlotte attendance was slightly higher than the 3,021 attendees last year in Dallas, but down from the 3,705 in Philadelphia in 2005. There were about 3,500 attendees at the 2004 show in San Diego and 3,900 in Philadelphia in 2003.

RADIO SHOW IN AUSTIN NEXT YEAR

Next year's NAB Radio Show is to be held Sept. 17–19 in Austin, Texas.

An ad for next year's show in the convention's NAB Daily News read: "From its roots to its boots, radio's live and kickin'."

World Radio History



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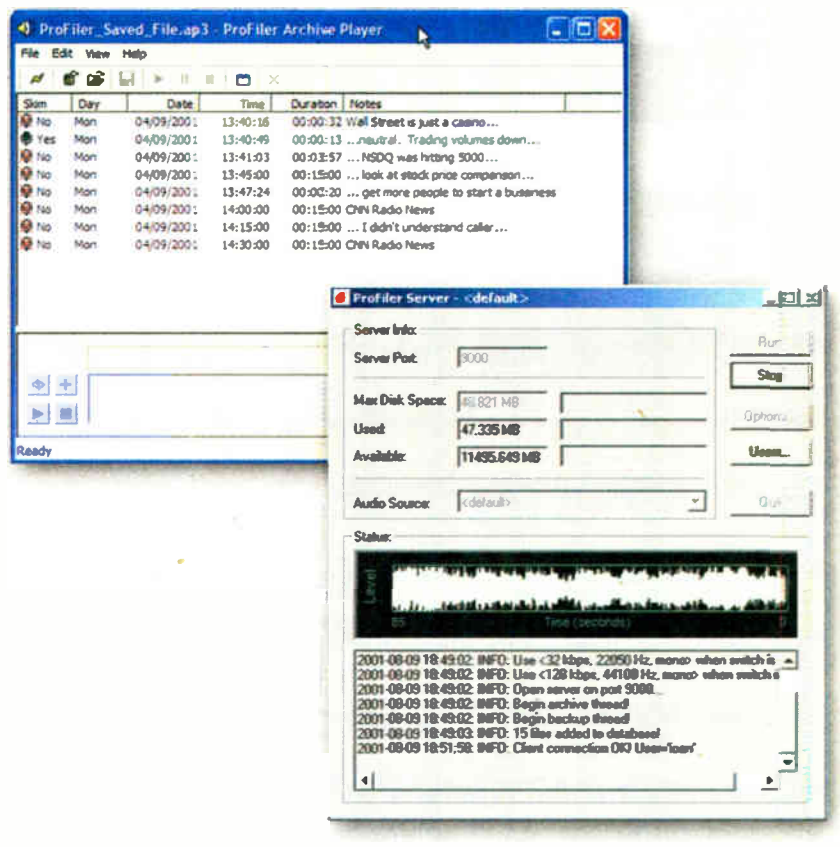

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World Radio History

A Custom Controller You Can Build

by John Bisset

Tom Lange works in the electronics department of North High School in Sheboygan, Wis. WSHS(FM) 91.7 is a non-commercial student-run radio station affiliated with the school.

The station broadcasts student and ethnic music formats. It also carries the Wisconsin Public Radio (WPR) Ideas Network talk format in the absence of local programming.

Because of stereo-related "noise" in outlying areas, the station installed a custom automatic controller to change from stereo to mono operation while carrying the mono WPR talk programming.

The controller will switch to stereo mode immediately upon detection of stereo program content, but it will also switch to mono mode with monaural program content after a time interval. This avoids excessive mono/stereo switching during normal air shifts. The circuit will default to stereo mode when the unit is powered down.

The circuit is a retrofit of a speaker mute gate design that Tom submitted to Radio World and that appeared here 10 years ago almost to the day (*Workbench*, Oct. 29, 1997).

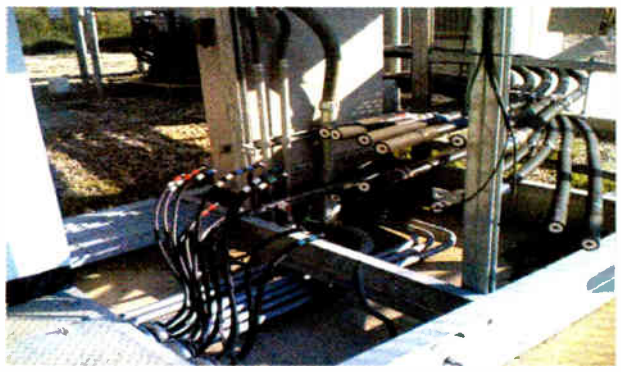

Fig. 2: Site thefts continue. Here, the remains of a cell site hit by copper thieves.

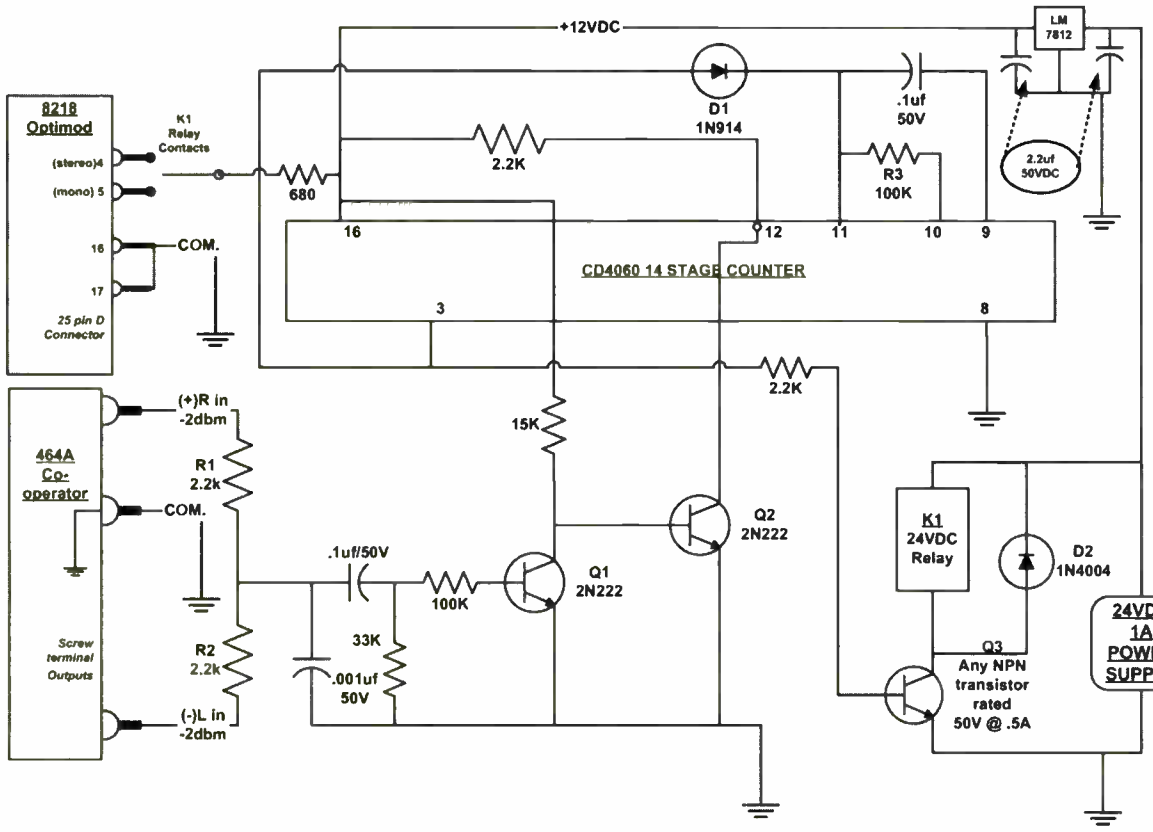

Fig. 1: This easy-to-build switcher switches the stereo generator to mono upon detection of mono programming.

All resistors are 1/4w film, and capacitors greater then 1uf are electrolytic. This controller is used in conjunction with the Orban 464A Co-Operator audio processor and Orban 8218 Optimod stereo generator/limiter, but can be adapted easily to any processor/stereo generator combination.

Sampling of right and left audio signals is obtained by summing resistors R1 and R2. These connections essentially are "bridged" to the existing wiring at the processor's output terminals. No existing audio wiring is removed.

Tom notes that this audio sampling method should only be used with an audio processor that employs active balanced outputs. Equipment with isolated transformer outputs will need an external amplifier with balanced inputs (such as an audio DA or custom-built op amp circuit) inserted between the processor's audio sample and the controller's audio sample inputs.

When monaural audio appears, the sampled signals of +R and –L are out of phase with a resultant minimum (ideally 0) at the summing point of R1 and R2, providing insufficient signal to trigger the Q1 & Q2 reset transistors. This enables the counter to perform the timing interval and then at timeout, change the relay output so DC is routed to the "mono" logic input of the stereo generator.

See SWITCHER, page 12 ▶

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World Radio History

The Elephant and the Oak Tree

An Old Joke Reflects a Growing Realization About IBOC

The Big Picture

Photo: Gary Hayes, BBC

by Skip Pizzi

Sometime in the fourth or fifth grade I first heard the elephant joke that asks, "How do you get an elephant into an oak tree?" Answer: "Have him sit on an acorn and wait."

The joke stuck with me through the years, not because it was funny, but for its aptness as a metaphor to many of the processes around us — that is, those that occur more by attrition and passive shifts rather than by proactive choice. The joke's image also illustrates the lengthy development time involved in such cases.

As an Oct. 10 RW editorial noted, we are now beginning to recognize that the transition to digital radio in the U.S. may follow this course, as well.

Broadcast transitions are slow

Actually, this behavior is fairly normal, given that it follows the path experienced by almost all broadcast format introductions.

Perhaps we have become accustomed of late to digital consumer electronics introductions advancing more rapidly, and so we tend to measure all new systems by such metrics. Yet examine the recent advances in *broadcasting* systems, and you will see consistently slow uptakes at best.

Because broadcast formats change so infrequently, however, low speed is not necessarily tantamount to failure. As long as there is some continued forward movement, attrition ultimately prevails and the new format eventually becomes well established.

Consider FM radio, FM stereo, stereo TV and RBDS. None of these experienced meteoric growth out of the box, but eventually became the norm. (Digital television in the U.S. is a current example that is just now turning the corner after a slow and rocky start, and its natural progression has even been accelerated by government mandates.)

Slow and steady typically wins the race in the broadcast world.

At least that's the way it's worked in the past. Some argue that today such wisdom no longer applies because the competitive context has been so radically altered. These pundits point out that current broadcast formats have never had to cope with so many other potentially competitive introductions, most of which are enjoying far faster growth.

Others counter that while this may be true, it simply sets the bar a bit higher for broadcast formats to break through.

Witness DAB in the U.K., which after years of malaise — there and elsewhere, including Canada — the addition of new, compelling content (along with plentiful, cheap receivers and strong, multifaceted promotional campaigns) from U.K. broadcasters finally established a beachhead, and the format is now enjoying strong success there.

Replacement cycles

Radio is also in a unique position, for a number of behavioral reasons.

First, it already has such high penetration among U.S. households that conversion of a critical mass of receivers to digital — even with rapid uptake — will take a very long time.

Second, consumer satisfaction with radio, especially FM service, is quite high, so there is little motivation to upgrade.

Third, and somewhat contravening the first two points, many new radios are pur-

See PIZZI, page 12 ▶

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World Radio History

Switcher

▶ Continued from page 10

With the presence of stereo audio, there will be an L–R signal voltage appearing between common/ground and the summing point of R1 & R2. This signal will trigger transistors Q1 & Q2 to immediately reset the counter and produce a "stereo" mode from the relay, and keeps this mode as long as stereo programming exists. If the program audio is monaural when the controller is first powered up, the controller will remain in the stereo mode until the timing interval is complete.

The minimum sampling level of each output of the audio processor with respect to common/ground should be approximately minus (–) 2 dBm as measured with normal program audio. Steps must be taken to ensure the two levels are the same in monaural mode.

The timing interval with R3 at 100K is approximately 5 minutes. R3 can be replaced with a higher value potentiometer to allow longer or shorter time interval adjustments.

Questions or comments can be directed to Tom Lange at *tlange@sheboygan.k12.wi.us.*

★ ★ ★

Randy Zippel of Comm Source Data Inc. has developed a site surveillance product that is reasonably priced and should greatly deter copper thieves and site vandalism.

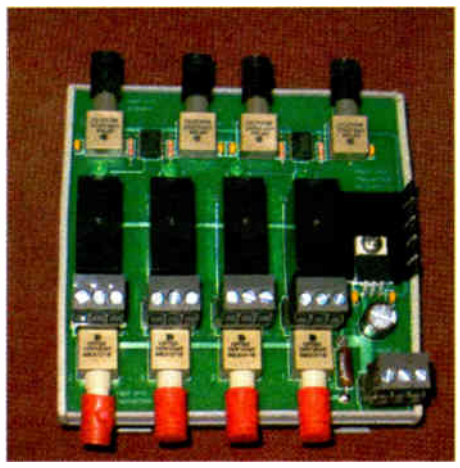

Fig. 3: Fiber-optic loops are terminated in this compact optical module.

Originally marketed to cellular companies, which have endured some of the same type of copper theft as broadcast stations, the system is based on fiber-optic loops.

Called an Optical Ground Buss Surveillance System, a thin fiber-optic cable is looped through the equipment being protected. This can be a ground buss bar, fencing, even an air conditioner.

Both ends of the fiber-optic cable are run back into the building to a four-zone optical module, seen in Fig. 3. The module senses a break in the fiber-optic loops, which would be cut when the thieves attempt to remove the ground bus or other equipment. Interruption of the fiber-optic loop triggers an alarm condition and siren.

The fiber-optic cable is impervious to RF and can be looped through anything. Several strands of fiber can be interlaced through and along the perimeter fencing, to thwart entry to the tower base. Spacing these strands a foot to 18 inches apart prevents fence entry by cutting the fencing. Holes can be punched along the copper strap, in a similar fashion, to keep it safe.

Fig. 4: A NEMA-4 enclosure can be used to mount the optical module.

In addition to a siren and strobe trigger output, there is a network operations relay with dry contacts that can be customized for your application. The optical module can be mounted in a NEMA-4 enclosure, seen in Fig. 4, or attached to the equipment rack inside the building, as in Fig. 5.

More information on the system can be obtained by emailing Randy Zippel at *rzippel@bellsouth.net* or visit *www.csdata.com.*

SBE's Educator of the Year, John Bisset has worked as a chief engineer and contract engineer for 38 years. He is the northeast regional sales manager for Broadcast Electronics. Reach him at (571) 217-9386, or jbisset@bdcast.com. *Faxed submissions can be sent to (603) 472-4944. Submissions for this column are encouraged, and qualify for SBE recertification credit.*

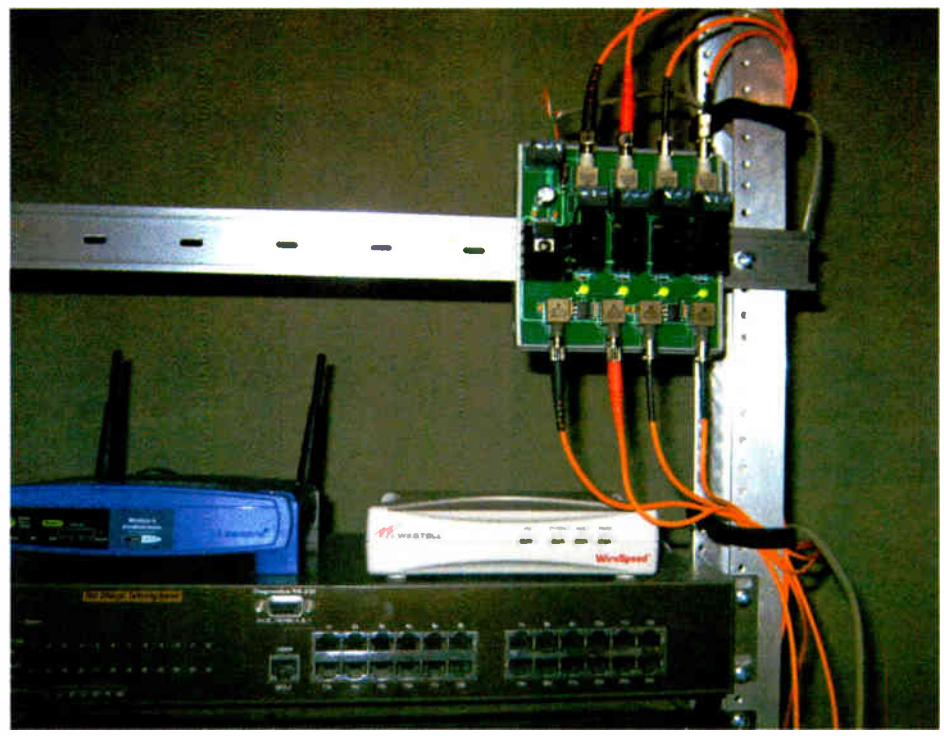

Fig 5: The module can also be mounted on an equipment rack.

Pizzi

▶ Continued from page 11

chased today as part of something else (e.g., cars, clocks, MP3 players, cell phones, etc.), and not acquired as radio purchases per se.

Thus the conversion process for transition to digital receivers among consumers is necessarily slow and complex, and therefore difficult to predict with any degree of accuracy.

The best approach to take for ensuring an ultimately successful transition is to quickly include IBOC capabilities in as many new radios as possible, without significant price impact, such that digital receivers become the default design in home, car and portable devices. Thereafter, it's a matter of waiting for the replacement cycles to run their course.

Even under a best-case scenario, this two-step process will take substantial time to complete. Again, this is as it's always been for broadcast transitions, but the many variables involved this time could slow or speed its pace beyond the norm.

Of course, there is one other critical element in this transition that is unusual, and it could also affect the ultimate outcome.

There's more uniqueness here

No other broadcast format transition has ever been driven so overtly by a single corporate entity. Certainly other companies were involved in the development of past transitions, and had a stake in their success or failure, but the technology involved in a broadcast transition has never been so closely held and exclusively managed by one company as it is for IBOC.

This is not necessarily a bad thing. The existence of a well-established company that is exclusively focused on the success of a format can help drive it to early success.

Indeed, the lack of such singular focus has been blamed for the slow pace or even the failure of previous (i.e., purely standards-driven) broadcast formats. Particularly in the United States, a proprietary

See PIZZI, page 14 ▶

World Radio History

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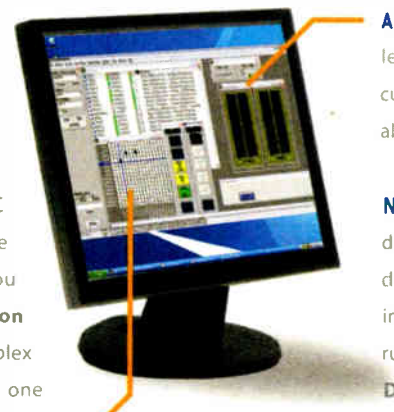
It's not rude to point • Little kids tell mommy what they want by pointing — a pretty intuitive way of doing things. PathfinderPC software gives talent the same convenience. You can **build custom "button panels"** to execute complex operations with just one click. You can map these panels to controller modules on Element consoles or to turret-mounted controls, place mini-applications on studio computer screens, even run them on touchscreen monitors.



Automation station • Wouldn't it be cool to have a **self-monitoring air chain with silence-sense** that can fix problems, then e-mail a status report? To be able to switch your program feed from Studio "A" to Studio "B" with one button? Or build custom switching apps and scheduled scene changes based on Boolean logic and stacking events? PathfinderPC software does all these things and more. But unlike HAL 9000, it doesn't talk back to you.

Nothin' but Net • Did you know you can plug a PC directly into an IP-Audio network to exchange audio? Can't do that with a mainframe router. Well, you *could* add more input cards to the mainframe, buy high-end audio cards and run more wiring... but with Axia, you just install the **IP-Audio Driver** on any Windows® PC to send and receive pure digital audio right through the PC's Ethernet port — no sound card required or additional router inputs needed. The single-stream version is great for audio workstations; the multi-stream version lets you send and record **16 stereo channels simultaneously** — perfect for digital automation systems.

Put that in your pipe • How many discrete wires can a CAT-6 cable replace? Well, a T-3 data link has 44.7 Mbps of throughput. But Axia networks' Gigabit Ethernet links give 1000 Mbps of throughput between studios — more than 22 times the capacity of a T-3; enough for 250 stereo channels per link — the equivalent of a **500-pair bundle on one skinny piece of CAT-6**. Use media converters and optical fiber for even higher signal density. Think that might save a little coin in a multi-studio build-out?

Level headed • These green, bouncing dots built into every Axia Audio Node are confidence meters. One glance and you know whether an audio source is really active — or just playing possum.

Jammin' on the mic • Radio studios and microphones go together like Homer Simpson and donuts. Unfortunately, so do preamps, mic compressors, EQ boxes, de-essers — let's face it: most studios house more flying saucers than Area 51. Axia helps clean up the clutter by including mic preamps with our Microphone Nodes; not bargain-basement units either, but **studio grade preamps** with headroom enough to handle Chaka Kahn. Phantom power, too. And if you choose to use Axia Element consoles in your studios, you'll find world-class mic processing built right in: vocal dynamics (compression and de-essing) from the audio processing gurus at Omnia, plus three-band parametric EQ with SmartQ, available on every mic input. Rap on, Grandmaster.

Very logical, Captain • Routing logic with audio used to be as hard as performing the Vulcan Mind Meld. But Axia makes it simple, converting machine logic to data and pairing it with audio streams. So **logic follows audio throughout the facility** on Axia's switched Ethernet backbone. Eight assignable GPI/GPO logic ports, each with five opto-isolated inputs outputs, are built into every Element power supply, so you can control on-air lights, monitor mutes, CD players, DAT decks, profanity delays, etc. Got more than eight audio devices? Add a GPIO node like this one wherever you've got gear.

AES yes • You like your audio to stay digital as much as possible, right? We get that; our AES/EBU Audio Nodes let you plug AES3 sources right into the network. Studio-grade sample-rate converters are inside; anything from **32 kHz to 96 kHz** will work. Oh, and there are 8 AES ins + 8 AES outs in each node. Digital distribution amp, anyone?

Heavyweight champion • This Axia StudioEngine works with our Element Modular Consoles (the fastest-growing console brand in the world, by the way) to direct multiple simultaneous inputs and outputs, mix audio, apply EQ, process voice dynamics, and generate multiple mix-minuses and monitor feeds on-the-fly. To make sure it delivers the reliability and ultra-low latency broadcast audio demands, we powered the StudioEngine with a fast, robust version of Linux — so fast that **total input to output latency is just a few hundred microseconds.** How can one little box do so much? There's a blazingly fast Intel processor inside, with enough CPU muscle to lift a small building. Strong *and* fast: Ali would approve.

Push to play • Axia Router Selector Nodes are **really advanced selector and monitor panels** that you can put anyplace you need access to audio streams. Like newsrooms, dubbing stations, or even the station's TOC, so you can monitor any of the thousands of audio streams on your network at a moment's notice. The LCD screen scrolls through a list of available streams; the eight Fast Access keys let you store and recall the streams you use most. There's even an input, for convenient connection of an analog or AES device. Sweet.

Brains in the box • The typical radio jock cares for studio equipment about the same as a five-year-old cares for a puppy: haphazardly, if at all. That's why we **took the CPU out** of our Element modular console and put it in here, with the power supply and GPIO ports. That means a greatly reduced chance of being taken off the air by a Coke spilled into the board. Because we know that you have better things to do on a Sunday night than trying to dehumidify circuit boards with a hair dryer.

Quick Connect • Axia I/O is presented on RJ-45 and adheres to the StudioHub+ standard. A couple of clicks and you're done.

You got to have friends • Delivery system providers like ENCO, Prophet, BSI, BE, iMediaTouch, DAVID Systems and more all have products that **work directly** with Axia networks. So do hardware makers like AudioScience, International Datacasting, 25/Seven, Telos and Omnia. Check out the whole list at AxiaAudio.com/partners/

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World Radio History

MILE STONES

The General Electric Phasitron FM Transmitter

A Legendary FM Modulator Tube Helped This Fledgling Medium Out of the Nest

by Charles S. Fitch

Is the glass half full or half empty? This test divides the optimists and the pessimists among us.

Those rare few who see adventure and opportunity in every choice, question or direction view the glass as *mostly* full. Right now, many view the H2 channels in the new digital FM signal as akin to a few drops of water in the bottom of the glass, academically interesting at best, an annoying distraction at worst.

In the early 1950s, many saw the emergence of FM on a new band (88–108 MHz) as a waste of time and money. Only a few visionaries, people who were ready to try different paths, create new audiences and serve new needs, succeeded with FM.

The GE exciter was elegant in simplicity, a reliable performer with superior fidelity. Unfortunately the Phasitron's electromagnetic concept was not equally effective above 20 kHz of audio input.

Edwin Howard Armstrong developed wide-band FM technology — literally the whole concept, from mic input to speaker on the receiver — but World War II and a move from one band to another almost put the kibosh on this fledging medium.

Finally, with the adoption of FM sound for TV and the availability of receivers (sound familiar?), it looked like an open field run for FM.

Armstrong, like Allen B. Dumont in television, viewed his role as more of an entrepreneur than a technocrat. He realized that the bigger the audience, the bigger would be the returns on his patents and the greater the positive use of his work.

To further this universality, Armstrong made many bold moves. He established a network of stations utilizing FM's superior fidelity, chaining them together via off-air pickup and garnering a large potential audience.

He also allowed "educational stations" the use of all his FM patents for $1 a year. A new concept in broadcasting, these stations had been given the "reserve" portion at the bottom of the FM band (88 MHz–92 MHz).

Package deal

This generosity created another opportunity, this time for broadcast equipment manufacturers.

Suppliers moved quickly to sell "station packages" to educational institutions nationwide. Such licenses ranged from the flea-powered classic Class D allocation, a 10 watt authorization, to parity with the biggest mega-power commercial broadcaster at 400,000 watts ERP.

One of the most aggressive manufacturers in this arena was General Electric, a significant player in the broadcast equipment business at that time. GE would sell educational broadcasters everything they needed, from soup to nuts, to get on the air and making radio with a cost-effective package.

At the simplest end was a combination mixer board and 10 watt transmitter along with two turntables and a few mics. This package would allow you to create great radio for your school's campus with the bonus of adjacent neighborhood coverage.

Somewhere in the middle was a popular sort of mid-power package such as we had at WBJC(FM) in Baltimore. GE supplied a 250 watt transmitter, combination mono modulation and frequency monitor, one-bay halo antenna, 200 feet or so of coax, a mixing console, two turntables and a mic. When it was over and done, the 125 watts of ERP provided Baltimore-area coverage from the tower parapet of City College across from the old Memorial Stadium.

Photo courtesy Steve Auyer via Mark Humphrey

Late 1940s WFBL(FM) in Syracuse sports a GE Phasitron FM transmitter, with 250 watt exciter at left and 3 kW amplifier at right. Stations were manned by First Phone operators, hence the console. WFBL was in a Quonset hut; notice the curved wall. Steve Auyer, from whose collection this image is taken, said the station went on in 1947 but failed to make money and the owner returned the license three years later. It is now WNTQ.

GL-5593

GE was confident that it was supplying a superior transmitter product, as it had beaten the frequency stability problem of FM by using direct modulation.

The heart of this solution was its proprietary, legendary Phasitron FM modulator tube, GL-5593.

The Phasitron proportionately frequency modulates an ultra-stable, crystal-generated, very low subharmonic of the output signal, then multiplies this up 432 times to the FM channel of interest. With this high multiplication, at the output, the signal becomes frequency modulated +/- 75 kHz.

This modulation is introduced using essentially TV deflection concepts, electromagnetically influencing the phase/frequency of the frequency source inside the Phasitron tube using a surrounding magnetic coil. That influence of the source is the audio of interest varying the magnetic field.

The GE exciter — essentially a complete 10 watt transmitter — did not need any of the complex, elaborate automatic frequency control (AFC) extant in other products that used a reactance (phase) modulator.

By 1962, GE had made about 300 BT-1-B 250 watt transmitters, such as we had at WBJC, and 260 of these were still operating as mains, according to a letter from GE at the time. The mechanical designer was Ross A. Lash and the electrical designer was W.F. Goetter. H.B. Thomas was the designer of the Phasitron circuit used in the exciter.

GE viewed itself as a source of both transmitters and tubes, so it also offered the Phasitron to other manufacturers including Collins, AEL, REL and Federal, according to the John F. Rider publication "FM: An Introduction to Frequency Modulation."

Overall the GE exciter was elegant in simplicity, a reliable performer with superior fidelity. Unfortunately the

See PHASITRON, page 16 ▶

Pizzi

▶ Continued from page 12

steward can establish a new format quickly and decisively. In the absence of such an entity, promotion of the format has to be taken up by trade associations or an industry consortium, and/or is left to the often uncoordinated marketing of various interested manufacturers.

The existence of a single entity also simplifies the licensing of required intellectual property to manufacturers, and can provide well-orchestrated implementation support to such licensees. (In the standards-based case, a patent pool can provide the one-stop IP licensing, but it typically does not offer any implementation help.)

Moreover, the ongoing development of the format is enhanced greatly by the continuing existence of a single commercial developer. The relatively quick deployment of incremental improvements to the HD Radio format subsequent to its initial design (e.g., multicasting, surround sound, conditional access) already provides ample testimony to this.

It could be further argued that the double-barreled power of such commercial drive coupled with the FCC's regulatory assent creates the perfect storm for digital radio's rapid establishment here.

You knew there was a 'but' coming

On the other hand, the concentration of an entire broadcast industry's transition in the hands of a single corporation brings unprecedented risk. If Ibiquity Digital were to fail as a company, the entire U.S. radio industry's future could be threatened.

Such a dire outcome is unlikely, given that several large radio broadcasting companies are major investors in the firm. And even if the current corporate structure were to suffer reorganization, administration of the IP and other processes critical to the ongoing transition likely could be carried on by one or more other firms.

Nevertheless, as we acknowledge that, like other broadcast transitions, this one is taking its good sweet time, it remains the first one to run its course with a corporate clock ticking over its head.

Ironically, the unusual licensing structure of IBOC may also be *slowing* the transition because it has kept some (particularly the larger) consumer electronics manufacturers from adopting the format due to their lack of comfort with the unorthodox approach.

The impact of this licensing process on pricing also is an issue. As noted above, for digital radio to achieve the default status it needs to begin achieving wide-scale penetration, its incremental cost over analog radio components must approach zero.

Any such obstacles to rapid growth are particularly problematic because the transition needs to be seen as having consistent new wins in deployment, both on the broadcast and the CE sides. Any perceived slowing in momentum makes those on the sidelines stay put rather than jump in. So forecasts of slow growth can become self-fulfilling prophecies and add to the servo effect that could drag the transition down, perhaps even to a halt.

Clearly the current U.S. transition to digital radio possesses a unique structure that serves as a two-edged sword. Whether its forehand or backhand action wins the day remains to be seen.

Skip Pizzi is contributing editor of Radio World.

World Radio History

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World Radio History

Phasitron

▶ Continued from page 14

Phasitron's electromagnetic concept was not equally effective above 20 kHz of audio input. With stereo and the introduction of the cost-effective varicap diode, the Phasitron went the way of the dodo.

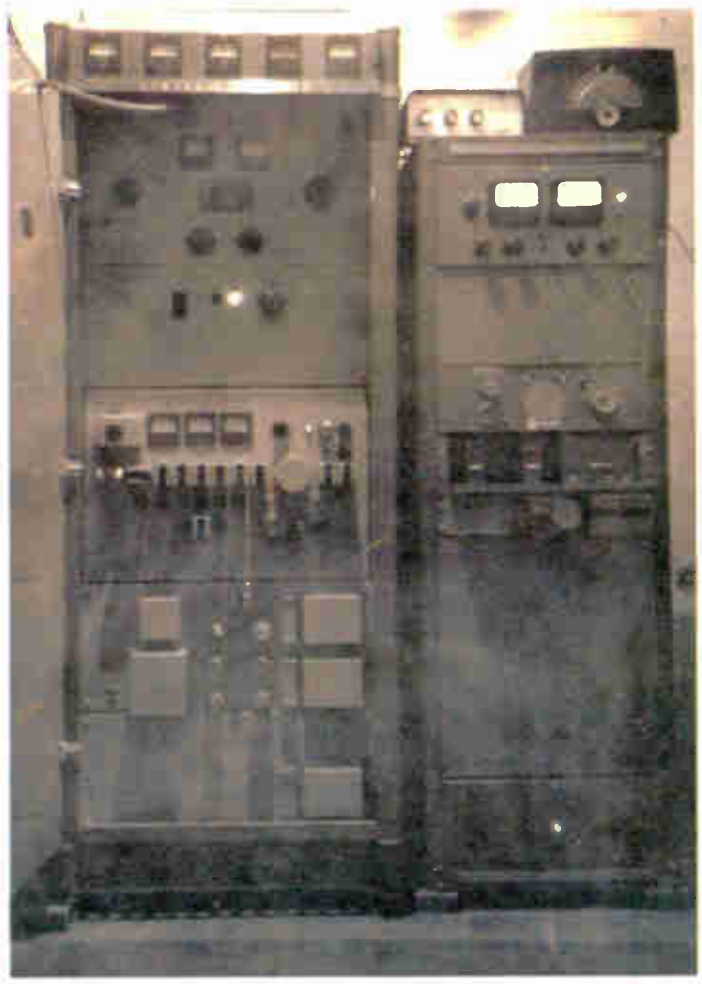
The last Phasitron transmitter I encountered was a 250 watt unit that was serving as a standby for a Los Angeles radio station in 1970; it was still type accepted and licensable at the time.

FM's dominance of the radio marketplace today makes it difficult for many to realize that it took a 50-year meandering march from near-oblivion — with many owners turning in their licenses as worthless — to the present, when some licenses are worth hundreds of millions.

The Phasitron and these GE rigs gave FM broadcasters with vision a tool to make reliable, hi-fi radio a success.

These rigs were not the only ones with personality and a story. Please share with us your tales of early FM. E-mail the author c/o Radio World at radioworld@imaspub.com. *Past Milestone columns are archived at* radioworld.com.

Sources used in this story include the following. For information concerning the Phasitron, visit www.w9gr.com/ge-fm.html. *About Armstrong:* www.fathom.com/course/10701020/session1.html. *Also see Lawrence Lessing's book "Man of High Fidelity: Edwin Howard Armstrong" and "FM Atlas" by Bruce F. Elving.*



GE 250 watt Phasitron transmitter at WBJC circa 1960, with matching GE FM modulation and frequency monitor in the top of the rack. The Phasitron is inside the large can in the exciter section. Notice the 'Cold War' Conelrad monitor receiver in the center of the rack.

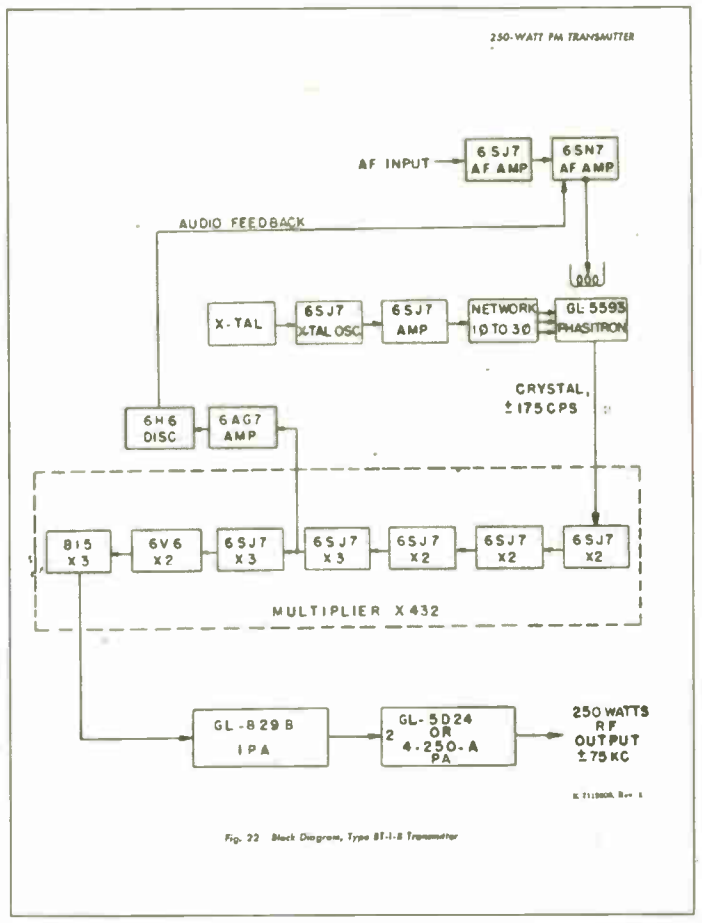


Fig. 22 Block Diagram, Type BT-1-B Transmitter

The block diagram from the GE instruction book. Notice the diode demodulator (discriminator) using a sample from the multiplier chain that functions as part of a negative feedback concept to reduce audio distortion. The 'complete loop' notion was found even in AM transmitters of the time such as the RCA tube version of the Ampliphase.

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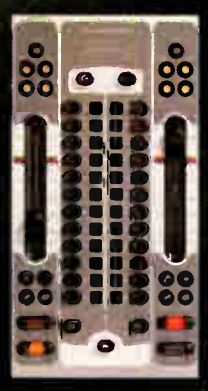

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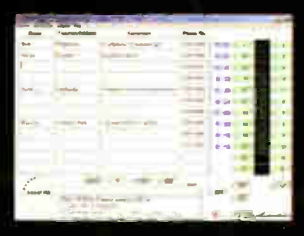

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HD Radio News

AM Standards 'Makeover' Page 22

Radio World | Covering Radio's Digital Transition | October 24, 2007

SHOW HD-R

HD-R Commands Attention at Radio Show

by Leslie Stimson

CHARLOTTE, N.C. The announcement that Ford Motor Co. is including HD Radio receivers as an option across all of its product lines, coupled with the recent publication of the FCC's IBOC rules in the Federal Register, gives HD Radio more certainty in the market, proponents believe.

Supporters hope the Ford decision spurs other U.S. automakers to include HD Radio receivers in the dash. "It's critical for us," said Greater Media Vice President of Radio Engineering Milford Smith.

At The NAB Radio Show here, more receiver manufacturers announced HD-R product coming out this year and vendors showed new transmission equipment compatible with iTunes tagging for HD Radio. Gear for conditional access and surround sound related to HD-R was on display. More broadcast groups said they are supporting the iTunes tagging technology with HD Radio just after the show.

Shortly after the optimism surrounding the convention, however, came a setback for the technology. At the start of October, Citadel Broadcasting halted transmissions in HD-R at night on its AM stations due to interference complaints. The broadcaster hoped to determine exactly what was occurring and to work with Ibiquity on a resolution (see story, page 1.)

Here's a roundup of notable HD Radio news at the fall convention.

Photo by Leslie Stimson

WHUR GM Jim Watkins shows an oversized version of the WHUR HD Radio Club Card.

FORD OFFERS HD-R

One of the "big three" U.S. automakers, Ford Motor Co. has become the first U.S. automaker to offer HD Radio across multiple product lines, including Ford, Lincoln and Mercury. Participation by such a prominent U.S. automaker is seen as an important development in the progress of the technology's market penetration.

While HD-R is an option now, proponents believe it will become standard. Ibiquity Digital President/CEO Robert Struble said in an interview that FM, stereo, RDS, CDs and other audio improvements began as options but are now standard equipment for many automobiles.

The dealer-installed HD Radio receiver option is now available nationwide on nearly all model year 2008 Ford, Lincoln and Mercury vehicles. The HD-R receivers can also be installed on several earlier models from 2005, 2006 and 2007.

Kim Irwin, vehicle personalization and accessories manager for Ford's Customer Service Division, said in the announcement that the improved audio, text and data features of HD Radio — along with its multicast stations — "create a compelling combination at the right price."

More than 1,500 radio stations in the U.S. broadcast in HD Radio, with more than 700 stations also airing multicasts, according to Ibiquity Digital and the HD Digital Radio Alliance.

Because the HD Radio receivers are a dealer option, price points will vary, according to Ford.

To support the launch, on Sept. 26 some 700 Alliance stations in a total of 100 markets began airing a "multi-million-dollar, 13-week," spot campaign to promote the dealership option. Alliance ads run in all day-parts, including drive time, several sources told Radio World.

"In all of our discussions with automakers, Ford has consistently demonstrated both the will and the resolve to be industry leaders in this arena," said Alliance President/CEO Peter Ferrara.

GROUPS IMPLEMENT ITUNES TAGGING

CBS Radio, Clear Channel, Cumulus, Cox, Entercom and Greater Media formally announced they are in the process of installing iTunes Tagging technology. We had previously reported Clear Channel had begun adapting its automation systems in all stations broadcasting in HD-R to support tagging and that other HD Digital Radio Alliance member groups were discussing licensing agreements with Apple so that they too, could support iTunes tagging.

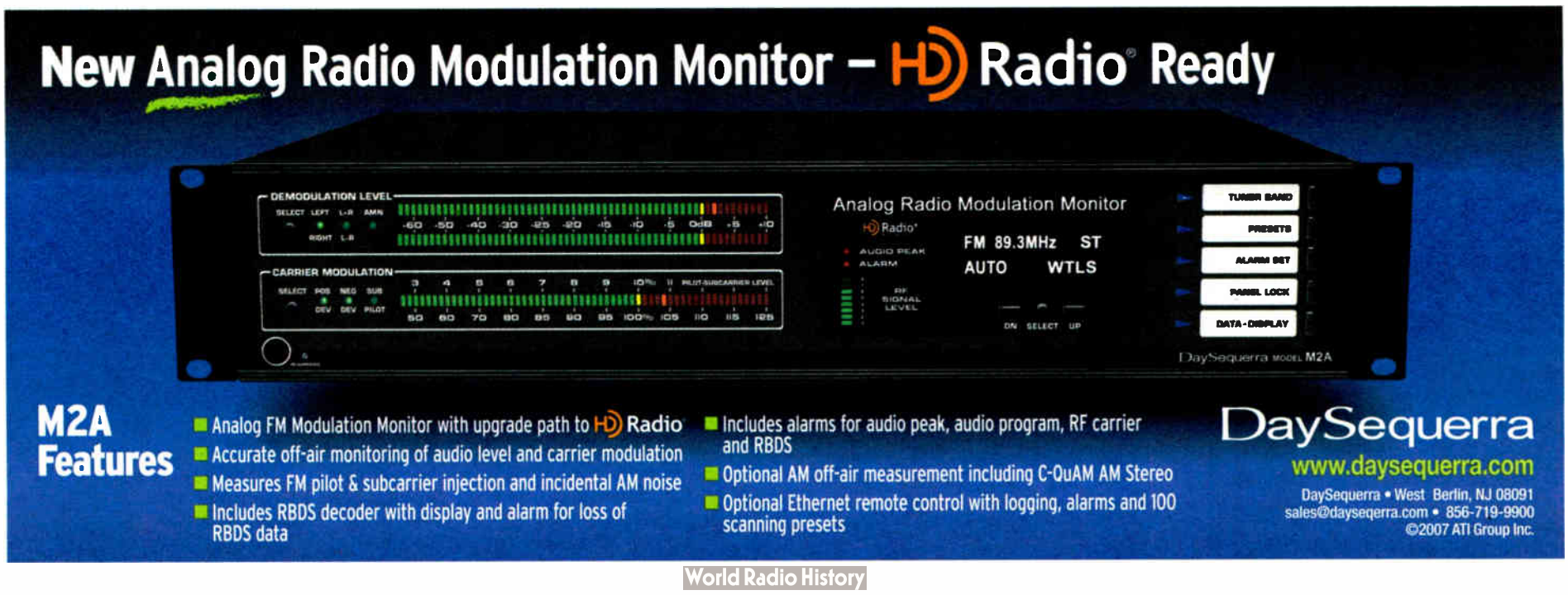
With tagging, consumers who hear a song on their HD Radio stations — and want to preview, buy and download it later on iTunes — will be able to do so by touch a "tagging" button on an enabled HD Radio receiver. Two receiver makers, Polk and JBL, said they would soon have such receivers on the market.

The Polk I-Sonic Entertainment System 2 and the JBL iHD will both include the Tag button. These products will go on sale in the fourth quarter. Additional products that include the tag button for both the home and car will follow in early 2008, according to proponents.

See SHOW HD-R, page 20 ▶

'We embraced HD Radio as a mature product.'

— WHUR(FM), Washington GM Jim Watkins



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Radio World's HD Radio™ Scoreboard

The HD Radio Scoreboard is compiled by Radio World using information supplied by iBiquity Digital Corp., the HD Digital Radio Alliance, BIA Financial Network and other sources. Data reflect best information as of September. This page is sponsored by Broadcast Electronics. HD Radio is a trademark of iBiquity Digital Corp.

Top 10 Markets by Total Number of Stations on Air With HD Radio

Rank	Market	# of Stations
2	Los Angeles	40
3	Chicago	37
5	Dallas-Ft. Worth	31
22	Denver-Boulder	28
7	Philadelphia	28
11	Detroit	27
4	San Francisco	26
1	New York	26
9	Washington	25
8	Atlanta	25
10	Boston	25

Top 10 Markets By % of Stations on Air With HD Radio

Rank	Market	# of Stations	% of Stations
22	Denver-Boulder	28	54.9%
79	Stockton, Calif.	7	53.8%
9	Washington	25	48.1%
19	Tampa-St. Petersburg-Clearwater	22	45.8%
2	Los Angeles	40	44.9%
12	Miami-Ft. Lauderdale-Hollywood	24	43.6%
40	Indianapolis	19	43.2%
11	Detroit	27	42.2%
52	Buffalo-Niagara Falls	13	41.9%
46	West Palm Beach-Boca Raton	13	41.9%

Source: Data above is from BIA Financial Network s data service MEDIA Access Pro ™ and also includes Ibiquity information. Visit www.bia.com

HD Radio at Noncommercial Stations

Total stations: 3,062

The HD Radio Bottom Line

	Total Licensed	On the Air	FMs Multicasting
	1,976	1,494	724
Last Month:	1,933	1,422	688
Last Year:	1,475	1,000	378

World Radio History

Show HD-R

▶ Continued from page 18

Apple's Vice President of iPod Product Marketing Greg Joswiak called iTunes tagging, "a great way for local broadcasters to jump into the digital music space and for consumers to easily discover new music on their HD Radio and enjoy it with iTunes and their iPod."

"When asked about the possibilities for HD Radio broadcasting my response is always the same — the opportunities are limitless," stated Dan Mason, president and chief executive officer at CBS Radio. "This announcement is proof positive that HD Radio technology is a significant advancement for the radio industry, one that will afford our listeners with greater access to the music they discover on our stations."

FM radio continues to be the place where most consumers are introduced to new music and new artists, according to a May 2007 study by Jacobs Media. It found that 54-percent of respondents identified FM radio as their number one source for new music, far outdistancing the second ranked source in the poll, friends and other people, identified by 11 percent of respondents.

Additional broadcast groups said they're supporting iTunes tagging with HD Radio. The new Polk I-Sonic ES2 and the JBL iHD will include the tag button.

STUDY: THREE OF FOUR LISTENERS AWARE OF HD-R

Disputing recent studies that say public awareness of HD Radio is low, the HD Digital Radio Alliance cites research from Critical Mass Media that says three out of four listeners are aware of HD-R.

The study, conducted in September, finds that 31 percent of listeners polled said they are interested in HD-R. Critical Mass said those polled cited improved sound quality and local content of HD2 stations as key drivers to growing interest.

The Alliance said that unlike other research done with online polls, which it argues tend to be unreliable, the Critical Mass telephone interview survey was balanced across age and sex demographics and screened accordingly.

One recent poll from Paragon Media Research said four years after its introduction, awareness of HD Radio lags far behind Internet and satellite radio.

Paragon SVP Bob Harper said broadcasters frequently ask him if HD Radio has legs. "The months ahead will determine if we have a huge disaster or higher demand when it comes to HD Radio."

"Programming variety, less talk and fewer interruptions are helping to drive

See SHOW HD-R, page 22 ▶

FIRST PERSON

In Search of an HD-R Receiver

by Richard Factor

I love radio.

The company at which I strive makes technical radio products, including one for HD Radio. I have been reading about HD Radio for years. I have been listening to ads on a local station for their HD-R channels for more than a year and have checked out IBOC signals on a number of my beautiful spectrum analyzers.

And yet: I had never, not even for an instant, ever *heard* an HD-R channel, so I decided to purchase one.

Shopping for an HD Radio

My first effort was this June.

With only slight inconvenience I have the option of taking a very commercial route home that winds its way past any number of large shopping venues, including a Barnes & Noble, a defunct CompUSA and my destination for this adventure, an enormous Circuit City in Totowa, N.J.

Just guessing, but I would say that the establishment has perhaps 30,000 square feet of merchandise, tastefully arrayed in islands and alcoves, on walls and even on the ceiling, where an especially large fixture was suspended with a 360-degree array of CRT monitors exhorting me to buy some sort of game-console gadgetry.

I was surprised to see this because it looked like it weighed (literally) a ton, and if there were ever a candidate for flat screen displays this was it.

Within the compass of this vast retail enterprise was a substantial section for LCD and plasma "teevee" sets, and even a large section devoted to music served on plastic.

Radio World's HD Radio Scoreboard is published in alternating issues. Selected data is from BIAfn's MEDIA Access Pro™; the scoreboard also uses information supplied by sources including iBiquity Digital Corp., the HD Digital Radio Alliance and RW's own research.
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Thousands of CDs of every persuasion except, of course, for anything I would ever listen to.

Circuit City

I arrived at this emporium about an hour before closing time. An ideal time, really, because it's too early for the salestrons to be focused solely on going home but too late for a press of customers to throng every available red-shirted customer consultant (or however they style them).

Moments later I found myself in the auto-entertainment alcove, filled with Sirius and XM gadgets. The Sirius radio on demo was playing Jerry Garcia's "The Wheel," so I waited til it was finished and asked the sales guy, unaccountably wearing a black shirt, if they had HD Radios.

At least they have their story straight; he pointed me to the teevee area and agreed with his predecessor that only a red shirt would do. I gave up and returned to the teevee area. Almost needless to

Photo by Leslie Stimson

HD Radio receivers, shown at Ibiquity's offices. The author describes his experiences shopping at national retailers.

Mission-oriented dude that I was, I almost immediately looked for the "radio" section. (*Almost* because I can't pass up checking the weekly depredations the LCD "teevee" manufacturers are committing on each other.)

Of course there was no "radio" section. Radios are no longer *something*, although they're often *in* something. As I wandered the aisles, a gentleman asked me if he could be of assistance.

"Hi! I would like to buy an HD Radio."

"I'm sorry, I can't help you; I don't work in that department. You could try one of them." (All quotes are approximate.) He pointed to the section I had just left with the LCD teevees.

Since I just came from there and had seen no sign of HD Radios, I decided to continue wandering.

say, the salestron there immediately told me to go see the guy in auto entertainment. "You mean the guy in the black shirt?" So it seems.

You see where this is going.

Without attempting to recreate further quotations, I can report that of all the people I asked, only one actually seemed willing to admit that he had never even heard of HD Radio.

He was by far the most useful. He took me to the "boom box" area where they had one that looked like it was ready to attack the next passer-by. It was called an "xplod." Did it have HD Radio? He shrugged.

Actually there was another useful one. He's the one who asked, "Have you tried RadioShack?"

My mission was a failure, at least for the moment. Apparently you *could not get an HD Radio* at one of the largest consumer electronic dealers in the United States of America. What does this say about the future of HD Radio? I don't know — that's why they call it the "future."

Progress!

There was progress in a follow-up visit on Sept. 14.

Same commercial route, same Circuit City, different security guy. I walked in, deliberately looking bewildered. This requires no acting talent on my part.

A guy in the Verizon booth piped up, "Do you need help?" I've never quite figured out how to answer that, but I asked if he knew where the HD Radios are. He told me to check in the Auto Section. Miracle!

The sales guy not only had *heard* of HD Radio, he pointed to one that they had on demo. It was a very nice-looking JVC car radio for $199.99. (When I got home and checked the Web site, it had been reduced to $159.99. Not bad for a drive of a few miles.)

I asked him if they simply had an HD Radio I could buy to listen to at home. He said there were none in stock.

Were they expecting any? Without flatly saying "No," he pretty much indicated that I shouldn't skip any desserts while waiting.

The author is chairman at Eventide Inc.; these are his personal views, updated for Radio World from postings on his blog at www.priups.com/riklblog. *Reach him at rcf@eventide.com.*

World Radio History

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World Radio History

Show HD-R

▶ Continued from page 20

awareness and interest as a whole," stated Alliance President/CEO Peter Ferrara. "Although we still have work to do in increasing consumer awareness and interest, HD Radio has clearly grown exponentially the past year."

HD RADIOS SOLD ON QVC

About 500 HD Radio receivers were sold on QVC in just over 20 minutes.

Three models were shown Sept. 26, the night The NAB Radio Show opened in Charlotte: the Polk Audio I-Sonic Audio Entertainment System, which includes a DVD/CD player; the Visteon HD Pulse, an HD-R tabletop clock radio; and the Radiosophy HD 100, also a tabletop.

Each radio enjoyed about eight minutes of airtime, starting at 10 p.m., according to Ibiquity.

The HD Digital Radio Alliance promoted the show with member station radio spots in 100 markets.

QVC Senior Vice President of Merchandising Mary Campbell said the broadcast was an opportunity for consumers to learn about the technology and purchase products while Alliance President/CEO Peter Ferrara called QVC "a unique home retail environment that is ideal" for helping consumers discover new content on HD Radio.

MARTIN: FINALIZING HD-R RULES FCC PRIORITY

Kevin Martin says finalizing HD Radio rules is one of his agency's top priorities.

That's what the commission chairman told NAB Radio Board Chairman Russ Withers during the FCC Breakfast. Finalizing rules regarding subscription services will be important, too, Martin said.

"We want to encourage the radio industry to take advantage of what digital radio offers. The burden is on us to finalize those rules so they'll be able to do digital services," he said.

Asked how long he thought radio's digital transition would take, Martin said, "I think the easiest way to make that decision from a consumer standpoint is to let that transition occur naturally."

MARTIN: NO ADDITIONAL PUBLIC SERVICE OBLIGATIONS

At the same session, when asked about revising its radio ownership rules, Martin said rather than applying more public interest obligations on digital stations, it would help if the commission could better quantify what broadcasters do for their local communities. The FCC is updating related forms and intends to place those online, he said.

1,500 STATIONS ON-AIR WITH IBOC

Ibiquity Digital said the 1,500th HD Radio station went on the air during the show: Clear Channel's rock-formatted WROV(FM) in Roanoke, Va.

'The months ahead will determine if we have a huge disaster or higher demand when it comes to HD Radio.'

— Paragon SVP Bob Harper

Ibiquity President/CEO Robert Struble said about 500 stations converted this year. "That's more than one a day."

Also, more than 700 multicast stations are now on the air, according to the technology developer.

DOYLE: LOOKING FOR THE 'MISSING' 200

During a legal session, FCC Audio Division Chief Peter Doyle noted the 1,500 station figure and dryly noted that according to the agency's database, only 1,300 stations have filed the proper notification. "If you're one of the 200, please let us know."

WHUR EMBRACED HD-R 'AS MATURE PRODUCT'

"We didn't want our HD-R to end up like quadraphonic sound. We didn't worry about whether it was the chicken or the egg. We embraced it as a mature product." So said WHUR(FM), Washington, GM Jim Watkins during a session on HD Radio for managers.

One of the early seed stations for the technology, the station still gives away an HD Radio a day.

WHUR includes the digital branding on all products alongside the station branding, he said. Displaying several logoed products, Watkins held up a giant WHUR HD Radio Club Card. Promotion of HD Radio is critical to its success, he told managers.

"We can't control the price of the radio. What we can control is how we promote the service to our listeners," he said.

In that same session, Jeff Detweiler, Ibiquity director of broadcast business development, pointed attendees to Ibiquity's new Web page devoted to iTunes tagging that states the necessary software upgrades stations will need to their HD Radio transmission equipment to support iTunes tagging.

NRSC REVISES AM STANDARDS, ADOPTS NEW GUIDELINES

The National Radio Systems Committee revised and streamlined its AM standards. The members also voted to adopt two guideline documents and to retire one AM radio receiver standard.

The AM Subcommittee has spent the last three years working on revising those standards. Now the work is done, said committee co-chair Stan Salek of the broadcast consultancy Hammett & Edison.

The group revised NRSC-1 (AM pre-emphasis/de-emphasis and broadcast audio bandwidth specifications) and NRSC-2 (emission limitation for AM broadcast transmission).

It also deleted NRSC-3 (audio bandwidth and distortion recommendations for AM broadcast receivers) and moved the receiver response curves, the most relevant portion of the standard, into NRSC-1, according to Salek.

The standards have been updated to incorporate IBOC information.

A lot of what the group has done is streamline and update the voluntary standards. Much of that text was last written to accommodate AMAX, the promotional program to get receiver manufacturers to produce radios that had increased bandwidth. The idea was to improve the AM part of the receiver.

...ADOPTS NARROWER BANDWIDTH RECOMMENDATIONS, TOO...

A separate document, called "NRSC-G100," illustrates "the relationship of transmitted analog AM bandwidth with interference considerations as related to receiver test results," Salek said.

We previously reported that NPR Labs was characterizing 30 or so receivers, on the bench and in the field; that research was for the NRSC. The tests were to determine how much of the bandwidth they recover from an AM transmitted signal.

"Mainstream receivers never did go out as wide as the 10 kHz NRSC standard," said Salek. The idea is to better match up the transmitted signal with what the radio can receive.

Discussion in the document describes how to narrow the transmitted analog or digital bandwidth. The general recommendation is 7 kHz, he said.

When Clear Channel narrowed the transmitted bandwidth on its AMs to some 5 kHz about two years ago (a story that RW broke), the concept was controversial. That's why this discussion is not part of the standard but placed in a separate document.

Clear Channel Radio's Jeff Littlejohn, who led the Clear Channel narrowing move, co-chairs the subcommittee, which will exist until at least CES. After that, the roughly 15-member group may go on hiatus until needed again.

... AND MAKES ANALOG, DIGITAL RECEIVER DISPLAYS JIVE

The NRSC also vote on a harmonization guideline for transmitted and received RBDS and digital program display data.

See SHOW HD-R, page 23 ▶

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World Radio History

Citadel

▶ Continued from page 1

only HD operation as soon as possible. ..."

The company received interference complaints from listeners and stations on adjacent channels, the latter from both Citadel- and non-Citadel-owned stations in and outside the markets.

Most of the complaints center around 50 kW Class As, Stabbert said, although internally, Citadel has also observed effects from lower-powered stations on adjacents at night.

Stabbert stressed that Citadel's action is not a criticism of Ibiquity nor of its technology. The move, however, comes at a time when the impact of AM digital at night, which only recently was OK'ed by the FCC, is being closely scrutinized by those who believe it could fundamentally damage the band.

With this action, Citadel, a member of the HD Digital Radio Alliance, offered itself as a testbed to Ibiquity for itself and other radio groups.

Of the issue overall, Stabbert said, "It's an unknown, and that's why we're stepping back to work with Ibiquity to make it a known. I can only see that good will come from our stance of stepping back to evaluate performance."

Ibiquity Digital said it has received few complaints about interference and that the "vast majority" of feedback it's received about AM nighttime has been positive.

"We understand Citadel's caution and are working with them to understand what they are experiencing and to address their concerns," said a spokeswoman.

It took some time to get feedback after the stations began running 24/7 in HD-R. "I would imagine some people listening the first couple of nights wondered what was going on but didn't call the station, especially since the [nighttime] launch was over a weekend," said Stabbert.

Some stations had no complaints, he said, and roughly the same number did.

Listeners who have complained say they hear hiss and adjacent-channel stations say they hear noise on the channel, he said, adding that most of the impacted adjacents are stations Citadel owns.

After 'Stepping Back,' What's Next?

Citadel and Ibiquity were figuring out the next steps — and who would pay for what — earlier in the month.

Stabbert said Citadel employees have been measuring the effects of AM nighttime IBOC subjectively — by ear — so far; it's working with Ibiquity to determine what equipment and resources are needed to devise a resolution.

That may involve some on/off testing and/or reducing the injection of the digital energy into one or both sidebands.

"We have a general idea of what's going on; as we step back, we can do empirical testing with Ibiquity," Stabbert told Radio World.

He couldn't guess how long the process would take, noting "The sooner we step back and evaluate the next move, the sooner we can make that move. If there is a problem, we want to help Ibiquity tweak it so that it's less of an issue, or a non-issue."

— Leslie Stimson

Show HD-R

▶ Continued from page 22

The text blending concept has to do with matching up RBDS and HD Radio text fields.

The idea is to have broadcasters, transmitter manufacturers and receiver manufacturers all on the same page as far as how information on the radio is displayed so it matches up when you're driving around and the IBOC radio blends to analog or vice versa.

The guideline also suggests how to make the information, such as artist name, song title and station info, display in the same manner whether the radio is receiving analog, an HD main or a supplemental channel.

The digital radio broadcasting subcommittee worked on the guideline, co-chaired by Kenwood's Mike Bergman and Journal Broadcast Group's Andy Laird.

KBCO, WRIF WIN NAB MULTICAST AWARD

A Clear Channel station in Boulder and a Greater Media station in Detroit took home the NAB's first HD Radio Multicast Award.

The association said its judges chose The Studio C Channel of rock station KBCO(FM) in Colorado and Riff2 at rocker WRIF(FM) in Michigan to share the honor, which the NAB launched this year to help promote creative multicast programming.

The Studio C Channel features only songs recorded in KBCO's Studio C. Artists include performers like Sarah McLachlan, Jackson Browne, Steve Winwood, Elvis Costello, Matchbox Twenty, Sheryl Crow and John Mayer.

Riff2, featuring local artists and other non-mainstream performers, was launched two years ago.

The award was established to recognize stations using HD Radio technology to its fullest through innovative or groundbreaking programming on a multicast channel. Stations were asked to submit info including programming, on-air personalities, promotions and branding elements, as well as anything else that established the multicast channel with a separate identity from the main station.

NAB President/CEO David Rehr presented the awards during his keynote on Sept. 27.

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Studio Sessions

Gate Meets Easyrider
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Radio World — Resource for Radio On-Air, Production and Recording — October 24, 2007

PRODUCT EVALUATION

Denon Has Network Connectivity to Boot

DN-C640 Offers Web Interface, RS-232, S/PDIF-AES Outs, GPI Closure. Oh, Yeah, It Plays CDs Too

by Stephen M. Poole

When I was asked to review the DN-C640, I read the features sheet and saw that it included an embedded Web server. I thought to myself, "This is going too far."

Nowadays, it has gotten to the point that there's network connectivity in everything from remote facility controllers to consoles, but a *CD player?* What possible use could that be?

As it turns out, it's quite useful because that network interface provides a lot more than just remote control. More on that in a moment; for now, I'll assure you that if control is what you're looking for, the DN-C640 has more choices than a buffet: Web interface, hand-held remote, RS-232 and GPI.

Full disclosure

The manual looks like the usual translation into English and doesn't explain some features, such as audio fade-up and fade-down. But Denon Professional is to be commended for publishing the complete specification on the RS-232 protocol, which basically offers the same range of control as the handheld remote.

A lot of equipment today comes with great connectivity, but it's not documented and/or will only work with special (often expensive and proprietary) software. If you have an automation system that will transmit plain ASCII serial strings, the DN-C640 can easily be integrated with it. Way to go, Denon.

As for the quality of the hardware itself, well, it's a Denon. Those of us who've used the company's other pro-audio stuff over the years have come to appreciate the solid construction and crystal-clear sound; this one is no different.

I found only two annoyances. Neither is a show stopper but they need to be mentioned.

First, Denon's other pro CD players have DSP-based features like oversampling to deal with the (now aging) base CD spec of 16 bits at 44.1 kHz. The DN-C640 apparently does not. From my reading of the manual, while the AES outputs can use a 48 kHz clock rate, the bit rate is still limited to 16 bits, even when playing a 24 bit WAV file.

Second, though the DN-C640 can be rack-mounted, Denon recommends you provide additional support for the rear if other, non-rack-mounted equipment is placed in a rack atop the unit.

The rear contains a host of connection points: there are both "pro" and "consumer" analog outs, S/PDIF and AES outs and, of course, the aforementioned 100Base-T network jack, a DB-9 for RS-232 and a DB-25 for dry-closure GPI control.

The front-panel buttons are well laid out and have a good feel, providing tactile feedback. A multi-purpose jog wheel allows you to step through tracks and to zero in on a selection.

The display looks dinky at first glance, but it is adequate. The large letters can be read from several feet away. Finally, a front-panel headphone jack with volume control allows you to monitor the audio directly — useful for cuing selections prior to air.

When I first powered it up, the display said "Booting," which drew a few chuckles. A CD player that "boots"!

It takes almost a minute to completely finish initializing, but it's all plus from that point on. Anyone who has used older players like the DN-951 will recall that it sometimes took them *forever* to load the TOC or to switch tracks. This unit is much quicker and provides a host of controls to select and preview tracks, do searches and shuttles through tracks and even "time warp" — you can change the playback speed by up to 12 percent.

Buzzers and bells

Here's where the DN-C640 really shines.

To start with, operation is smooth; it is very easy to zero in on the precise selection you want to play. You can even mark a portion of a track for later playback, and the unit offers fade-up and fade-down of the audio.

For example, suppose someone wants to play a short clip off a CD and does not have time to dub and edit before it goes on air. Once you get the hang of it, you can slap in a disc, mark the selection and then put it on air in short order.

Better yet, the DN-C640 isn't limited to standard CDs. Data CDs and DVDs containing MP3 or MPEG (MPG), WAV or WMA files also can be played. Not all of the editing functions are available with some of these formats (not surprising with compressed ones like MP3s), but this improves storage dramatically. A small station on a budget could use a couple of these players with DVDs to hold an entire playlist.

Now for the Web interface. Believe me, this is where you begin to see even more possibilities.

The DN-C640 starts as a very good pro CD player. Once you add in the networking, it becomes a complete audio play station, able to use a number of different file formats off of disk and off of a shared folder on the network. You can use it to rip cuts from CD or DVD to that shared network folder too.

This thing could play back audio for days or even weeks. You can create an

See DENON, page 26 ▶

Product Capsule:
Denon DN-C640 Network CD Player

Thumbs Up

- ✓ Well built, good sound
- ✓ Flexible, with excellent control over playback
- ✓ Web interface
- ✓ Can play from disc or network, several different file formats
- ✓ Playlists can be made to provide weeks(!) of continuous audio
- ✓ Excellent price/performance ratio

Thumbs Down

- ✓ Relatively long boot time
- ✓ Only 16 bit, no oversampling on CD playback
- ✓ User's manual is adequate, but lacks some details

PRICE: $899 list

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World Radio History

PRODUCT EVALUATION

Aphex 240 Combines Gate, Compressor

Dynamics Processor Is Affordable Dual Comp/Gate For Easyrider-Craving Live, Studio Engineers

by Stephen Murphy

Hardware audio processors struggle to find relevance in the increasingly virtual studio world, but dynamics processors such as Aphex Systems' Model 240 enjoy strong demand from the live production and broadcast markets. Competition among manufacturers remains stiff within these markets, however.

Aphex traditionally has aimed to differentiate its products from the old industry standbys and inexpensive imports through its sound quality, reliability and innovative features. This review sees whether the Aphex Systems Model 240 gated compressor ($599) meets these goals.

Channel features

The Model 240 is a single-space rackmount analog dynamics processor featuring two channels of compression and gating. The channels can be operated independently or linked for stereo program use. The 240 combines Aphex's patented and award-winning Logic-Assisted Gate and Easyrider compressor technology, and links them together in a unique, interdependent relationship.

Each channel has XLR and TRS 1/4-inch inputs (in parallel) and outputs (independent, impedance balanced). Input connectors can be fed balanced or unbalanced signals; the impedance-balanced XLR outputs can feed balanced or unbalanced destinations, while the 1/4 inch outputs are for unbalanced use only.

The operating level for each channel is selectable between +4 dBu and –10 dBv via rear-panel switches. Also on the rear are two 1/4 inch key insert points (TRS send/return configuration) for adding an equalizer before the threshold detector circuit or inputting an external key source

Each channel consists of a Logic-Assisted Gate section followed by an Easyrider compressor section. Gate controls include threshold (–60 dB to 20 dB), attack (4 uS to 100 mS), hold (5 mS to 500 mS), release (100 mS to 1 S) and depth (2 dB to 80 dB). The fixed-threshold, program-adaptive Easyrider Compressor section features a 3:1 ratio with a medium-hard knee. Its simplified set of controls includes Drive (compressor section input gain), Speed (basal time constant adjust; effectively, release time) and Output level.

Other front-panel features include power, stereo link and processing bypass (per channel) buttons. A unique metering scheme simultaneously displays a channel's gate gain-reduction status (downward-moving dot) and compressor gain-reduction status (downward-moving red bar) on a single 10-segment LED meter.

My first encounter with Aphex products was, as for many engineers of a certain vintage, the ubiquitous Aural Exciter.

The company and the novel product became fused to many (say it with me now: 'aphexauralexciter'). As the company expanded into high-quality, innovative dynamics processors and preamps, a lingering association with the original Aural Exciter may have led to the belief that the company was a one-trick pony.

That erroneous perception hopefully is long in the company's past. Like the several Bryston power amps I have owned and brutalized for 20-plus years (and worship for their stalwart performance), I have the utmost respect for Aphex products. The Compellor became one of my all-time favorite pieces of gear at my commercial facility; all of the Compellors (and the excellent 612 and 622 gates) continue to function flawlessly, despite constant use for more than 15 years.

The Aphex 240 continues the Aphex track record with a confidence-inspiring build quality and, as I have found with all Aphex pro-level products, an impeccably clean signal path.

Track record

Logical control placement and some of the best front-panel labeling I have ever seen made learning and operating the 240 a quick and intuitive affair. In high-pressure situations, these are essential qualities; qualities that were sorely lacking on a competitor's product I recently used at a broadcast facility. It's always gratifying to experience something done right immediately after toiling with something just the opposite.

Most compressor/gate combo units I have used invariably give the short shrift to one processor or the other (and sometimes both). Although there are a few obvious controls that would have been included on a single-purpose processor, Aphex pulls off the dual-channel compressor/gate trick far more seamlessly and with greater flexibility than any other similarly equipped unit I have used.

This success is due in part to Aphex Systems' established Logic-Assisted Gate and program-adaptive Easyrider compressor technology, and in part to the unique manner in which the two processors are linked. Instead of two processors ignorant of the other's existence, Aphex has joined its processors in a cooperative gate/compressor marriage (legal in most states), avoiding the common and wholly unwanted situation where the gate is closing (reducing the signal level) at the same time that the compressor is releasing (increasing the level).

Aphex achieves cooperation between the processors by intelligently "freezing" the compressor's operation whenever the gate is closing or closed. The 240 gate/compressor combo performed better in this respect than my usual path of two single-function processors in series.

If you haven't used an Aphex product equipped with a Logic-Assisted gate, you will be impressed with both its ease of operation (especially in setting a proper threshold) and flexibility. In a nutshell, the Logic-Assisted gate ensures that once the threshold is reached, it triggers the full attack-hold-release cycle. This has the ultimate effect of consistent gating performance without incidents of chatter, late or early closings and other misfirings.

Compared to typical gate/compressor combos, the 240's gate section provides a generous set of controls, including an all-important depth control. This makes the 240 suitable for anything from full-on gating to subtle downward expansion for reducing unwanted ambience and/or noise (perfect for TV studios and less-than-perfect locations).

I would be remiss if I didn't lament the omission of a built-in key filter control, for which I would gladly sacrifice the key insert point. Of course, then someone else will complain there's no external key insert.

The compressor section of the Model 240 seems woefully lacking at first glance, considering that it consists of just three controls, two of which are input and output gain. But I found to my surprise the compressor section quite effective for most applications. Between the program-adaptive Easyrider technology and the unified Speed knob, it was easy to dial up appropriate settings and tweaks. Its fixed 3:1 ratio combined with a reasonably hard knee proved to be a good design choice for covering the greatest range of uses.

Conclusion

It should be noted, especially for on-air use, that the fixed threshold nature of the compressor requires a bit more care (and two hands) to increase or decrease gain reduction without noticeably affecting output volume.

Aphex Systems has made some of the finest products I have used in studio and broadcast applications. The Aphex 1100 is second only to APIs as my first-call high-end mic preamps, and I have yet to find any products that rival the transparent leveling of the Aphex Compellor or flexibility of the 622 gate.

The Aphex Systems Model 240 inherits many of its predecessors' traits and technologies and links them together in an effective package that's sure to impress demanding broadcast, live and studio engineers.

Stephen Murphy is studio editor for Radio World's sister publication Pro Audio Review. His Web site is www.smurphco.com

Product Capsule: Aphex 240 Dual-Channel Gated Compressor

Thumbs Up

- ✓ Dual-channel gate and compressor
- ✓ XLR and 1/4-insert I/O
- ✓ Flexible balanced or unbalanced operation
- ✓ Patented Logic-Assisted Gate and Easyrider Compressor technology

Thumbs Down

- ✓ Lacks built-in key filter control

PRICE: $599

CONTACT: *Aphex Systems at (818) 767-2929 or visit* www.aphex.com.

Denon

▶ Continued from page 24

M3U listing (sometimes called a 'WinAmp playlist') that pulls in cuts from both the network and CD/DVD, interspersed in any order, and be limited only by space on the disc and/or in the network folder.

When you first boot up the DN-C640, by default it will use DHCP to obtain an IP address from your network. You can use the front-panel buttons to find that assigned address. Write it down (ex., '192.168.50.100'), then go to any Web browser on that same network, enter that IP address and you'll see the main control screen for the DN-C640.

The first thing you'll want to do is to assign a static IP address to it. Then browse to that address, bookmark that page and before long, even the more technically-challenged amongst your staff could be working with playlists and ripping audio into the system.

A number of possibilities came to my mind while I worked with the DN-C640. I've mentioned that it can be integrated with an automation system, but that's just a start.

For example, you could place one of these at a tower site with a DVD to provide backup if you should lose your STL. If you have Internet access at that tower site, you could even update and upload audio on the fly.

Here's one more idea: Many stations stream on the Web now, but need to cut out agency spots to avoid paying royalties. The DN-C640 might be ideal for that. You could put in a CD or DVD loaded with PSAs and instrumental music, make up a playlist, then have it fire into the streaming computer (via GPI closure or serial string) anytime an agency spot comes along.

One final recommendation: Plug it into a UPS. Like most digital equipment, its brains could become scrambled if there were a power surge or brief outage. Having it on an uninterruptible supply also will prevent the need to wait for a lengthy reboot before you can use it again.

At a suggested list of $899, this thing is a bargain, considering all that it can do. I've seen prices online under $700, making it even more of a deal.

I strongly recommend this unit, even to stations that might think they don't have much use for CDs anymore, what with most audio being stored on hard drives today. But once you really get to know what the DN-C640 can do, you'll become convinced that it's a veritable Swiss Army knife for audio work. Anyone with a good imagination can come up with ways to use it to address needs in the average facility.

Stephen Poole is an engineer with Crawford Broadcasting, Birmingham, Ala.

World Radio History

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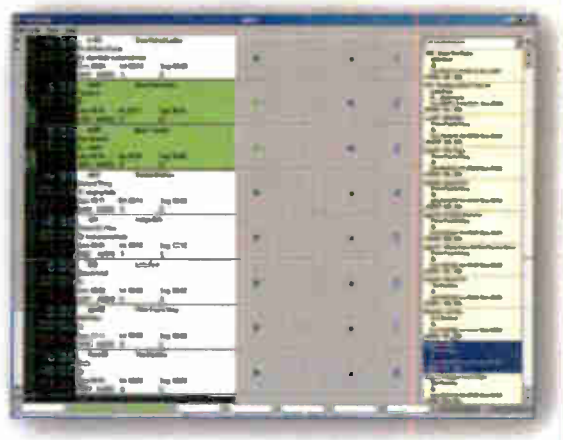

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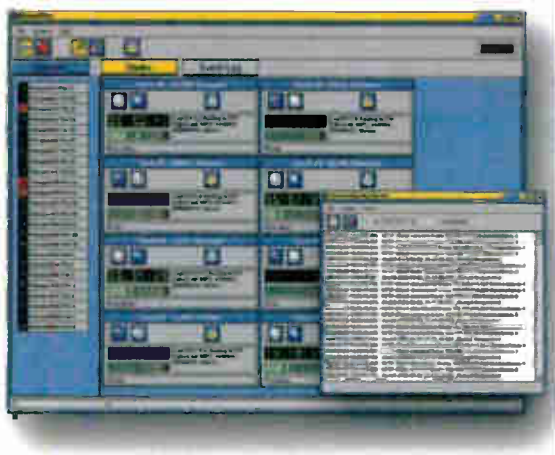

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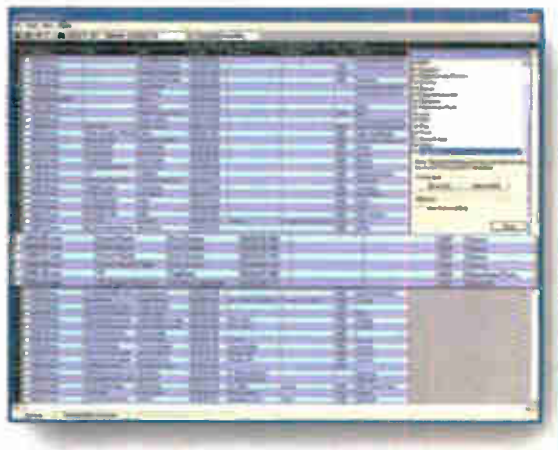

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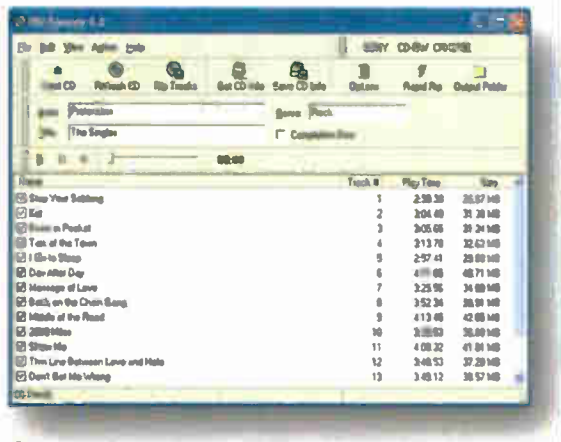

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World Radio History

USER REPORT

AudioVault Adapts Well to Change

WFCJ Has Used BE System for Sending News to Web Site, Controlling Satellite Receivers, Switchers

by John Graham
Chief Engineer
WFCJ(FM) Worship-HD2

DAYTON, Ohio WFCJ(FM) is a nonprofit religious radio station that has been operating in Dayton, Ohio, for over 45 years.

In 1995, the station built new studios due to a growing need for space and to be prepared to take advantage of new technology. During that year I had gone to NAB to see what was coming in the way of technology. I saw the use of computers to automate various operations of a station, digital consoles and HD Radio.

As a religious station, most of our programs were sent to us in the mail by tape or cassette, but times were changing. Our programmers were beginning to send their programs to us by satellite, and I needed a way to capture them.

So I'd built a unit of Mr. Coffee timers and cassette decks to record them. We used that setup for five years but the demand was too much for the system. During the studio build-out, we decided we needed to move to a computer-based operation and use it to help in recording various daily programs.

I decided I needed a computer system the staff was not afraid to use and could easily understand. It needed to be adaptable to change and have good tech support. I looked at companies I thought would still be in business five to 10 years down the road to support this system.

In 1996, the decision was made to go with **Broadcast Electronics** and its AudioVault system.

The AudioVault has turned out to be a good, reliable automation system for WFCJ.

Familiar face

The station had been using a transmitter and cart decks — both made by BE — for several years. So I knew what kind of support the AudioVault system would have behind it. The screens for Play and Record looked just like our BE cart decks, so the staff adapted well to the system.

Currently our system is an eight-computer setup. In air control there is an AVAir/AVSat computer for on-air operation for live and full satellite operations, and a second unit for play and record. The newsroom and production both have play and record computers with production setup as a backup to air control. Two other computers are setup with the AVNet screen to record network programming and control our Wegener Unity 4000 satellite receivers.

Midday Announcer Jim Williams is shown in WFCJ's on-air control room using the AVAir screen and a production screen.

I have a play and record unit in my office that I use to setup playlists, check audio, edit cuts and add cuts as well. In 2006, WFCJ began to broadcast with HD and multicast so another AVAir computer was added to handle operations.

When we bought the AudioVault system, we got the NewsBoss software for our news department. It has been a great program for our news people over the years. We can send news stories to our Web site, capture various news wires, get e-mail and now receive faxes from The Weather Channel.

The AV-Scheduler program has helped us to streamline our logging. We generate our main log for on-air operation and our HD-2 broadcast. Clocks are easy to setup and change as needed. We have it networked through the Vault system for easy operation from different studios.

The AVRip utility is a CD rip program, which is a great tool for transferring song and long-form programs into the Vault. The Import/Export utility is another program to transfer audio in and out of the Vault system. I use it to transfer a cut out of the Vault to send to a client for their approval. These two utility programs I use on my office Vault save me a lot of time when waiting to get the use of a studio. My office has become my own private production studio.

Over the years, I have had to adapt the AudioVault to various changes in our operation. We use AudioVault to control satellite receivers and switchers. The AVAir computer sends out data to our RDS encoder and HD operations with artist and song title information. In the future we are preparing for store and forward technology that we will be using with the Vault system.

Now completing 11 years usage with the AudioVault system, I can say that the tech support from BE has been there to help when a new use for the system is needed. BE also has a user forum for users to share and trade ideas around with each other. I have used it many times to help solve a problem before I need to call the factory.

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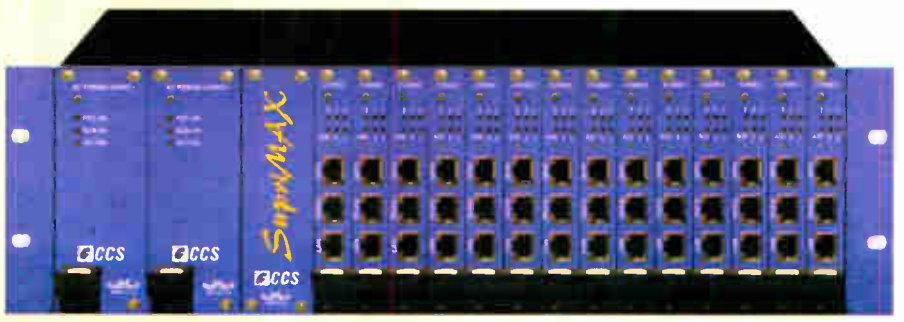

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World Radio History

USER REPORT

Vermont Stations Ditch Carts for DAD

WVMT, WXXX Use ENCO's Digital Audio Delivery System to Provide Live-Assist Logs, Full Automation

by Mark Esbjerg
Operations Manager
WVMT(AM)/WXXX(FM)

BURLINGTON, Vt. When WVMT (AM)/WXXX(FM) was shopping for a new audio delivery/automation system years ago, we had been using an early — and we felt, primitive — simple automation system from another company for three or four years. The process to load and program it was slightly more complicated than I imagine it was to launch a nuclear ICBM.

It took two disc jockeys wearing sidearms and an inch-thick manual almost as much time each day to get the thing ready to air as it would be to staff the station in real time. The only upside to the process was that we integrated automation at the same pace that announcers left our employ, so no one was "replaced by automation."

Customary service

Chief Engineer Mike Seguin shopped the major systems available at the time and decided to go with **ENCO Systems'** DAD system for automation and digital audio distribution for the two stations. He found that ENCO was able to accommodate the different needs for our news/talk and CHR formats, and provide features to help us streamline operations as the needs of the business evolved over the years.

Esbjerg creates rack space to install the new ENCO server: 'I determined the directional AM controller and EAS unit being removed were probably nonessential.'

ENCO technical support, as I was quickly relayed to Dave Fuller from ENCO on his "car phone" (as cellular service was referred to at the time) driving with his wife to his mother-in-law's house in Indiana.

Dave, going 70 miles an hour with one hand on the wheel and his other hand holding his mailbox-sized "bag phone," quickly triaged our network over the phone ('...so we have two Seagate audio Drives and two IBM data drives showing in Novell? Well, that gives us something to work with!').

He had us back on the air within 20 minutes. Over the years, calls of every level of urgency have been handled by ENCO technical support with the utmost of expertise and professionalism.

ENCO says the latest release of DAD features enhancements to the AirPlay live playback user interface.

With ENCO's help he created custom import software to easily integrate our current traffic and music systems into ENCO to provide live-assist logs for WXXX and full automation for WVMT.

WXXX announcers left behind their beloved carts and the incredible fidelity and reliability of spinning magnetic tape.

WVMT used ENCO's timed record capabilities to grab and air both short-and long-form features from an automatically switched bank of satellite receivers.

WVMT/WXXX had our new ENCO network up and running for exactly four days when, sensing that our chief engineer had left the state, our new non-ENCO supplied UPS unit had an identity crisis and turned itself into an Easy-Bake Oven. I came to the station on the Saturday before Mother's Day to experience that lovely "burning electronics" smell in the server room and two radio stations off the air.

At that point in the 1990s, ENCO apparently had not determined how to run its equipment without electricity, and I had not at a glance learned to determine exactly what was frying in the rack. This is when we first experienced the excellent

Denouement

We recently completed an entire ENCO network replacement after our old system was crippled by a lightning strike this past summer. The old network, while damaged, still functioned until the new gear was delivered and installed.

And apparently in the interval between the time we first installed the original ENCO and now, Microsoft has gotten into the business of server operating systems. I am almost at the point where I can put away my DOS command cheat sheet.

For more information, including pricing, contact ENCO Systems at (800) ENCOSYS 362-6797 or visit www.enco.com.

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World Radio History

USER REPORT

Simian Goes to the Drive-In

by Jack Ondracek
Contract Engineer and Theater Owner

BREMERTON, Wash. Much has been said about the flexibility and "cost vs. feature ratio" of **Broadcast Software International**'s Simian automation software. Over the past five years we've worked with the system, we've had every opportunity to evaluate the entire package, from many of the software and hardware configurations to our ongoing relationship with BSI's sales and support staff.

As an owner, daily user and contract engineer for various installations of BSI systems, I can say from experience that BSI scores extremely high in every area I've experienced.

In comparing Simian automation to other systems, it's easy to say that it will handle most everything you can dream up, and do it well. Simian is equally at home with "music on hard drive," full automation, live-assisted formats, satellite, network and streaming tasks.

Would you expect to see a broadcast automation system in charge of the projection booth of a drive-in theater?

Integration with satellite receivers, switching hardware from Broadcast Tools, logging and music scheduling from Natural Software and the full range of sound and mixing cards from Audio Science make it easy to configure your ideal package. Depending on your experience and criteria, the fact that you can build your own computer platform or purchase one "ready to go" from BSI is an added plus.

Given the reasonable prices for the software and service packages BSI offers, it amazes me that they are able to provide a high level of ongoing support for the product. But they do it, and do it well. The software is written and tested in-house, so the support people are able to replicate any problems and work out solutions in short order. BSI also hosts a yearly training seminar, which can further enhance your knowledge of the system's capabilities.

On-air, on-screen

Speaking of flexibility: Would you expect to see a broadcast automation system in charge of the projection booth of a drive-in theater? It happens that this was our first experience with the product and its manufacturer.

Consider for a moment: What is a movie projector but a playback device for film, much as our old cart machines and reel-to reel decks were for tape?

In both cases, a contact closure from the outside can start the device. Handling audio and cue triggers from the playback are literally the same. Once you get past the originating machinery, it's not hard to see how a system like Simian could be put to use; playing pre-show and intermission music and commercial content, switching the projectors on, mixing digital and analog audio channels, and controlling perimeter lighting with relay contacts from the Broadcast Tools switchers.

We did just that. Our multi-instance version of Simian has "run the show" at our three-screen Rodeo Drive-In over the past five years, and has turned out a polished, daily program that would be difficult, if not impossible to duplicate manually.

Rather than run from the opportunity, the BSI folks took our theatre application and treated us as they would a traditional broadcast customer. They assisted with interface suggestions and worked through some initial kinks, just as they would have if we had been calling from a radio station. That, along with attendance at their training seminar pretty much sold me on their product quality and company commitment.

If you're looking for a reliable and reasonably priced product, with flexibility that's likely limited only by your imagination, and a qualified and dedicated support structure, I encourage you to look into the products of Broadcast Software International.

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

The touchscreen monitor shows one of four Simian programs that operate three projectors and provide music programming.

Success comes from knowing what you do best, and then doing it. At ENCO, we know broadcast software, and that's what we do. DAD, from ENCO, is reliable, powerful audio playout and automation that's easy to use...and affordable to purchase. Since 1992, ENCO has provided mission critical systems to small, medium and large markets as well as major radio networks and groups. Your business depends on the audio you play, and you can rely on DAD.

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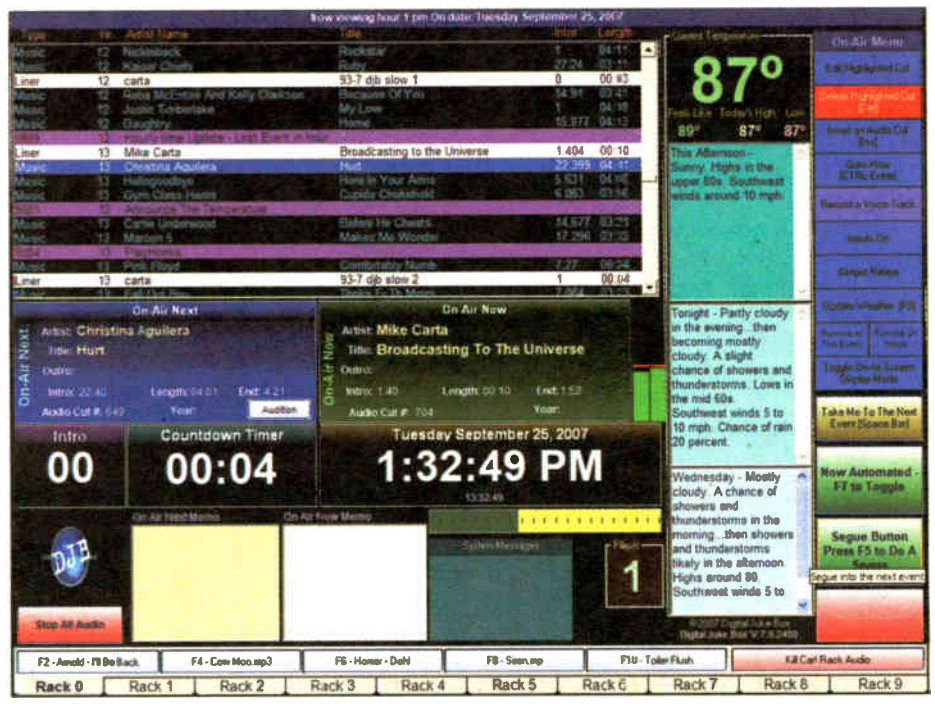
World Radio History

USER REPORT

WOOP Plays Appalachian on Digital Jukebox

by Jerry Venable
Executive Director and General Manager
WOOP(LP)



Digital Jukebox On-Air Screen

CLEVELAND, Tenn. WOOP(LP) is a low-power non-commercial low-power FM radio station operated by a nonprofit arts organization, the Traditional Music Resource Center.

The mission of the organization is the preservation, performance, broadcast and performance of music traditional to the Appalachian area of the southeast United States.

The music format of the 24/7 station is traditional country music, bluegrass, old-fashioned gospel music with roots, acoustic, cowboy and samplings of other related music forms liberally included in the broadcast day. There are no compensated employees and our air "talent" consists of any individual with an interest to have a show on our little community radio station.

Truly a niche broadcaster, WOOP faces the typical low-power broadcaster challenges, servicing an audience with a narrow interest music format, really low power and reach, surviving in a noncommercial revenue environment, maximizing the value of capital expenditures and integrating technology so the 24/7 broadcasts are automated by a system that also can allow a once-a-week show host to operate it without supervisory or engineering support.

WOOP would not and could not exist without a reasonably priced, fully-functional automation system. That's what the **Digital Jukebox** is for this organization.

Our first experience with the Digital Jukebox dates to early 1998 when a predecessor entity to the arts organization became one of the first "radio" stations to broadcast live, 24/7 radio-style programming over the Internet.

First impressions

Although computer automation was not an "infant" at that time, it was still struggling through puberty compared to today's state-of-the-art systems.

Today's challenges of routing, networking and Cat-5 integration replaced the simple, but real 1998 challenge of having a system that would stay on the air with the Windows 95 operating system. The Digital Jukebox was the answer; it was affordable and used the DOS operating system, and that marked the beginning of our relationship with Digital Jukebox that continues today.

In recent years, when the instability of Windows 95 was replaced by the stability of Windows XP, the Digital Jukebox was programmed to use the new operating system, and networking, Web interfaces, remote administration and large-size storage devices created amazing opportunities for a small, niche broadcaster like WOOP.

While we have been long-term users of Digital Jukebox, our organizational capital and operating budgets cause us constantly to review what is available in automation systems for the initial and recurring dollar outlays.

For us, the answer has been and remains the Digital Jukebox because it provides what we need: value for our invested dollars. There are systems available for smaller outlays, but we have found none that provide the features, reliability and support of Digital Jukebox.

Dollars aside, Digital Jukebox lets us have a radio station when it would be impossible to broadcast without a dependable automation system that keeps playing the music.

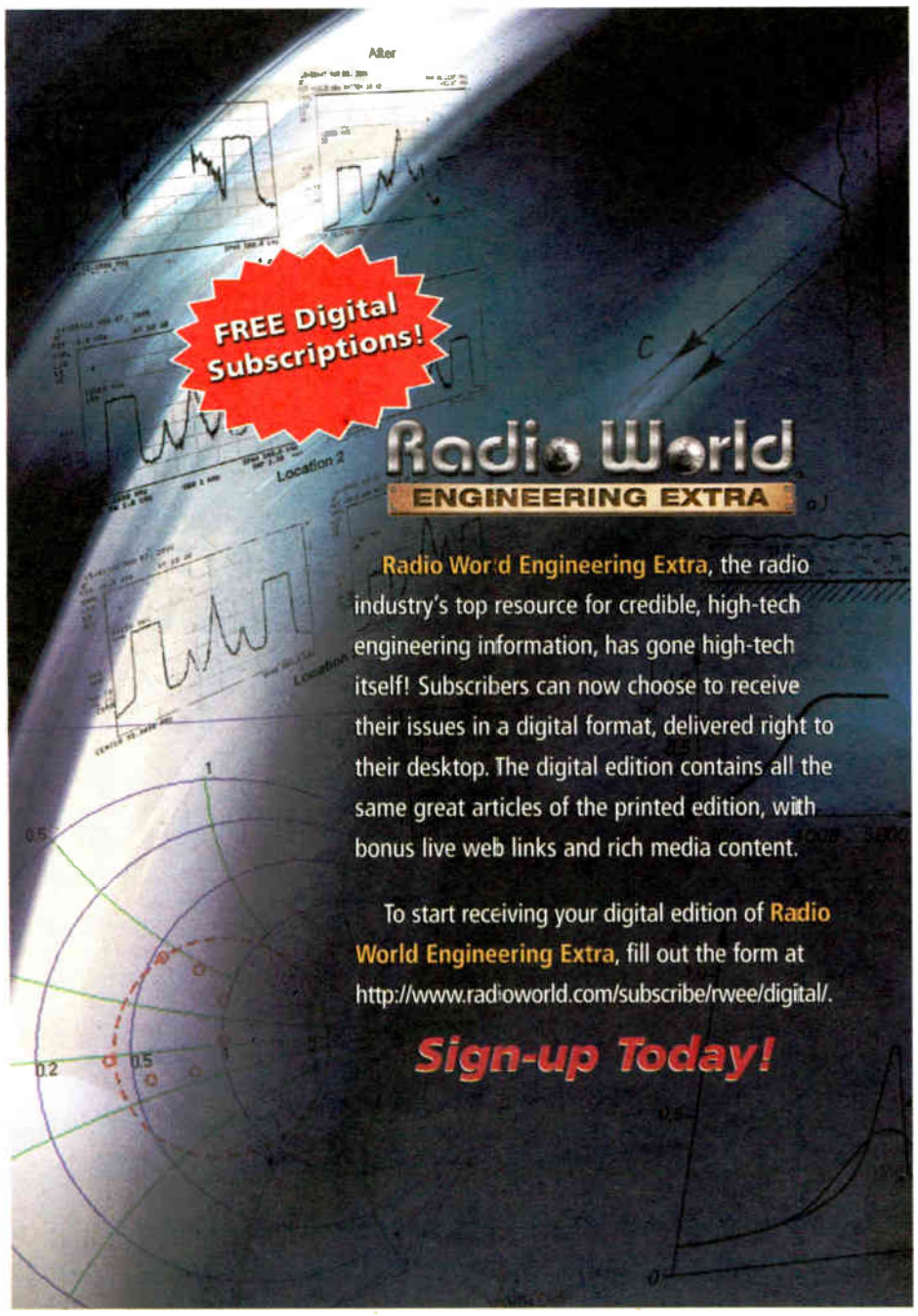
Necessary

Features that are critical for WOOP are easy to identify.

First, the interface is user-friendly, intuitive and easy to learn and operate. We have no experienced radio talent; each new program host is a "tabula rasa" experience, including the 70-year-old grandmother with a gospel show on Sundays. She learned the system quickly, but clicking the mouse (without double-clicking) remains an insurmountable challenge.

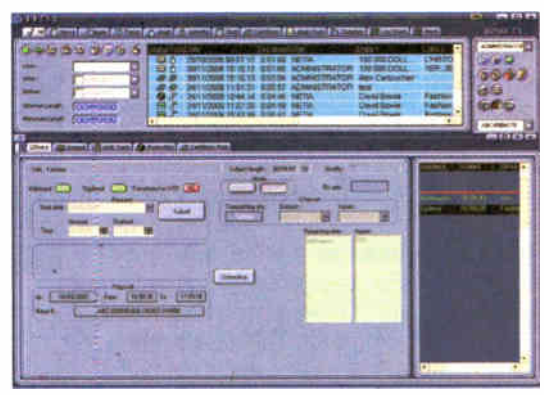
The large-capacity storage devices have given us an opportunity to build a big music library that includes all sea-

See WOOP, page 33 ▶



TECH UPDATE

Radio-Assist Adds 5.1, 7.1 Support



The U-Share Network Management System, Located Within the Radio-Assist Interface

Netia says its Radio-Assist 7.5 range of digital audio software programs now supports both 5.1 and 7.1 multichannel audio, from acquisition through to broadcast. Users can record an input containing up to 5+1 or 7+1 channels, edit that content using the Snippet tool and broadcast finished media through the Air-Cartstack application.

Radio-Assist 7.5 allows production staff to record, edit or prepare playlists while working within a single application. The software suite features tools for acquisition, sound-file editing, commercial and music production, newsroom systems, scheduling, multicasting and administration, and it adapts to the requirements of individual radio facilities or radio groups, according to the company.

In addition to multichannel audio support, a number of new features boost flexible handling of media within production and playout processes, such as integration of Netia's U-Share network management system, which automates the exchange of content over to latest transmission platforms to ease the distribution of audio content from one site to multiple destinations.

Additionally, the Feed-In IP Mode supports daily scheduling of automatic recordings of external programs, and custom Axia IP-Audio networking components are available bundled with the Netia software to enable delivery of audio from an audio workstation running Windows to an Axia audio network.

For more information, contact Netia in New Jersey at (888) 207-2480 or visit www.netia.net.

World Radio History

USER REPORT

Will the Real Caller 10 Please Stand Up?

Stations Use NeoWinners Software to Organize Contest Information and Weed Out 'Prize Pigs'

by Alex Byrne
Promotions Director
Springfield Rock Radio Group

SPRINGFIELD, Mass. When I joined the Springfield Rock Radio Group — WAQY(FM) "Rock 102" and WLZX(FM) "Lazer 99.3" — I was pleasantly surprised to find a piece of software the promotions department had at its disposal which was incredibly helpful in streamlining contests, liner scheduling and prize fulfilment.

In the past, the stations I had worked for had been handling contests manually with paper forms for years.

We had difficulty tracking winners to ensure they waited 30 days before winning again, and weeding out the "prize pigs," the guys who try to fool the on-air staff and win several times a week. The station jocks would even occasionally skip over on-air contests because they didn't have the information they needed right in front of them; or they simply didn't have any reminder on the screen.

We also had some issues with winners showing up at the front desk looking for their prize, and their information had not yet been processed, making us look unprofessional.

These problems would occur because there were so many people involved in the prize process, and there was no central point for the information to be housed.

Did I win?

Springfield Rock Radio Group found a product that seemed to contain all the necessary functionalities to help a radio team be more efficient: NeoWinners from **NeoGroupe**, which claims more than 100 radio station clients, including in the United States and Canada.

NeoGroupe helped with training and in establishing the database. Since then, any information regarding contest winners is found in NeoWinners.

Producing guest lists for events now only takes a couple of seconds. We just print the appropriate report and can e-mail this directly from the program with the embedded functions.

At a glance, jocks find their contest log together with instructions so they no longer need to look through a three-ring binder or on a printed log. Front-desk employees can now immediately look for a name and find the appropriate winner instantly. There is even barcode management if necessary. Many useful functions are available that ease contests and follow-ups.

Alex Byrne

This program has saved us a lot of time — particularly myself as the promotions director — and allowed us to be less dependent on others in the office. I can be out of the office for meetings, or take a day off here and there, and feel comfortable knowing that contests, liners, promos and prize fulfilment will continue smoothly. NeoWinners helps the promotions department, and our stations as a whole, be more organized both on and off the air.

For more information, including pricing, contact NeoGroupe c/o Telos Systems at (210) 757-4700 or visit www.neogroupe.com.

WOOP

▶ Continued from page 32

sonal music, special-interest or event music and live performance recordings.

With a legacy of Internet broadcasting, WOOP streams its audio signal online at its Web site, *www.woopfm.com*. The Digital Jukebox interface to place the song title and artist information on our Web site to accompany the audio stream was almost too simple. We are in process of installing an SC100 RDS encoder and will soon be sending this same song title and artist information to RDS-enabled car radios, just like the "big boys." Digital Jukebox allows us to be the high-tech rednecks.

Finally, and in a selfish way, having an automation system that integrates seamlessly to the Internet allows me as the executive director and general manager to access the computers by remote control no matter where I may be physically located. This is a luxury for any bare-bones organization.

For more information, including pricing, contact Digital Jukebox (888) On Air-99 (662-4799), or visit www.digitaljukebox.com.

World Radio History

USER REPORT

D.A.V.I.D. Facilitates Workflow at WNYC

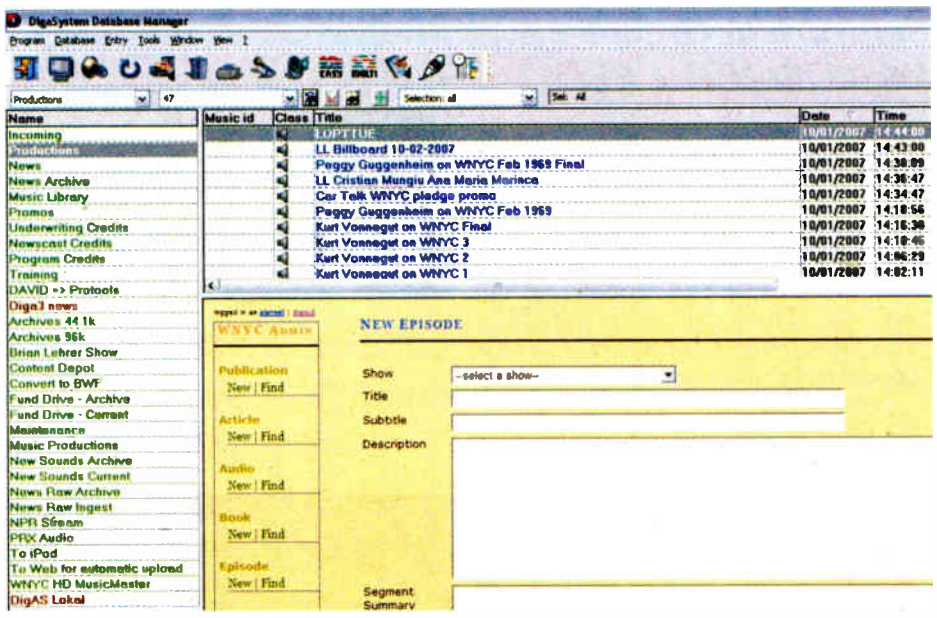
by Angelo Bello
Digital Audio Network Engineer
WNYC New York Public Radio

NEW YORK WNYC New York Public Radio has chosen the **D.A.V.I.D.** DigaSystem for asset management and content delivery as we embark on a major expansion and relocation project in 2007-08.

For an organization the size and scope of WNYC, the transition to an all-digital media asset and automation delivery system presents challenges in primarily two distinct yet interrelated areas: the human network and the machine network.

By "human network" we mean the relationships and workflows among staff members that handle tasks ranging from content creation, scheduling, broadcasting and archiving, to broadcast and on-demand delivery of content to Web and to the airwaves.

By "machine network" we mean the hardware and software components needed for successful delivery of content to listeners. The D.A.V.I.D. system has provided the tools for facilitating the paradigm shift at WNYC, in both the way we think about content and the way we deliver that content.



DigaSystem Database Manager is shown with Web browser functionality switched on. The default page in the browser has been configured to open WNYC's custom CMS data entry page, allowing users to enter metadata for content that is to be published to the Web site from the D.A.V.I.D. system.

Customized metadata masks

The modularity and flexibility of the system make possible the translation of complex relationships and workflows between staff members into transparent background tasks, freeing staff to concentrate their efforts on content itself, as opposed to concentrating on tedious and repetitious routines or on problem-solving. Below are case studies of such tasks, illustrating how the D.A.V.I.D. DigaSystem has functioned as an aid to problem-solving and work-flow efficiency.

With version 3 of the D.A.V.I.D. Database Manager, it is possible to create customized metadata masks that cater to specific departments and functions.

For example, WNYC's archive of historical audio is on various formats ranging from wax cylinders and acetate plates to CDs and DAT tapes. The PBCore specification, which defines a multitude of fields describing archival assets, is the template for a customized metadata mask that allows WNYC's archives department accurately and robustly to describe a catalog that exceeds 30,000 individual items and is growing rapidly.

Likewise, a customized metadata mask is defined for WNYC's music catalog, as well as for news-related content. These independent assets are accessible by users across the station, since the D.A.V.I.D. Database Manager is the entry point into WNYC's assets, permitting cross-usage for features, programs and special projects.

Media transfer

One of the strengths of the D.A.V.I.D. system is its ability to convert content into multiple file formats and distribute that content to multiple destinations, as background processes transparent to the user.

For example, if a user needs to deliver content to the Public Radio Exchange (PRX), a simple drag and drop into a database table, or a simple click on a check box on the metadata form, initiates a conversion and delivery task. The content is delivered to the PRX FTP site without further intervention by the user.

Content can be distributed internally as well, allowing WNYC to publish content on our Web site (daily scheduled programming, newsbreaks, specials), immediately after it has been broadcast. Automated recording schedules capture the content, MP3 ID3 metadata is inserted automatically, and content is converted and sent to our Web server

As we deliver increasingly varied rich media to our Web site, the D.A.V.I.D. system is capable of handling a multitude of formats and media types (video, graphics, text, in addition to audio), and can, for example, deliver podcasts at various bit rates, mono or stereo, depending on the content.

Bidirectional metadata exchange

Four primary departments at WNYC — Archives, News, Music and Interactive Web — have been using four separate databases to catalog and manage assets. Our archives department uses Microsoft Access; the News department, NewsBoss; Music, Music Master scheduling software; Web, a proprietary CMS developed in-house.

The D.A.V.I.D. system can exchange metadata among these four databases, allowing us to maintain existing workflows if required, as we further migrate into D.A.V.I.D.

At the same time, this exchange of database information has provided opportunities for, in some cases, the elimination of now unnecessary workflows. By exchanging metadata between D.A.V.I.D. and our interactive Web CMS, for example, users can provide information at a single-point-of-entry, eliminating redundancy and information transfer by proxy.

Drag-and-drop

The D.A.V.I.D. system's drag-and-drop capabilities include the ability to drop content from the Database Manager into the EasyTrack editing tool, the DigAIRange scheduling tool, as well as the DigaROC on-air player.

Users also are able to drag content from the Database Manager directly into an open ProTools session, where the content can then be incorporated into large production pieces. By installing ProTools and the DigaSystem on the same PC workstation, the transfer of content between the two networks becomes seamless.

Additionally, with the use of portable Flash recorders that appear as attached hard drives once connected to a D.A.V.I.D. workstation, WNYC reporters are able to transfer content recorded in the field directly into the DBM via drag and drop.

For more information, including pricing, contact D.A.V.I.D. Systems at (888) 374-3040 or visit www.davidsystems.us.

USER REPORT

CKLB Keeps 'Live, Friendly' Feel With CDS[32]

by Dane Gibson
Executive Director
CKLB(FM)

YELLOWKNIFE, Northwest Territories CKLB(FM) is owned and operated by the Native Communications Society of the Northwest Territories. Our newly remodeled studios are on the shores of the lake in Yellowknife, Canada. Our main frequency is 101.9, but we utilize more than 30 repeaters to reach our listeners in a broadcast footprint that spans more than 1.2 million square kilometers.

Two years ago, I centered my attention upon upgrading our station's broadcast automation system to present-day standards. I researched the major systems by various big-name vendors before awarding our project to **Pristine Systems.**

CDS[32] is shown playing a music log.

Live feel

Pristine Systems' CDS[32] PRO software suite fulfills our talent-driven, live-assist mornings, afternoons and early evenings.

Each of our announcers is a talented and respected leader in our community. Our solution also allows us to provide complete walk-away programming in the evenings and overnights as well as the weekends, while maintaining a live and friendly feel. Many of our announcers have been stopped while in town and asked, "What are you doing here? You're on the air."

One cool feature is Smart Promo. CDS[32] looks down a music log and assembles slick "Coming up next"-style promos from your music library in real time.

The voice tracker allows our talent to see the music log and record "dry" or "wet"; the announcer gets the feel of actually being on the air because he hears what will play in real time. The announcer can create voice tracks from any CDS[32] workstation in the building or from the Internet. We often have more than one announcer simultaneously cutting voice tracks for the same station.

The CDS[32] automation plays commercially available music libraries and audio files. Uncompressed PCM, MPEG Layer II & III, DolbyAC2, ADPCM and other formats are supported. This eases importing audio files from a digital editor, third-party music provider, advertising agency or the Internet.

CDS[32] imports traffic logs from any traffic company, but we selected Summit

See CDS[32], page 37 ▶

World Radio History

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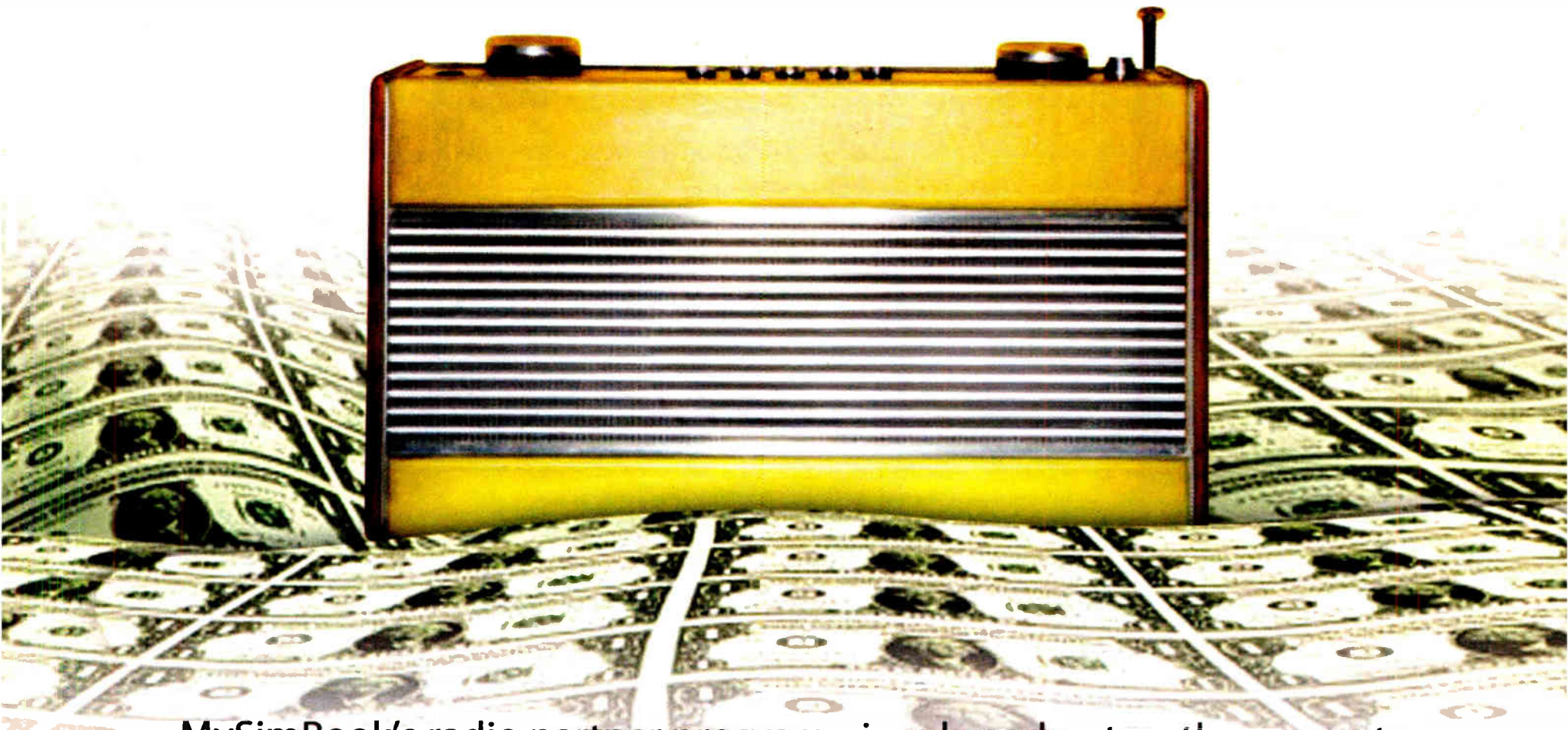

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World Radio History

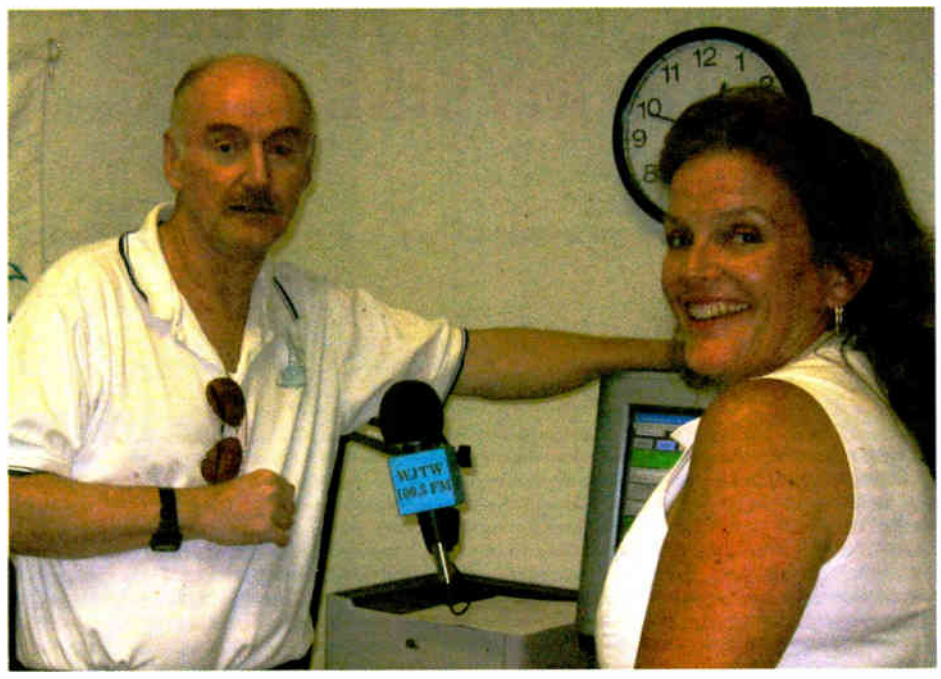
USER REPORT

Automatronix Adds Sort, Random Functions

by Tom Boyhan
President
WJTW(FM) Radio

JUPITER, Fla. Automation is the heart's blood of radio broadcasting today. If you want to run a small or medium-sized radio station successfully, you better have an automation program that's reliable, easy to learn and use and preferably won't cost you a fortune.

When WJTW(FM) 100.3 went on the air in 2003, we had such an automation program: Automatronix from **JT Communications**. It was an extremely easy program to learn and a bargain at $399. Today's version costs $449. And as for reliability, we're still using Automatronix after four years. One of the main reasons we are still using the same automation program is because the author of the program, Jim Trapani, keeps improving and updating it.



Tom Boyhan, shown with Program Director Kathy Greene.

Spot on

One of the improvements incorporated in the Automatronix program is the ability to sort items in the Playlist Editor using the Sort button.

This is especially useful when looking for duplicate songs. We've downloaded approximately 3,400 songs into our playlist, and most were input by volunteers. Needless to say we had a fair number of duplicates. We've sorted and deleted around 200 duplicate songs.

The on-air playlist also can be transferred to the Playlist Editor and edited in the background. This is useful to be able to edit on the fly.

Using random files continues to be a great feature of this automation program. It has proven to be a major selling tool for us.

Sponsors love the idea that they can create many different spots describing their businesses and then store them in random files. Then, when a sponsor's spot is scheduled to play, Automatronix reaches into the random file and picks one of the spots. Each time one of these random files plays, it is highlighting a different aspect of the business. Sponsors adore this.

We don't use any satellite programs but Automatronix fully supports such programming. In fact, one of the improvements to the program now allows you to use random files with the hot keys. This is a great feature for satellite users as it gives them the ability to rotate their liners.

Also as part of the upgrades, after downloading programs from the Internet, Automatronix will search for the program and then synchronize your computer time with the Internet time.

When we went searching for an automation program in 2003, we almost passed on the Automatronix program for two reasons.

The first was a fundamental problem: We didn't know how to reset the time and date formats. It was a simple procedure that was easily explained to us, but now users don't even have to know that. The program runs immediately after it is installed. All the user needs to do is install the program and then download music into a file.

The second reason was simply aesthetics. The program did not fit the entire screen and it looked awkward. Whether one would really consider that a problem doesn't matter anymore. The program has been resized so it fits the screen.

The "meat and potatoes" of any automation program is its ability to go 24/7; play the desired music or programs; and play spots, liners and station identifications when you want them to play. Automatronix does all that and gives you great flexibility in scheduling any event. Schedule anything — spots, liners, etc. — to run once only, once a week, once a day or hourly.

Another feature that will give you peace of mind is the internal silence sensor. If for whatever reason the program stops playing, it will wait a pre-determined amount of seconds from 1 to 60, and then it will fire the next available player.

Perhaps one of the biggest plusses for me is that if I have a question about Automatronix, I can pick up the phone and talk directly to the person who wrote the program. I'm not talking to a faceless person in India; I'm talking to someone who knows the program inside and out. And you don't have to pay for costly support and updates. We're 3-1/2 years using Automatronix and Jim still supports us. And when he has a new update, he e-mails it to us.

Each time a random file plays, it is highlighting a different aspect of the business. Sponsors adore this.

We could have spent more money and gotten an automation program with more bells and whistles, but we wouldn't have found a better automation system, just a more expensive one.

For more information, including pricing, contact JT Communications at (352) 236-0744 or visit www.automatronix.com.

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World Radio History

USER REPORT

Eagle Taps NexGen for Networking, WANcasting

by David Fudge, Chief Operator and Heather James, Assistant Program Director KELN(FM)/KOOQ(AM)

NORTH PLATTE, Neb. Small-market radio stations don't buy new on-air software every day. For that matter we don't get to buy it yearly.

Nope, maybe once a decade for us. So when we began shopping for a product to upgrade our mid-'90s technology, the goal was to find something cutting-edge. After all, we'll go through at least two presidential terms before we do this again. We wanted something that not only would increase our flexibility, but also would allow us to utilize talent from across our company, Eagle Communications, which features 21 stations in seven markets.

Our team researched several systems but settled on NexGen from **RCS**. The system stood out on a number of fronts, but won because of its networking and WANcasting features.

It offers seamless station integration across our three markets that have NexGen installed. In North Platte, we see logs for St. Joseph, Mo., and Hutchinson, Kan., as if they were our stations. Translation: when we have a jock out, it's just as easy to have talent in one of our other markets step in and substitute. Voice tracks are transmitted from station to station in lightning-quick times, and give us the ability to sound "live" from seven hours away.

Learning curve

From the beginning, NexGen has been easy to operate and understand, even for senior members of the staff who are not as computer literate. After the first day of training, staff members were able to remember and comprehend the applications and put them into practice.

As a small station, our staff has to wear a lot of hats. While it proves to be great experience, it doesn't leave a lot of time for our on-air talent, and this is where NexGen has really come into play.

It has expanded what we're able to do on-air and allowed us to focus our attention on other areas instead. For example, the broadcasts have become automated, which not only eliminates the need for a board operator, saving the company money, but also has proven to sound more professional, concise and crisp.

But bells and whistles are nothing without support, which is where NexGen stands out. No frustrated computer user likes to dial the support number and be put on hold for hours listening to elevator music, or worse, automatically directed to another computer. When we need to make a support call to RCS, we always get a live person. And generally, we wait no longer than three minutes to get to that person.

In other markets that have not switched to NexGen yet — we are phasing it in — horror stories are told by staff members who place calls to support for their product, then wait hours and sometimes days to get a call back. You will not have that problem with NexGen. The people you get on the phone know the product well, and if you ask them a question for which they have no answer, you're quickly sent

See RCS, page 38 ▶

David Fudge studies the NexGen system.

CDS32

▶ Continued from page 34

Traffic as it is a sister company to Pristine Systems and allows for integration between products.

CDS32 reads and merges the logs generated and then performs a quick scan to confirm all spots on the log are available. Operators may make changes in real time. Management is pleased because this has resulted in fewer missed spots and on-air mistakes.

CDS32 allows stations to reach their audience in various ways. Not only do we broadcast quality audio, we deliver song titles, artist names, photos and sponsor logos to our station's Web site.

Most new cars include radio receivers with RDS, so our station takes advantage of that technology as well. CDS32 feeds our RDS encoder a steady stream of song titles and artist names through the data channel of our STL.

For more information, including pricing, contact Pristine Systems at (800) 795-7234 or visit www.pristinesys.com.

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World Radio History

USER REPORT

iMediaTouch Serves Marshall Cluster

by Scott Schmeling, Corporate Chief Engineer, and Heath Radke, Engineer, Linder Broadcasting Group

iMediaTouch On Air

MARSHALL, Minn. Marshall Radio is a four-station cluster — KMHL(AM), KKCK(FM), KARL(FM) and KARZ (FM) — located in Marshall, Minn. We are, proudly, still part of a family-owned group of stations across Southern Minnesota. KMHL was built in 1946 by Harry Linder and Sons. The cluster is owned today by the Linder family. KMHL has the dubious distinction of having fired Tom Brokaw, yes, the "NBC Nightly News" Tom Brokaw, early in his career.

When we started shopping for a replacement audio delivery system we wanted reliability, redundancy, flexibility and responsive tech support. We found that and more with **OMT Technologies** and its iMediaTouch system.

Installation day

The project started with planning, planning and more planning. Our co-worker on the project, Keith Wright, helped set up I/O planning forms. He worked on these plans at the Marshall location while we worked at our Mankato site.

The Excel planning forms we used could easily be e-mailed back and forth as changes were made, keeping us "in synch" during the planning. Several phone calls were made to Rick Landry at OMT's tech support to ask questions and get the system configuration just right. Rick also was sent copies of the I/O forms and in turn, generated installation documentation and recommendations that he e-mailed back to us.

Computer hardware was ordered locally and shipped to OMT for software loading, OS "tweaking" and burn-in. In the meantime, we started re-wiring the building. When KMHL was built, it was a standalone AM. We're still in the same building but now operate four stations. Growth was one station/studio at a time with no real center.

Remote Access is another function that engineers or programmers will find essential when faced with a call that something has gone wrong.

Our engineering hub is located in close proximity to three of the on-air studios and our production suite. Our newsroom and fourth on-air studio are located in the far reaches of the building, which over the years have been added on to the original building. We installed two runs of 20-pair shielded audio cable and one run of 25-pair un-shielded from our central point to each studio with each end terminating in punch blocks.

We did as much re-wiring as we could before the actual installation, as our plan was to switch over to iMediaTouch with as little interruption as possible. This meant leaving the bare essentials of our existing automation system in tact.

For flexibility, we wanted all audio sources (network feeds, Martis, Tielines, etc.) to be available to all stations. With that in mind, we installed a Broadcast Tools SS16.4 audio switcher on each system, and to save money, we used the Antex audio cards from our old system. We have a new file server, and for redundancy, the server from our old system will become our new back-up server.

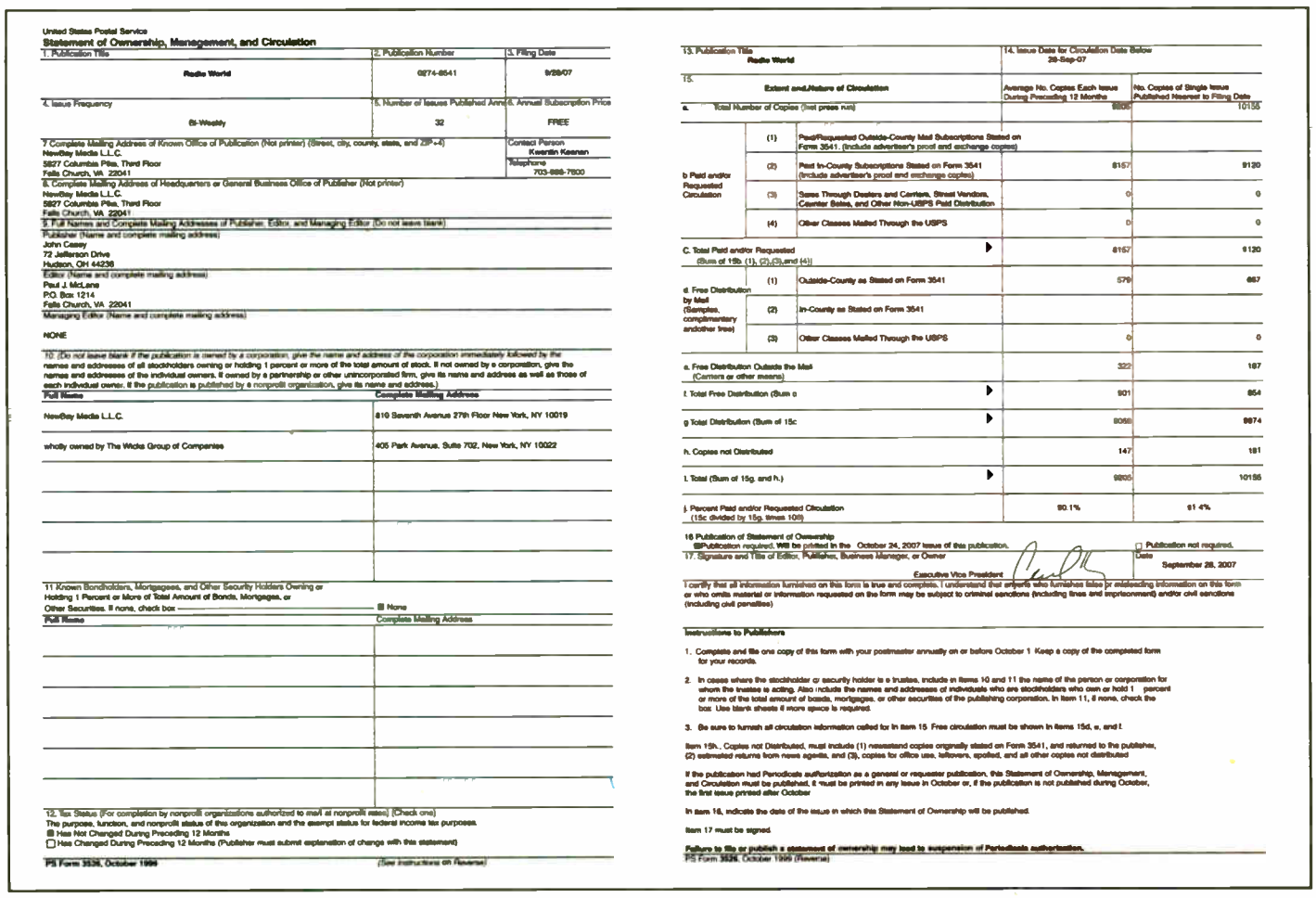
Each station has its primary on-air computer. In addition, each station has a "Utility" workstation for production, voice-tracking and log manipulation that can take over on-air duties in the event of a primary computer failure. We also installed OMT's 12-channel iMediaLogger that allows for simultaneous recordings of up to 12 different programs.

On "Installation Day," systems were brought on line and configured one at a time. The fine details of each station's programming were discussed and templates built. As we performed all the installation and training, one feature we felt would become increasingly important is iMediaTouch's ability to import files automatically — whether from other computers on our network or from remote locations.

For example, each hour, our system downloads a localized weather forecast, complete with the current temp, from WeatherEye in Minneapolis. News reports or remotes could be recorded on location using a laptop then transferred into the system, automatically through a remote connection.

Remote Access is another function that engineers or programmers will find essential when faced with a call that something has gone wrong. Log on from any location with Internet connection and find the problem without going into the office. We already have been able to use Remote Access in the field; Marshall hosted the North Central Regional Legion Baseball tournament in August. We ran the whole thing on an HP laptop from the stadium over an Internet connection.

For more information, including pricing, contact OMT Technologies at (888) 665-0501 or visit www.imediatouch.com.



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17. Signature and Title of Editor, Publisher, Business Manager, or Owner: Executive Vice President. Date: September 28, 2007

I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties).

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PS Form 3526, October 1999 (Reverse)

RCS

▶ Continued from page 37

up the chain until you get someone who does know the answer.

Any time you jump from decade-old technology into new, you are bound to have some problems, and of course we did. The biggest issue was converting our commercial inventory from our compressed Maestro format back into a WAV format.

This process is neither quick nor easy, so be prepared to set up batch scripts to handle this conversion one file at a time. The best advice we can give is to clean your inventory out prior to converting files. If you haven't aired them in the last year, dump them. And if you need them later, they probably needed freshening up anyway.

We also have experienced some growing pains when it comes to boot times. The Dell PoweEdge servers utilized in the NexGen world are slow to boot. So a power burp or outage that forces a reboot of the system and network can cause problems. The on-air machines will reboot before the server, which means when they look for the server it is not there. The on-air machines then revert to local database mode, and you are required to reboot again once the server comes up.

Battery backups are therefore a must. They clean up most burps and cover small outages, leaving the system connected like nothing happened.

And while you're backing up the machines, put a backup on the Cisco switch, which also does not like power burps. We've had a series of problems that have been traced back to the switch, all of which have to do with power loss.

But regardless of the problem, you will find RCS support standing by ready to help. And in the end, that's what matters in our world.

For more information, including pricing, contact RCS at (914) 428-4600 or visit www.rcsworks.com.

World Radio History

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Behind the stylish front panel you'll find we've included more of the features that have made the DSPX range of processors among the best in the world. If you don't need all the features, no problem, the DSPXtreme is available in four different versions with tailored hardware and programming features: FM, AM, CD, HD.

For quality FM stereo broadcasting, the DSPXtreme-FM includes the world class stereo encoder found in the DSPX and DSPXtra. As well as the standard processing features you'd expect in a top-line processor, the DSPXtreme-FM has dual output paths allowing HD and FM services to be processed simultaneously without compromise. Simulcasting of FM and HD service is not a problem using the diversity delay feature.

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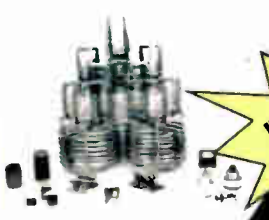

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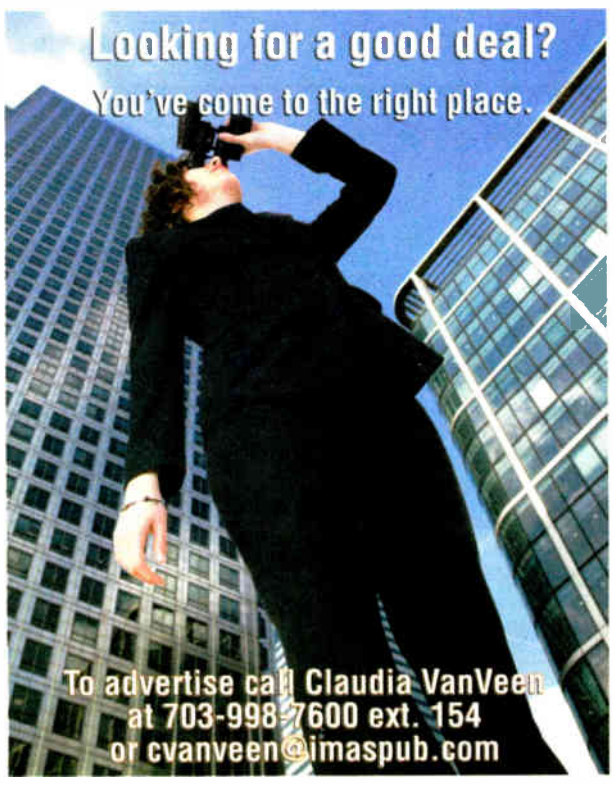

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World Radio History

◆READER'S FORUM◆

AM HD Radio

Certainly we can all agree with the title of the front-page article of the Aug. 15 issue, "If There Are Call Letters, There Is an Opinion."

On the other hand, I find it hard to believe that a publication with the reputation of Radio World would even give the time of day to some of these opinions.

Without a doubt, the AM HD-R nighttime interference issue is one that is very polarized, as Mr. Gray so correctly points out. However, I don't know where Mr. Gray has been because I have heard from many engineers and non-engineers expressing concern about the potential for interference caused by AM HD-R, particularly with regard to nighttime operation.

Often, those commenting not only speculate about the potential level of interference but also about the potential impact of the interference and potential solutions. At the recent Texas Association of Broadcasters convention, the subject was discussed at length in just such a manner by vendors, consultants and engineers.

At this point, there is plenty of room for debate over the issue of interference that may be caused by nighttime AM HD-R. There are legitimate concerns and legitimate points to be made on both sides of the issue. Time will tell which of those concerns and points are validated.

Legitimate disagreement is one thing, but arguments based on a disregard for fact should be ignored. While I would characterize some of his comments as uninformed, Mr. Gray's uninformed comments pale in comparison to the absolute disregard for fact displayed by Mr. Berlen! To say that the NRSC-2 mask is being disregarded is complete blather and shouldn't be given the time of day.

I find it hard to believe that Radio World would even give such comments the space on the page.

Roger Taylor
Market Engineering Manager
Clear Channel Radio
Lubbock, Texas

For the most part Alan Carter did an excellent job of taking a lot of information about the HD Radio system and packaging it in an easy-to-read digest.

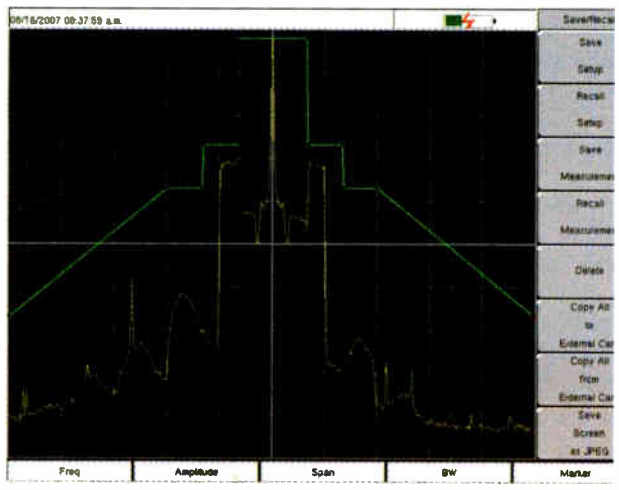
However, by the time I finished reading the last few paragraphs of the article my blood was boiling! The ignorance of people who claim to be "engineers" never ceases to amaze me!

Real engineers look at problems by analyzing facts and drawing a conclusion. Yet I read the comments of a supposed "23-year engineering veteran" and saw absolutely no respect for facts at all. Instead, the comments by Keven Berlen were taken straight from fantasy literature!

The fact is this: HD Radio does indeed fit completely within the NRSC-2 mask, as specified by the FCC (47 CFR 73.44).

As a matter of fact, a week before this issue of Radio World arrived at my desk I had just completed my annual Equipment Performance Measurements on all four of my AM HD Radio facilities. None of them had any problems at all with meeting the requirements of 73.44.

As an example of our compliance I've attached a copy of the spectrum from my 50 kW station that is broadcasting an HD Radio signal. You'll notice that *all* of the emissions from that transmitter (yellow trace) are well within the NRSC-2 mask (green trace).



The spectrum from Ed Dulaney's 50 kW station, broadcasting an HD Radio signal. 'Notice that all of the emissions from that transmitter (yellow trace) are well within the NRSC-2 mask (green trace),' he said.

HD Radio does have issues, don't get me wrong! There are some significant problems with the broadcasting of a digital signal that will need to be worked out. Not the least of which will be the cost of implementing HD Radio broadcasting.

And I'll admit that small-market stations will find it difficult, if not completely impossible, to come up with the $100,000 necessary to redesign their facilities. Converting from a monaural, analog radio station to a digital, stereo radio station isn't going to be cheap. But the benefits will far outweigh the cost over the long term.

Further, HD Radio on the AM band is plagued by electrical interference. That's where analog and digital share the same handicap. The only difference is that analog signals simply get "noisy." Digital signals, however, will completely disappear when the noise level scrambles those digital bits. And, unlike analog broadcasting, it is impossible to play with the tone controls and IF bandwidth in order to try and pull a noisy HD Radio signal "out of the dirt!"

I agree that there are problems with digital broadcasting. Both AM and FM stations will need to work hard to overcome the obstacles that lie ahead. Just don't build up "straw-man" arguments. Because if that's all you have, then it's time to give up being an "engineer" and, instead, work on writing novels. You might be the next Stephen King.

Ed Dulaney
Chief Engineer
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AM HD continues on page 46

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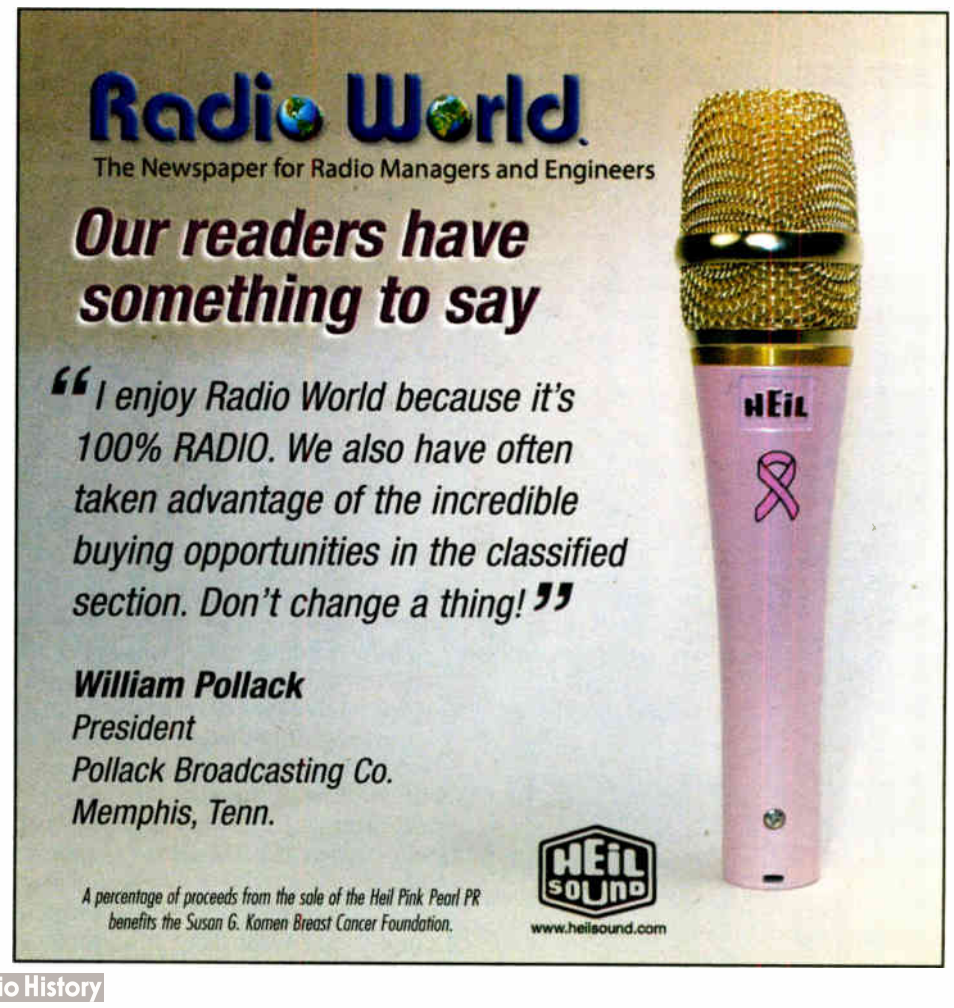

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NewBay Media

Tag, You're It!

It's no secret that terrestrial radio has been struggling in recent years to attract younger listeners, aka the iPod generation.

Apple's recent debut of iTunes Tagging is being touted by some as just the thing to bridge radio's generation gap.

With this free service, consumers who hear a song on HD Radio can tag, buy and download it to their iPods with the press of a button on a properly equipped receiver.

iTunes Tagging is a joint effort of Apple and Ibiquity Digital. Clear Channel, CBS, Cumulus, Cox, Entercom and Greater Media are installing iTunes Tagging technology, which uses an available field in the HD Radio data stream and can also work via RDS.

An Apple official said in a press release that the radio industry is giving the format "strong support."

Initial IBOC tag receiver offerings, due by the holiday season, include the Polk I-Sonic Entertainment System 2, shown, and the JBL iHD receiver. Car radios are expected by early 2008. Hundreds of stations were slated to participate in the initial launch.

While the technology appears to be engaging, a few issues may warrant scrutiny before broadcasters decide to jump in.

For tagging to work, the broadcast metadata would need to be standardized nationwide. As it is, every automation system and RDS generator may present artist and title data differently; it's unclear whether and how these will match the online music stores' databases (though technology company Jump2Go, an active proponent of tagging which has tested its "Go Commerce" system at Entercom and Cumulus stations in Seattle and San Francisco, says it solves this problem for stations because many broadcasters and even automation vendors don't currently have the staff or skill to build a solution to automatically match music libraries with Apple IDs).

Also, consumers would need to purchase an IBOC receiver with a tag button and iPod dock when they become available, then sync the receiver with a PC in order to purchase music only from iTunes. Little information is available on how iTunes Tagging will work with car radios at the moment.

Critics also believe the restricted playlists of many large broadcasters may make the discovery of new music unlikely, and that innovative programmers like public broadcasters, college and independent stations will be largely excluded from the iTunes Tagging movement.

There is some speculation that with all the steps involved, impulse buying via iTunes Tagging would be questionable; consumers might just as easily jot down artist/title information from the receiver's display and purchase music from whomever they choose. (Tagging proponents believe otherwise. "When the customer hears music, impulse buying occurs," as one put it.)

Some observers meanwhile believe the ability to do tagging via RDS is more immediately relevant than the HD Radio angle. With so many receivers out there with RDS, that market appears more immediately exploitable and relevant to listeners.

iTunes Tagging marks one of the first initiatives to connect digital radio with digital music; other tagging proponents besides Apple may come along. RW applauds this effort to bridge this gap but urges industry leaders to take a close look at the cost/benefit ratio and to press the proponents for more and better such offerings.

— RW

◆READER'S FORUM◆

Get Over It

I read with great interest Alan Carter's cover story in Radio World on AM HD-R, and offer some thoughts from the real world of today's radio environment.

AM radio is, for the most part, DOA in that many operators simply turn on the satellite and hope their automation and the program supplier stay in synch. Anyone who will admit it knows that all too often, local commercials don't play, network commercials get omitted, network and local newscasts often don't air, etc., etc.

Many broadcasters still make a valiant effort to program, promote and successfully sell time on their AM stations, and the bottom line is to serve the community *and* be profitable.

Unfortunately, other than those of us who for the most part grew up with it, AM is rarely tuned to on a radio.

Carter's article wrote of car radios in Hondas having poor reception; the same criticism can be levied against *many* manufacturers of car and personal/home radios, where the AM section is simply an afterthought and doesn't work well at all.

Who is to blame? The manufacturers simply make what the public wants, and most people don't care what the AM section of their radio does because they don't use it.

Shame on us as broadcasters. We should be asking NAB to lobby the CEA to once again urge their members to build radios with excellent FM and AM sections, and also to greatly roll out HD in them.

Now comes the chicken and the egg. Like AM, where manufacturers have built poor radios, putting HD in them requires broadcasters to step up to the plate and put programming on *both* the FM and the AM bands that people *want* to listen to and they will demand better receivers as a result.

Let me comment on AM HD-R also. The system that's in place isn't perfect, but with advancing technology it can be made to work. Our best-case scenario is that listeners will actually complain to broadcasters and manufacturers, as that means they are listening.

It is way past the point to be mesmerized about great distant skywave reception from AM stations hundreds and sometimes thousands of miles distant.

When our company, Fairfield Broadcasting Co., put WQSN(AM) 1660 on the air in the fall of 1998, only a few expanded-band stations were in operation and we had an outstanding skywave signal. We got listener mail from 37 states, five Canadian provinces and 13 countries including New Zealand. You could drive by the White House at night (and you still can) listening to the Detroit Pistons basketball games on your car radio.

Great, right? No! The president certainly wasn't listening to WQSN and nobody in Washington bought time in those broadcasts.

Engineers, and most of us who have been in radio for at least 30+ years, love to talk about how far many AM signals can be received at night. Get over it! The alternative is to relegate the AM band to the status of a shortwave radio station or worse.

AM HD-R, and FM HD-R as well, have problems and they need to be resolved; and I believe that, other than skywave becoming a historical footnote, working together broadcasters and our suppliers can and will fix them.

The alternative is to simply shut off the AM transmitter, disconnect the power source, sell the real estate and do something else.

William J. Wertz
Friday Harbor, Wash.

It is way past the point to be mesmerized about great distant skywave reception from AM stations hundreds and sometimes thousands of miles distant.

Write to RW

Send e-mail to *radioworld@imaspub.com* with "Letter to the Editor" and issue date in the subject field; fax to (703) 820-3245; or mail to Reader's Forum, Radio World, P.O. Box 1214, Falls Church, VA 22041.

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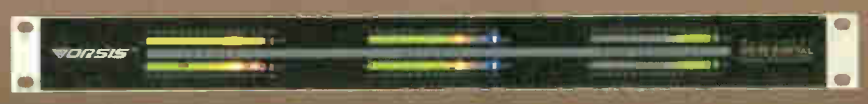

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