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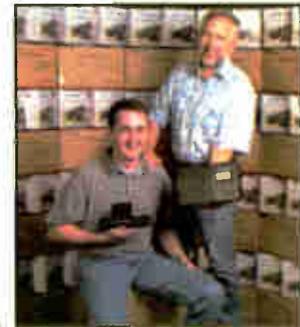
In Kansas City, a special project recalls KMBC Radio and another era.

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AM Believers

C. Crane says it has the best AM radio available. Audacious? Hell yes.

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Radio World

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The Newspaper for Radio Managers and Engineers

February 12, 2003

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ENGINEERING

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NEWS ANALYSIS

HD Radio 'Baby' Is Ready to Fly

by Leslie Stimson

LAS VEGAS Finally, consumer electronics retailers don't need PowerPoint presentations or product mock-ups to understand the concept of terrestrial digital radio. Proponents say soon, the public will be equally informed.

The receiver partners of Ibiqity Digital Corp. had real products on display at the Consumer Electronics Show, the event where retailers place orders for radios, which traditionally reach store shelves in the spring.

This milestone places the developer
 See HD RADIO, page 6 ▶



Ibiqity's Mike Lyons (foreground) and Paul Peyla demonstrate in-dash HD Radios from receiver manufacturers Kenwood USA, Visteon, Alpine, Delphi, Jensen, JVC and Sanyo.

NEWS MAKER

NATE Sees 'Tremendous Strides'

WATERTOWN, S.D. Craig Snyder began working as a tower hand in 1984. Today he is chairman of the board of the National Association of Tower Erectors, and is president and CEO of Sioux Falls Tower & Communications.

NATE was formed in 1995. Its annual convention takes place Feb. 18-21 in Dallas.

RW: What has NATE accomplished toward its goals of encouraging uniform safety standards, improved communications and a voice for members?

Snyder: NATE has made tremendous strides ... For example, in 1995, most members looked at the Occupational Safety and Health Administration as the enemy, and often our focus on safety was a combative defense of the status quo.

We now work as partners with OSHA and have helped them in developing a better understanding of our industry and how it differs from others. This understanding has been very beneficial to our members in that, when OSHA does show up on a site, they are not likely to arbitrarily cite tower erectors for rules that

See SNYDER, page 5 ▶

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◆ NEWSWATCH ◆

Radio Show May Morph

WASHINGTON Declining attendance at the fall radio show has NAB Radio Board members thinking it's time to pursue alternatives.

Discussion at the winter board meeting on this topic centered on possibly combining the fall show with the annual Radio Advertising Bureau show. RAB staff has been producing sales/marketing sessions at NAB shows for several years.

The NAB board directed its staff to explore that approach, as well as the feasibility of combining the radio show with other industry events.

Radio One Cable Expected by Mid-Year

LANHAM, Md. Radio One and Comcast plan to merge parts of their companies to form a cable channel by mid-year that would be a competitor to

Black Entertainment Television.

While Comcast is based in Philadelphia and Radio One in Lanham, Md., the new company will be based in the Washington area.

The channel provides a way for Radio One to expand into TV. Executives expect the new venture to launch by the middle of the year. Radio One Chief Executive Al Liggins III told The Washington Post he's been trying to expand into TV for four years.

Radio One is to put up \$70 million and provide radio ad time in markets

where Comcast launches the network. Comcast is to put up \$60 million and offer the network to its subscribers. Each company would own 38.5 percent of the new network. Other investor deals had not been finalized at presstime.

NAB Contemplates Broadcast Lab

WASHINGTON The NAB Radio Board supports the concept of launching a broadcast lab to "enhance terrestrial broadcasting," according to a statement released by NAB after the winter board meeting in January. The mission of the lab would be to improve and enhance delivery of over-the-air broadcasting to consumers, stated NAB.

Board approval is contingent upon funding issues being resolved. Maximum Service Television asked NAB to commit \$6 million over three years to the project, with an additional \$6 million expected to come from Consumer Electronics Association member companies. MSTV expected to commit \$3 million.

Former NCR Exec To Head Harris

MELBOURNE, Fla. Howard Lance is the new president and CEO of Harris Corp., effective Feb. 1.

He also was elected to the company's board of directors. Lance previously served as president of NCR Corp. and COO of its retail and financial group. Lance also worked as executive vice president of Emerson Electric Co.

Current chairman, president and CEO of Harris, Phillip W. Farmer, will stay on as chairman of the board and as an employee until the end of the company's fiscal year in late June.

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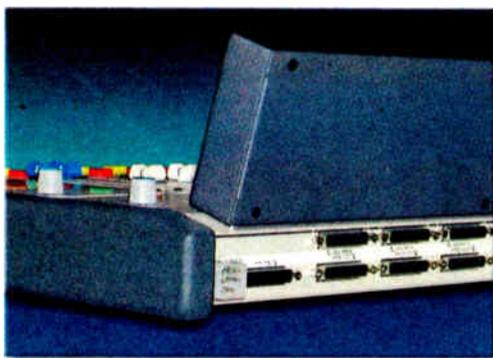
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Satellite Radio More Entrenched

by Leslie Stimson

LAS VEGAS Satellite radio firms XM and Sirius are maturing, with heftier subscriber bases and more radio models available compared to a year ago.

The companies created the satellite digital radio product category, and it was apparent at the CES show that consumer electronics retailers are enthused to have new features to pitch to the public in the in-dash and aftermarket receiver categories.

XM and Sirius helped subsidize receiver development costs to get product to market faster than normal, particularly for in-car models.

Experts say it can take several years to get a new design in a car, but the satellite radio companies got their radios in the dash quickly. For example, XM launched nationwide in fall 2001 and began to have in-dash radios made by receiver partners as vehicle factory options in available in the fall of '02.

Ibiquity, the newest arrival in the digital radio product category, has said it is not in the same financial position to provide receiver partners funds to supplement development costs. That hasn't seemed to affect its ability to get HD Radios developed for the car. Visteon and Delphi have manufactured HD Radios for in-dash use and displayed them at CES.

More in-dash

At the show, receiver partners for XM and Sirius showed more radios integrated into the dash and fewer black-box items where the receiver is mounted in the trunk or under a seat. Manufacturers also introduced portables and home radios for satellite digital radio. Antennas for the satellite digital radios are smaller than they were a year ago.

Although both XM and Sirius highlighted their programming and audio quality to differentiate themselves from

terrestrial radio, they differed dramatically in how they presented their respective companies at the convention.

XM President/CEO Hugh Panero said the company signed up more than 360,000 subscribers in 2002, adding 145,000 of those in the fourth quarter.

We want to be the HBO of radio and we're on the way to making that happen.

— XM's Hugh Panero

"XM hit these numbers in the face of a weak economy and soft retail environment," said Panero, who said the company is on track to pass 1 million subscribers this year. Reaching that figure, Panero said, would "firmly establish" XM as a mass-market product.

"We want to be the HBO of radio and we're on the way to making that happen."

XM investor General Motors expanded its XM offering as a factory-installed option to 25 vehicle lines for model year 2003, and plans to make XM radios available in 44 vehicle models in model year 2004, cars that will be available this fall. Honda and Nissan plan to expand XM's availability in their vehicles this year.

GM also is pulling more of the financial weight of XM's national advertising in '03 and XM is running ads on ABC Radio and Premiere Radio Networks, Panero told Radio World. XM would not disclose advertising financials.

The Delphi SkyFi "boombox," which can be used in home, office or car, is new. The product has a larger display with

larger text than other XM radios. XM said the unit sold well during the holidays and retailed for \$199.

"If they had had more product in the market, they would have done even better. They set themselves up well for 2003," one analyst said.

XM executives said referrals by friends and family members are helping boost their subscriber numbers. Each subscriber in a household is counted individually and pays separate subscriptions. When asked if the company would offer discounts for such referrals or a household plan, XM executives said it's being discussed within the company but no decision had been made.

Sirius executives, on the other hand, emphasized future concepts more than subscriber numbers.

Breaking even?

Sirius President/CEO Joe Clayton did say that having 2 million subscribers in 2005 would give the company "a strong balance sheet." At that time, Clayton said, the company would break even.

In the meantime, Sirius expected to have 40,000 subscribers by the end of March and 300,000 by the end of this year, prompting analysts to debate whether Sirius is hitting its subscriber targets.

Sirius Satellite Radio's new slogan is "It's On," and the company is quietly dropping the "Satellite Radio" from its

branding. It wants to be known for more products than satellite radio. That concept is part of its new ad campaign that will include cable, TV, print and, Sirius says, spots on commercial radio. Sirius President Joe Clayton didn't disclose the campaign amount.

The company showed future ways in which its programming could be delivered, other than in radios, such as an exercise bicycle that could receive Sirius programming and mall applications, using a multi-zone receiver that enables stores to play Sirius channels.

But the demo that garnered much of the attention was a live streaming video display of a cartoon over a Kenwood Sirius radio. The idea is to give consumers another viewing option to a built-in VCR or DVD player in the car.

Company executives told Radio World the video would only be engaged in the front seat when the vehicle is parked, with no limit on the back-seat use. Sirius and Kenwood have not agreed when the product would be available.

Sirius said it could devote data bits to the video product without compromising the quality of its audio channels.

"Sirius is the only satellite radio company that features statistical multiplexing technology, which allows us to maximize the utilization of our bits," said Larry Pesce, vice president of product management and strategic planning.

Sirius said its so-called "S-Plex" technology allows it to allocate bandwidth dynamically, giving more bits to channels that need bandwidth and less to those that

See CES SAT, page 10 ▶

Satellite in Home, Office, Car, Truck or Boat

Kenwood and Audiovox showed home and portable Sirius radios at the CES convention. Both plan to ship product to retailers by mid-year. Home units can be operated with a wireless remote and include audio presets and RCA left and right audio jacks to enable integration into a home audio system.

Kenwood introduced a portable Sirius tuner used with a slide-in cradle for car, home, office or boat. Available in the second quarter of 2003, the tuner is expected to list for about \$150.

Kenwood is offering a special retailer deal through February. A consumer who buys any head unit in January and February could get a Sirius receiver and one month's service for free.

Audiovox also expects to ship a plug-and-play Sirius portable receiver in mid-year.

Other Sirius plug-and-play models were introduced by Sanyo, Panasonic and Delphi.

Sirius showed a Terk antenna and combiner system that can be added onto an existing satellite TV dish for the home.

Sirius has a new, smaller chipset design, allowing it to introduce integrat-

ed in-dash AM/FM/CD in-dash radios. Sirius has reduced the number of chipsets in each radio from eight to four, consuming less power and allowing radio makers to save on component costs.

Delphi makes OEM radios for both Sirius and XM. Delphi is working with both on radios capable of receiving both services, which are still in development.

Delphi satellite radio antenna subcontractor Fuba is developing antennas that combine functions, so ultimately the same auto antenna could be used for satellite radio, GPS and cell phone. This would eliminate the need for a second antenna for satellite radio.

XM expects some 80,000 Delphi XM SkyFi "boom box" units to ship to retailers in the first half of this year. It has an integrated high-gain antenna and can be powered by an A/C adapter or batteries. The unit can be adapted for car installation.

Alpine, Delphi, Pioneer and Sony showed XM in-dash head units. Showing XM receivers were Alpine, Audiovox, Delphi, Pioneer and Sony.

— Leslie Stimson

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IBOC Is Here, for Better or Worse

First, a quick visual:

Engineering consultant Mike McCarthy sends us the photo shown on this page. Given recent events, such a picture might seem alarming; but all is in order.

Mike snapped it at a station located right under the approach to Chicago O'Hare International Airport, about five miles from the end of the runway, to show how startlingly close the planes seem to come.

"Perfect day — tower is freshly painted," Mike says. "If we tried to build that tower today, forget it."

★ ★ ★

If you had any doubts that IBOC/HD Radio is about to hit in a big way, the recently concluded CES show should put them to rest.

As Leslie Stimson, who was in Las Vegas for the convention, reported last issue, more than 35 radio groups have signed up for HD Radio licensing agreements and placed equipment orders, and stations in at least 40 markets will be on the air with digital in early 2003. HD-R



This tower site offers Mike McCarthy a dramatic view of air traffic near O'Hare.

From the Editor



Paul J. McLane

will head north again. Another factor in demand from stations will be whether Iiquity decides to offer incentives again, such as the now-expired fee waiver.

In the longer term, demand will be driven by availability and the consumer uptake of receivers (or a lack of it).

How long it will take the entire radio industry to go digital is an open question; but the general sense of the Harris managers was that the time frame may well be shorter than the 10 years often quoted in industry projections.

Meantime, the supplier is planning lots of emphasis on HD Radio at the spring NAB. We'll have details on Harris' plans, and those of other HD-R vendors, in upcoming issues.

★ ★ ★

However, one industry veteran who walked the floor at last month's CES show was unabashedly skeptical about IBOC.

"HD Radio. What a joke," he told me, agreeing to share his thoughts here if I did so without naming him. "(HD Radio was) totally lost at this show, and I believe once again a missed opportunity.

"I cannot believe that the average buyer for these large (retail) chains even have a clue to this technology or service, much less care. The Iiquity booth reminded me of nerdy scientists. They really need PR help and marketing assistance if they are to continue with these types of non-broadcast shows," he said.

See IBOC, page 5 ▶

is on the air in several markets. IBOC is about to stand the real test.

Opinions on its prognosis diverge wildly.

One company that stands

to profit is Harris Corp., which has invested a great deal in the technology and in ramping up production of transmitters.

Several Harris managers visited Radio World in January as part of a pre-NAB convention press tour to discuss their plans for the upcoming convention. Most of the discussion focused on IBOC.

Harris had taken approximately 45 orders for HD Radio systems as of mid-January. The Harris folks repeated Ibiqity Digital Corp.'s CES observations that IBOC orders are coming from stations in all sizes of markets, not just the biggest cities.

(This is not surprising to me; smaller markets usually participate in, or lead, radio innovation. Witness our experiences with computer automation and compact discs.)

One Harris executive predicts that after the first rush of early adopters, IBOC's demand curve will flatten or pause as the industry assesses the impact.

Then, as non-digital stations hear competitors trumpeting themselves for being the first, and as clients begin to take notice, the demand for IBOC gear

We're off to a galloping start in the 2003 New Technology Sweepstakes. Did you sign up at www.rwonline.com? It takes moments and costs nothing to enter.

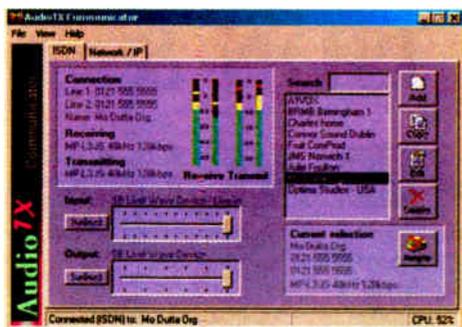
Andy Hudack, chief engineer with Susquehanna station KRBE(FM) in Houston, is the winner of AudioTX Communicator software, which turns a PC or laptop into an ISDN codec, compatible with most manufacturers' units.

The system offers an alternative to hardware ISDN codecs. The software auto-detects and configures itself for the type of codec on the other end. Only an ISDN card and sound card are required in the PC.

Communicator can connect over IP networks and the Internet, sending compressed or linear audio over LANs, WANs, T1/E1, wireless networks or high-speed Net connections

like DSL/cable modem, for audio transfer or STL-type connections. Multicast functionality allows broadcast-quality streaming to multiple receivers on a network.

Value: \$790. Communicator is distributed by CCS/Musicam USA.



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Snyder

► Continued from page 1
make no sense to our industry.

Furthermore, much of the advances in safety equipment have come through the efforts of the NATE Safety and Education Committee as well as individual members working with the various vendors of this equipment. Tower climbers can now access towers using state-of-the-art personal protective equipment that was not available just five years ago. This has undoubtedly saved lives and (prevented) personal injury.

Finally, NATE has developed numerous safety manuals and videos available to its members that have served to standardize safety practices within the industry. Most of what NATE has done is now accepted as the "standard" for tower workers inside and outside the association.

RW: What is the biggest challenge facing this industry when it comes to loss control?

Snyder: I see the biggest challenge as one facing our customers rather than the tower erector and service companies themselves.

I have seen a trend toward customers choosing to hire general contracting companies who then in turn hire smaller sub-

contractors who might then actually hire a third company to do the tower work required at the site. Often these smallest companies are not members of NATE and do not use safe practices in performing the required work. Most of the fatal accidents that made the news last year can be traced to this phenomenon.

I think that as more of our customers determine that they will get a better understanding of who is actually doing the work on their towers and make it a requirement that they meet minimum standards of safety, the more likely losses will begin to diminish.

Of course, it is my belief that NATE members are the safest in the industry. It is our job to try to get all tower service companies to join the association. As this continues to happen, a gradual education process will occur.

RW: Broadcasters have expressed a lot of interest in the Koor case in New Hampshire, in which that state's highest court overruled a city ordinance limiting the height of new communications towers



Craig Snyder

and stated that, in this case, federal law pre-empts local law. Do you see that case as precedent-setting?

Snyder: I would like to believe that the Koor case sets a precedent for other zoning officials to look to in developing (or not developing) similar ordinances in the future. But I fear that each jurisdiction will attempt to hold to the notion that towers are basically undesirable and need to be limited.

I think the more times these cases are won in the higher courts, the better chance that a loosening of similar tight regulations will occur.

RW: Characterize your members' relations with OSHA.

Snyder: Our members' relations with OSHA have come a long way in the past seven years.

Shortly after NATE came into existence, OSHA formed what they refer to as the "Tower Task Force." The association's OSHA Relations Committee works very closely with this tower task force and has been instrumental in getting an OSHA "directive" allowing workers to access towers by "riding the line" from the ground to the required work location on the tower.

OSHA was adamant against this practice before NATE was started, and even for sometime thereafter, but through the process of gentle persuasion and education, NATE has been successful in bringing OSHA around to see our point of view.

NATE and OSHA also formed a partnership in 2002 in one of the national regions in which partnering companies

agree to voluntarily abide by certain safety practices in exchange for OSHA focusing on only the most important safety matters at the work site and not citing companies for other more frivolous violations. If this partnership is successful, we hope to expand it to a national level.

I could not say that, at this time, there are any major areas of disagreement between OSHA and NATE. However, we continue to work with OSHA to educate them on such issues as "free climbing," which is not allowed under current OSHA rules, but is required in certain circumstances on towers or TV antennas. OSHA has been sympathetic to our efforts and we continue to work toward an agreement.

RW: What's the status of industry hoist and gin pole standard efforts?

Snyder: The gin pole standard that has been the effort of the TIA/EIA committee and NATE is now before the committee in what is hoped to be its final draft form. Unfortunately, the committee has been dedicating most of its efforts toward the revision of ANSI/TIA/EIA 222-"G" and will not likely present it for balloting until later in 2003 or early 2004. A tremendous amount of work has gone into this draft standard and it will be of great benefit to the industry once it is official and released to the public.

The NATE board of directors currently has the first draft of the Hoist Standard in its hands and it is being reviewed. We hope to have it completed by the end of 2003 as well and available to our members by early 2004.

See SNYDER, page 8 ►

IBOC

► Continued from page 4

"My opinion to the consumer (about HD Radio (is) that dog won't hunt. Quality of signal is not in question; content of the signal is. A 22-minute stop set of commercials in digital is still 22 minutes of commercials.

"The argument of 'free' isn't going to last much longer," he predicted. "Twenty-two minutes of my time per hour is not free. You want me to suffer through your crappy commercials, pay me. Otherwise I'll insert my MP3 unit in my car radio and listen to six hours of music, uninterrupted."

I might treat these harsh comments more skeptically if this particular individual had not spent most of his life in the business of providing services to radio stations. He is no whacko outsider but a man with deep connections to our business.

MP3, he said, was the only real audio buzz at CES: "MP3s for car. MP3s for jogging. MP3 units retailing for \$99 about the size of a large wristwatch," he said. "USB input. Headphone output. One AA required and included.

"No tuners in these portable units. When I asked someone where the tuner was, the response was, 'Why?'"

Listeners, particularly but not only younger ones, are downloading music to avoid radio, he said.

Personally, I think these are separate issues. The industry should indeed seek to better its service by pursuing technical advancements like HD Radio. If this means having scientists, nerdy or otherwise, in the booth, so be it. And many of those "nerds" are people I know and admire.

The writer's legitimate concern over radio's spot load does not render unnecessary the drive for us to make radio as competitive as possible. However, his comments do remind us that many people who love radio are frustrated with the medium these days.

What's going to happen to the fall NAB Radio Show?

We've asked that question many times in these pages. Now the NAB Radio Board of Directors has directed the association's staff "to begin reviewing alternative approaches" to presenting the current show. One option specifically included in its instructions: the possibility of combining the event with the annual Radio Advertising Bureau Conference or other industry events.

I wrote here in October that Radio Show attendance had declined from 7,680 in 2000 to 3,983 this past fall, a drop of 48 percent in two years. And that's overall attendance, including journalists, exhibitors and exhibit-only guests. The number of booths also was down.

I said then, and I believe now, that these trends are a reasonably predictable outcome of radio consolidation, and that the convention can remain a useful part of the industry landscape if we reset our expectations and accept it as a session-heavy event with fewer managers, a smaller show floor and a modest budget.

Don't kill the Radio Show. Be willing to reinvent.

The NAB board's action is welcome if overdue.

Suppliers: Our readers want to know about your new products. To help you get the most out of Radio World's NAB convention coverage this spring, I've compiled a list of tips and answers to common questions from exhibitors.

What's the best day to hold a press conference at NAB? What's the most common marketing error we see in press releases? How can you take full advantage of our existing coverage opportunities? Find out.

For a copy of this list of tips, just e-mail me at radioworld@imaspub.com.

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HD Radio

► Continued from page 1

of in-band, on-channel digital audio broadcasting on a more even playing field with its satellite brethren, whose receiver partners have had at least one satellite digital radio system available to the public since late 2001.

More than 35 radio group owners in 40 U.S. markets said at CES they plan to begin broadcasting in both digital and analog this year, with many stations doing so by the end of March.

After more than 10 years of IBOC development, several things are falling into place so that Ibiquity Digital Corp. can get terrestrial digital radio away from the workbench and to the companies that will take the technology into consumers' homes.

Baby flies

Ibiquity executives say the company is transitioning from a technology developer into a company that's transferring that information to radio groups and equipment partners.

"Today's the day the baby finally leaves the nest," said Ibiquity



Kenwood showed a car receiver that can be controlled by 17 Kenwood head units. This particular head unit can be modified to be either an HD or Sirius radio. Kenwood has also developed an adapter that can be installed in the trunk so that both types of digital radio services can be controlled with one tuner.

President/CEO Robert Struble to reporters at CES in early January.

Representatives from several facets of the consumer electronics industry and broadcasters joined Ibiquity to proclaim that HD Radio is rolling out. HD Radio is the name by which consumers will know in-band, on-channel digital audio broadcasting.

The Consumer Electronics Association produces the convention. President/CEO Gary Shapiro said, "This show increasingly focuses on the digital lifestyle. Almost every American understands what CD quality is," a reference to the promise that HD Radio delivers CD quality on FM.

Manufacturers displayed HD-R car audio tuner prototypes and two home versions (see sidebar below).

Retailer representatives and NAB joined Ibiquity in praising the rollout.

John Orlando, NAB senior vice president of external relations and acting head

of government relations, said HD Radio will enhance the listener experience. In what is likely a preview of the basic marketing pitch to consumers, he said, "It's all going to be brought to them for free."

Ibiquity originally believed most of the radio groups that agreed to convert early would be in big cities; but the 40 markets with early stations on the air were a mix of sizes. "We exceeded all of our expectations," said Struble. Representatives of transmitter companies taking orders echoed that observation.

Thirty-five radio groups agreed to convert at least some of their stations this year. About 100 stations are converting to digital this quarter. Early adopters received waivers of Ibiquity's technology license fee; that incentive deal ended Dec. 31, 2002. Those groups had to show proof that they had ordered IBOC RF equipment and intended to have it installed as soon as they could this year.

The radio groups also came to terms with Ibiquity on which specific stations would convert this year.

Asked whether Ibiquity is considering renewing the fee waiver or creating another incentive for stations to convert later, Struble said the deal was over and implied that no more are planned. He added, "Never say never."

Ibiquity expects about 300 stations to be transmitting HD-R by the end of this year and an additional 500 to 600 stations to make the switch in '04.

Markets where at least one HD Radio
See HD RADIO, page 7 ►

Receiver Companies Build HD Radios

LAS VEGAS Kenwood USA and Harman Kardon showed HD Radio receivers for the home at CES, with Kenwood predicting shipments to retailers in April or May.

Kenwood also showed a car receiver that can be controlled by 17 Kenwood head units. The target retail price for the receiver is \$350.

Kenwood USA's Bob Law said the dawning of HD Radio is an opportunity to replace existing product. "The potential we see is astounding."

Some retailers expressed enthusiasm about HD as well. Tweeter representative Bernie Sapienza said terrestrial radio's adoption of a digital format gives receiver manufacturers a chance to talk about the tuner spec and "rejuvenate those price points."

More receiver manufacturers are expected to have HD Radio receivers to sell to retailers by next year as well. At CES, manufacturers showed products that are ready to ship to retailers, as well as radios still in development.

Visteon has manufactured an HD Radio that includes a CD player; it will be offered by an unnamed European automaker as a factory-installed product in 2005 model year autos.

Delphi Automotive Systems has developed an in-dash HD Radio. Delphi said it could make its HD Radios available to auto companies in time for model year 2004. Those automobiles would be in dealerships this fall.

Delphi is testing various in-dash and aftermarket HD Radio prototypes with station WSHW(FM), Frankfurt, Ind., near Delphi's Kokomo plant. Delphi's Bob Schumacher said company engineers are driving cars equipped with HD Radios to test for multipath interference, as well as pops, fades and similar problems. The idea is to test under all conditions and stress the radio to see how it processes the analog and digital signals. Delphi OEM and aftermarket HD Radios are available for automakers now, he said.

Alpine and Jensen showed an in-car HD Radio that may ship by late this year. JVC and Sanyo showed in-dash versions

Alpine promoted the data potential of HD Radio. An Alpine receiver could someday deliver coupons to drivers as they approach certain stores.

of HD product. Both are targeting 2004 for shipping to retailers.

Harman Kardon demoed a home receiver with an integrated HD Radio.

Texas Instruments programmable digital signal processing chips are in the early HD Radios. Philips plans to have a hard-coated ASIC chip ready for HD Radio makers by mid-2003.

Among the many HD Radios displayed in Ibiquity's booth at CES was a portable HD Radio receiver with MP3 or WMA music file playback and FM radio capabilities. The unit by Personal Telecom is detachable from its docking station. The detachable part runs on batteries when it's not docked and plugged into the wall. The docking speakers look like Mickey Mouse ears.

The company displayed a similar Eureka-147 radio in the Texas Instruments booth.

— Leslie Stimson

Tomorrow Radio' Tests Second Digital-Channel Concept

LAS VEGAS National Public Radio wants to test whether it's feasible for non-commercial stations using Ibiquity Digital's HD Radio technology to send two programming streams on each station.

NPR has begun a multi-year, multi-million dollar project called "Tomorrow Radio" to do just that.

Kenwood USA and Harris Corp. have agreed to join the first test team for the project.

NPR Executive Vice President Ken Stern said, "Tomorrow Radio represents our commitment to making HD Radio an important new development in delivering programming and services."

NPR has been working with Ibiquity for a special solution with its IBOC technology. Splitting a station's spectrum into two channels would mean that station could not use Ibiquity's blend-to-analog feature. This, in turn, creates certain issues that receiver makers need to resolve.

Manufacturers would need to build receivers capable of processing a second digital program stream and provide another "digital" button on the head unit. They would also need to resolve how these users would have near-instant tuning, one of the reasons Ibiquity uses the blend-to-analog technology.

Kenwood plans to test the so-called "second audio" concept later this year at KKJZ(FM), Long Beach, Calif. Harris Broadcast will provide the RF equipment.

Asked whether the FCC would need to approve dual-channel HD operation, one NRSC source said that is yet to be determined.

A major question for the companies involved is whether splitting a station's spectrum into two channels would still

allow those streams to be robust enough to withstand a mobile environment. If not, the concept might be limited to at-work or at-home listening.

As part of the Tomorrow Radio tests, Kenwood will try feeding supplemental audio via the second channel using new receiver designs that it intends to accommodate new digital services. These might include supplemental audio channels and customized services such as zoned traffic announcements, weather reports and market quotations.

The receiver maker also will test choices some consumers have told retailers and manufacturers they'd like in a digital radio, such as high-quality text-to-speech announcement and customized graphic displays.

"Kenwood and NPR have been allies in the rollout of the Sirius Satellite Radio service, and we look forward to benchmarking new features into the Kenwood product line as a result of this initiative," said Bob Law, Kenwood USA's senior vice president.

NPR believes it will take about 10 years for all public radio stations to become fully compatible with HD Radio.

Also on the public radio front, WUSF(FM), Tampa, Fla., an NPR affiliate, recently announced a digital upgrade of its transmission system and planned to go HD in early February using Harris RF equipment.

"When the HD Radio conversion is completed, WUSF will use the separate amplification model to broadcast both analog FM and IBOC digital signals and will be one of the first public broadcast radio stations to broadcast HD Radio," Harris stated.

— Leslie Stimson

HD Radio

► Continued from page 6

station is expected to activate shortly include New York, Los Angeles, Chicago, San Francisco, Dallas, Philadelphia, Houston, Boston, Detroit, Atlanta, Miami, Seattle, Baltimore, Tampa-St. Petersburg, Fla., Cleveland, Cincinnati, San Jose, Calif., Milwaukee, Middlesex-Somerset-Union, N.J., and New Orleans.

Also on the list: Raleigh, N.C., West Palm Beach-Boca Raton, Fla., Monmouth-Ocean, N.J., Louisville, Ky., Richmond, Va., Birmingham, Ala., Greenville-Spartanburg, S.C., Syracuse, N.Y., Ft. Wayne, Ind., Roanoke-Lynchburg, Va., Morristown, N.J., Jackson, Miss., Charleston, W.Va., Morgantown, W.Va., Cedar Rapids, Iowa, and Lafayette, Ind.

At least four unranked markets will have HD Radio services: Forest and Raymond, Va.; Price, Utah; and White Oak, Ga.

Some stations stated during the show that they were the first to begin airing

Yes, Ibiqity Promote Interactive Services

LAS VEGAS Interactive radio company Yes Networks and Ibiqity Digital inked an agreement to develop interactive services compatible with HD Radio technology.

Yes will develop a way for consumers to interact with data they see on the HD Radio displays. The company aggregates data from retail partners, such as Amazon.com and eBay, to show price, name of seller, description, picture and other info to be offered to broadcasters to include in digital broadcasts.

Yes says it correlates and delivers this information to access points, such as phone, Web sites and wireless devices, where listeners can interact with ads or buy music, an example of the so-called "buy" button Ibiqity has said may be on its radios in the future.

Yes is one of several companies with which Ibiqity is working to develop such data services. It has put together a group of related industry experts to develop data standards, so receiver makers build to certain specs and all broadcasters transmit the data in the same way. Ibiqity has planned a public meeting of these groups at NAB this spring.

Here Comes dMarc Flow

Where is the extra revenue from IBOC going to come from? Expect to hear more about "dMarc Flow." Ibiqity and dMarc Networks, an RF subcarrier management and wireless data distribution firm, will market dMarc Flow for use by AM and FM broadcasters using HD Radio.

Ryan Steelberg, president of dMarc, said his company's technology uses analog RDS to enable text to be broadcast and displayed on HD receivers. HD Radios will receive both analog and digital signals. The first generation HD Radios will have RDS-like text display capabilities.

"The increased bandwidth capacity inherent in digital technology affords dMarc offerings of enhanced value-added content and data services," he said.

HD-R in some capacity — whether the first non-Ibiqity test station, or the first in their market or the first with a particular manufacturer's equipment.

Radio One's WDMK(FM) in Detroit said it was the first FM to go on the air with HD-R using commercial equipment. WJLD(AM), Birmingham, Ala. claimed to be the first AM that was not an Ibiqity test station to go digital.

Capitol Broadcasting's WRAL(FM) in Raleigh, N.C., said it was the first East Coast FM in the nation to provide the service. In late fall, Infinity's WOR(AM) in New York and Susquehanna-owned WGY(FM) in Cincinnati said they were first to go digital. WOR bills itself as "New York's First Digital AM Radio Station."

Struble said they were all correct in the individual claims and said he couldn't be

See HD RADIO, page 8 ►



This portable HD Radio receiver from Personal Telecom comes with an MP3 player and FM tuner. The unit detaches from its docking station and can run on batteries for about an hour. When in the docking station, it can be plugged into the wall. The company showed a similar Eureka-147 version in the Texas Instruments booth.

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HD Radio

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happier to see the competition.

A Harris Broadcast representative said it was good "to see the competitive juices come out" at the start of the rollout. Harris and Broadcast Electronics have stated publicly they are supplying HD Radio RF equipment to several of the early adopter stations.

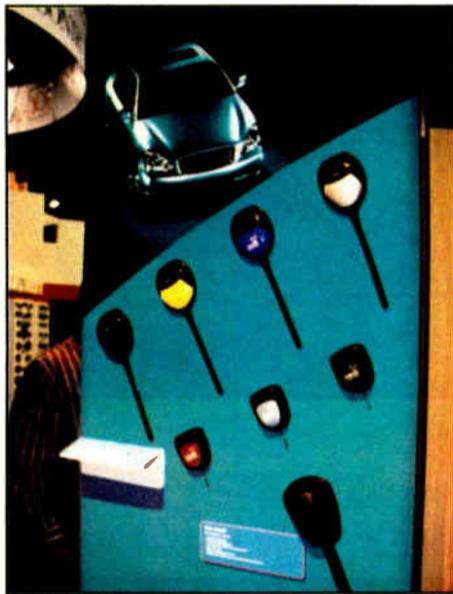
A number of radio group engineers attended the show. Several said more radio engineers attended than ever, testifying to the importance of this year in particular at CES.

Keeping in mind that such shows are designed to promote excitement about a concept, engineers who spoke to Radio World were pragmatic in regards to HD Radio. Most said they are transitioning a fraction of their stations at first, to try to minimize potential difficulties in converting.

'Competitive juices'

The exception is Greater Media, which intends to transition as many of its 19 stations as it can this year. Milford Smith, vice president of radio engineering, believes his company saved roughly \$1 million due to the licensee fee waiver.

Sterling Davis, vice president of engineering for Cox, which plans to convert nine stations this year, believes once some stations begin transmitting in HD-R, there will be competitive pressures for others in their markets to follow.



These new Sirius roof-mount car antennas from Terk are smaller than the current versions and incorporate an insert that changes the antenna color to match the vehicle's paint or its owner's own color preference.

"It's been announced in Richmond one of our competitors is going digital. It's on our radar screen. If they get any traction, we might look at that more seriously," and move up the Cox Richmond properties in its priority list.

Harris officials said stations in the city of Miami, for one, seem to be particularly interested in HD Radio based on early orders.

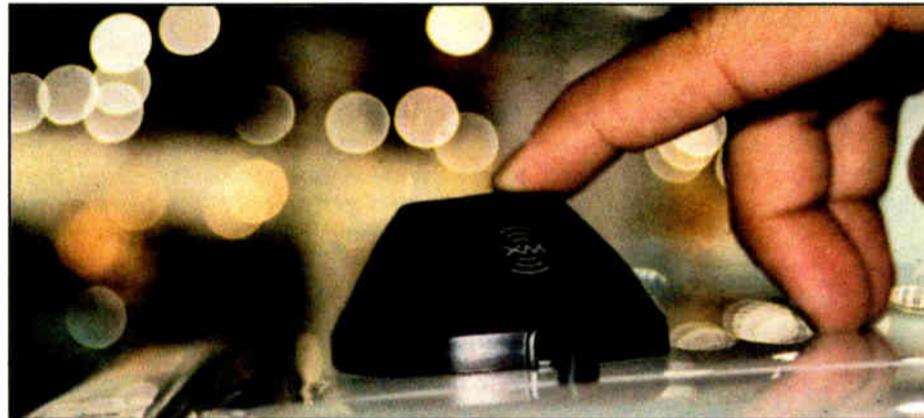
Other engineers contacted for this story who attended the show agreed that converting AM remains a challenge due to the nighttime interference questions that remain about the technology.

Depending how the IBOC rules are shaped, one engineer implied, stations that operate on skywaves can go digital at night, or those that transmit over groundwaves can do so; but both cannot be achieved without

potential interference.

One engineer whose company doesn't have stations in the so-called key receiver rollout markets is holding back on committing to HD-R. Equipment cost is a factor, he said.

He said some AM engineers also believe converting their stations will not be easy, especially those that have several tower arrays. He believes the rollout will be slower than Ibiquity would like. "HD will not be here in a year."



Antennas for XM and Sirius are getting smaller. This is a roof-mounted XM antenna.

Early adopters have applied for and received special temporary authorizations from the FCC to transmit both analog and digital signals.

In its initial authorization of IBOC, the FCC has only authorized AM stations to broadcast both the analog and digital signals during the day, using analog-only if the stations remain on the air after sundown. The FCC accepted guidance from the standards-setting National Radio Systems Committee on this point.

The NRSC told the FCC that not enough is known about the potential for IBOC to interfere with neighboring stations, especially those transmitting on skywaves at night.

The signals of high-power clear-channel AM stations relying primarily on skywaves at night travel hundreds of miles, much farther than the signals of stations using groundwaves only. Atmospheric conditions that change nightly can alter

how far skywaves travel and how powerful the signals sound.

Ibiquity completed an additional round of AM nighttime testing requested by the NRSC in mid-December 2002 using WLW in Cincinnati and WOR in New York. Those tests were designed to test the impact of AM IBOC on analog skywave and groundwave signals.

The December tests repeated measurements that were conducted last summer. "By conducting the tests in different seasons —

different weather, shorter days, colder temperatures — we were able to observe the impact of IBOC with different signal propagation conditions," said Ibiquity Vice President and General Counsel Al Shuldiner.

Ibiquity was preparing a report analyzing the additional AM test results that it hoped to deliver to the FCC and an ad-hoc committee of the NRSC by the end of February.

Members of the NRSC also met at CES and have shifted their focus from system testing for IBOC to standards setting. They're beginning the standard-setting process with Ibiquity's FM system, because they have all of that data.

NRSC members have been discussing the scope of whatever standards they develop for IBOC, whether they would be limited to transmission issues or would include receiver and data issues. Receiver makers would need to design radios capable of interpreting the IBOC signal, and include associated data

displays on the radio.

The first-generation HD-R receivers will have simple text displays such as the name of a song and artist. Future generations of HD-R receivers are expected to have bigger graphics and more interactive displays.

Using the Ibiquity system, broadcasters can decide how much of their spectrum they choose to devote to audio programming, and how much to devote to data services.

NRSC members have formed a new subcommittee to design standards for an interface between Ibiquity's system and data offerings, said Smith, the NRSC DAB Subcommittee chairman.

Who's converting?

The list of groups with at least one station going HD-R this year provided by Ibiquity includes Infinity Broadcasting, Clear Channel Radio, Entercom Communications Corp., Radio One Inc., Hispanic Broadcasting Inc., Susquehanna Radio Corp., Bonneville International Corp., Greater Media, Spanish Broadcasting System, Beasley Broadcast Group, Journal Broadcast Group, Buckley Broadcasting, Capitol Broadcasting Co., Inc., Chicago Public Radio, Cleveland Classical Radio, WCGA(AM) and Cram Communications, Inc.

Also on the list: Crawford Broadcasting Co., Crystal Boynton Beach Inc., Eastern Utah Broadcasting, Elyria-Lorain Broadcasting Co., Federated Media, Fenix Broadcasting Corp., Gee Communications Inc., Hunter Broadcast Group, Kaspar Broadcasting, KZIA Inc., Multicultural Radio Broadcasting Group, New World Broadcasting and OneCom Inc.

Also Perception Media Group Inc., Renaissance Radio Inc., Richardson Broadcasting Co., Sellers Broadcasting-KMRY, South Sound Broadcasting, Spanish Media Broadcasting, WWNO(FM) — University of New Orleans, University of South Florida, W&B Broadcasting Inc., West Virginia Radio Corp., WRHC Management Corp., WOLF Radio, Inc., Wood Broadcasting Co. Inc. and WWOZ Inc. 🌐

Snyder

► Continued from page 5

RW: The U.S. Fish & Wildlife Service recently said it was accelerating its efforts to address so-called "bird kills" at tower sites. Some observers feel there is no solid evidence that towers are a threat to wildlife. Where is NATE on this issue?

Snyder: NATE has looked closely at teaming with others in the industry, such as the Site Owners and Managers Association, to study further the bird kill issue. We feel that the studies done by U.S. Fish and Wildlife and others to date are not conclusive. Based on anecdotal evidence of our members, there is no real problem with birds being killed by flying into towers in any significant numbers.

To date, we have not begun the process of formally studying this issue but hope to make it a priority in the near future.

RW: In an historic move, the FCC has begun to issue fines to radio broadcasters as well as cellular towers for exceeding RF radiation limits at transmission sites. How does this affect your members?

Snyder: NATE, of course, has focused its efforts on worker safety. To this extent we are working on a safety and training video to educate tower workers on risks posed by RF radiation exposure. This video will sup-

plement our "Resource Reference for RF Awareness." OSHA regulates our members in this regard as opposed to the FCC. We have not heard of an inordinate amount of citations from OSHA regarding RF exposure affecting our members.

What we see as the biggest challenge in this regard is multiple broadcasters or users on one structure. Climbers typically are working for only one station at a time on any given structure and other broadcasters or users don't feel inclined to reduce or turn off power to their antennas to allow climbers access to their competition's antennas. This places tower climbers in a difficult position of coordination between multiple users and one that often has no good solution.

RW: What can broadcasters and other wireless companies do to make tower companies' jobs easier in maintenance and construction?

Snyder: One of the biggest things broadcasters or wireless companies could do to make tower service companies' jobs easier would be to ensure that their towers are brought up to the latest standards of safety.

For example, all towers should now be equipped with a climbing ladder and safety climb cable or similar device. This allows climbers to be in compliance with current OSHA regulations in accessing the tower and can dramatically limit the risk of falling that is inherent without such devices being installed.

Another great help would be for tower

owners to include language in rental contracts with other tenants that allow for simple coordination between the owner and tenants for reducing power during maintenance and other work that requires workers to be in areas where RF radiation exposure is above the allowable threshold.

RW: What is the status of standard EIA-222G, a standard for structural analysis of towers (it replaced 222F)? What structural studies does the insurance industry want?

Snyder: I serve as the chairman of the committee that writes this standard. The past year has been a challenging one for progress in completing revision "G," mostly due to the incredible downsizing of staffs at the various companies that serve on the committee in key roles with the development of the standard. With smaller staffs the committee volunteers are pressed for time more than ever.

Having said all this, we hope to have the standard out for internal and then public ballot by June 30, and then available for public use by the end of the year. The standard will have major changes over revision F, but will not automatically mean older towers will be rendered obsolete.

Many of the changes will not affect older towers, but will use new approaches in engineering and ... bring the standard in compliance with current standards and use.

For information about the NATE convention, go to www.natehome.com. 🌐

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Robert Hammett in Retrospect

A Consulting Engineer Is Remembered for His AM Tower Array Innovations

by Steve Jess

SONOMA, Calif. Robert L. Hammett is thought of as a generous man whose legacy includes innovations in the way many consulting engineers practice their profession.

Hammett, 82, a co-founder of Hammett & Edison Inc., Consulting Engineers, of Sonoma, Calif., died of lymphoma at his home on Oct. 11, 2002.

A native of Bakersfield, Calif., Hammett graduated from Stanford University with a master's degree in electrical engineering in 1942. During World War II, he served on a research team at Harvard Labs, where he met consulting engineer A. Earl Cullum.

At war's end, Hammett took a job with Cullum's engineering firm in Dallas. Hammett returned to his home state in 1952 to establish his own consulting practice.

It was the dawn of the television era. His son, William F. Hammett, said the firm's first client was KRON(TV), Channel 4 in San Francisco.

"He was instrumental in all sorts of developments in television, including Instructional TV Fixed Service," William

Hammett said. "He did a lot of work with a Catholic TV network around the country."

In the 1960s, the elder Hammett also encouraged AM broadcasters to expand into the relatively new medium of FM.

With partner Edward Edison, who joined the firm in 1956, Hammett & Edison grew to become "probably the engineering firm of choice outside of Washington," according to Roy Russo, managing partner of the Washington law firm Cohn and Marks. Russo said many of Cohn and Marks' clients on the West Coast gravitated to Hammett & Edison when they needed engineering assistance.

Bob Hammett's greatest contribution to broadcast engineering may be in the use of computers. In the 1970s, using remote terminals connected to a time-shared mainframe computer, engineers at Hammett & Edison developed techniques for designing directional AM tower arrays that maximized the station's service area.

"He laid the groundwork that many others followed for designing arrays," said William Hammett. "Many arrays used towers set out in a straight line or a parallelogram. It's easy to analyze. Early on, we developed a method of designing

arrays based on radiation limits. Our arrays tend to have an irregular array of towers of different heights. This way we can maximize the service area."

The new technology allowed engineers to explore more options in designing a directional array. "The computer can move towers around based on rules of optimization that my dad developed," William Hammett said. Scores of stations benefited from the technology, and several other consulting engineers adopted similar analysis methods, he said.

By 1985, Hammett & Edison's use of computers advanced to the point that the firm needed its own mainframe. They bought a used machine previously owned by Wayne University, Hammett said, and the engineers cleared out one of the garage stalls in its building in order to install it.

Today the FCC uses another technology Hammett developed. In the 1970s the firm digitized soil conductivity readings for the entire country. The resulting database enabled computers to calculate how far an AM radio signal was likely to travel.

"The FCC bought the system for their own use, in projecting signal contours," William Hammett said. "It was the first application of this technology to this field."

Award winner

The NAB recognized the achievements of Robert Hammett and Edward Edison with its 1992 Engineering Achievement Award. William Hammett says the award honored them "in recognition of their distinguished professional careers, and outstanding contribution to



Bob and Luana Hammett in France in 2000

the broadcast industry."

Hammett is remembered for his personality and his service to the community as much as for his engineering expertise. He worked to preserve and expand Stanford Sierra Camp, a retreat for Stanford alumni that lies on Fallen Leaf Lake in the Sierra Nevada range near Lake Tahoe.

"He brought an intelligence, maturity, a wide range of experience," Roy Russo said, "the kinds of things you need, particularly when you're dealing with unusual situations as we found ourselves doing from time to time. ... if you needed waivers of the rules, things like that."

His son William said Hammett "was a very generous man. He left us a great legacy of high-quality work and high ethics in client service. We work hard to fulfill that legacy."

Robert Hammett retired in 1988. Hammett & Edison continues in business under the management of William Hammett.

Besides his son William, Hammett is survived by his wife of 57 years, Luana, two other children and nine grandchildren.

CES Sat

► Continued from page 3

don't, such as talk channels (Radio World, May 22, 2002, page 3). Statistical multiplexing uses a variable bitrate encoder and only uses what it needs at that moment and places the rest in a common bit pool for other channels, according to Sirius.

Asked for reaction to the announcement, Hugh Panero, president and CEO of competitor XM Satellite Radio, said, "We talk about products that are fully baked."

He also said the concept was not new. "We could do it as well, but what will you sacrifice to do it?" He said the bandwidth needed for video would limit the bandwidth for audio channels, a claim Sirius disputed.

Sources said it was unclear whether the FCC, which approved satcasters' licenses for radio, would need to approve video use.

Both companies also were promoting home receivers. Sirius disputed whether XM's home antennas could actually pick up a satellite signal.

As Pesce described Sirius' new in-home antennas, they could be mounted on a roof, or a deck and pointed straight up to receive Sirius' satellite signal. His competitor's home antenna, he said, referring to XM, would need a southern-facing window to catch those satellites — if there are no trees in the way blocking the signal reception. An XM spokesman said that wasn't true.

As they have since they began their respective services, both satcasters contin-

ued to peck away at the reputation of terrestrial radio to build up their own products.

Sirius Executive Vice President of Marketing Mary Pat Ryan said Sirius could offer "deeper tracks than on radio." She said music choice on radio and on MTV has become narrow. Sirius Vice President of Programming and Market Development Larry Rebich added, "We're programmed as a premium entertainment service, like cable. We're not re-delivering what consumers already hear."

Both satcasters dismissed the idea that consumers might be confused when Ibiquity's receiver partners ship HD Radios this spring. Sirius and XM talked up their national footprints and 100 channels of specialized programming.

Sirius focused much of its press efforts on programming. The company has re-made some channels and introduced others for a total of nine new or significantly changed music channel streams. It added information and talk streams including weather channels zoned for the East, West and Midwest, and political talk channels Sirius Right and Sirius Left. There's also a new gay talk channel and a stream for independent music artists.

Daimler-Chrysler is offering Sirius as a dealer-installed option on most of its 2003 vehicles and as standard equipment in the 2003 Chrysler 300M and Chrysler PT Cruiser. Ford plans to offer Sirius in some of its products this year.

XM and Sirius made headway on their respective financial restructuring efforts shortly after CES. Both companies hoped to finalize those efforts to recapitalize their companies by the end of the first quarter.

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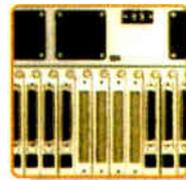
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Collaboration Brings History to the Web

by Skip Pizzi

It's not often commercial radio stations and libraries appear in the same sentence, but in Kansas City, Mo., just such collaboration has produced an unusual Web site that presents an interesting, localized perspective on WWII-era history.

The project, titled "Voices of World War II: Experiences from the Front and at Home — KMBC Radio," was based around the contents of 100 16-inch transcription discs from the Arthur B. Church-KMBC Radio Collection.

Arthur Church was a broadcast pioneer who owned and operated the KMBC radio and television stations in Kansas City from the 1920s through the late 1950s. He was one of the first to use radio for advertising purposes. Church also was the creative force behind several popular syndicated radio shows, including "The Texas Rangers" and "Phenomenon."

He built KMBC into a model for major-market radio stations — it was one of the first to incorporate a mobile news unit, a music director and librarian, and a publicity department. It provided training for talent in the burgeoning industry, with many radio stars getting their start there, among them John Cameron Swayze and Walter Cronkite.

Church's institutional attitude toward broadcasting stimulated him to create an archive of the 30-plus years of his career. Besides the sound recordings, the collection includes photos, published sheet music, scrapbooks, advertising brochures, contracts, telegrams and station newsletters from the period.

In 1996, his son, Arthur Church Jr., donated the collection to the Miller Nichols Library at the University of Missouri-Kansas City, where it is held in the Marr Sound Archives.

Although carefully inventoried and maintained there, the archives are part of the library's Department of Special Collections, meaning that they are not open to the public but only accessible to professional researchers. To widen the availability of this material, the department's staff recently obtained funding to develop and host the Web content, which is now running on UMKC's site.

A joint effort of radio, library, government and academia creates a noteworthy WWII oral history site.

The support came in the form of an \$11,000 Digital Imaging Grant administered by the Missouri State Library, using funds provided through the federal Library Services and Technology Act. This program is aimed at increasing public access to cultural heritage collections and developing new support and sustainability models for such efforts. Its criteria include the development of best practices and standards for selection, digital capture, storage and online delivery of resources.

The "Voices of WWII" project was deemed an excellent candidate.

Another partner in the project is the well-known Harry S. Truman

Presidential Museum and Library, which has contributed public programming and archival research materials for the site. (The Truman Library was the first to be created under the 1955 Presidential Libraries Act, and is one of 10 presidential libraries operated by the federal government.)

The site is available in two forms, text-only and multimedia. The latter is a rich and well-designed experience that includes elements created in dynamic HTML, Javascript, Flash animation and streaming media. The audio quality on the site is surprisingly high, and the numerous images and anima-

tion throughout the site are compelling. Modern metadata formats are used for cataloging and describing the content in standardized fashion.

Audio elements range from speeches and interviews of WWII-era personalities to war-related entertainment, propaganda and advertising. There are examples of USO Shows, Armed Forces Radio, V-Discs and other morale efforts, plus some of the first battlefield recordings and information on how the audio technology of the day worked.

Most of the sound recordings create a sense of how WWII was experienced in Kansas City through the broadcasts of KMBC(AM) radio, then and now a CBS affiliate at 980 kHz (although it is today renamed KMBZ, an Entercom property running a news/talk format).

The content is organized into six historical periods running from 1939 to the post-war. The site also features a

substantial section describing the project itself, plus a hefty set of references and recommended resources for additional study.

For interested professionals, there are Powerpoint presentations describing the technical aspects of the site's development, including the digitizing, processing and encoding of the archival audio. Among the intriguing items noted here are details on the collection's acetate transcription discs, some of which used glass rather than the more common metal substrates due to wartime conservation measures.

A unique appeal

The site maintains a good balance between an accessible style with broad appeal to the general Web surfer and a resource providing serious value to students, researchers and professional historians. It is the product of an unusual alliance of federal and state government agencies, library scientists and the estate of a pioneering broadcaster.

In addition, the project is noteworthy for having a multimedia Web site as its sole focus. This is not a "companion Web site" to a physical exhibit or show.

The project is uncommon in its description of a global, historic event through the use of localized, day-to-day content. History typically takes on a high-level and disengaged perspective, so it is rare to see it presented through such a regional, real-time lens.

In many respects this brings a greater sense of realism to the historical data, and leaves visitors to the site with a fresh and deepened grasp of the period. It applies the maxim that "all news is local" in a distinctively retroactive way.

And of course, the site's heavy emphasis on media content makes it far more powerful in conveying understanding than one limited to static text and images might be.

Best of all, you can experience the fruits of the project without leaving your desk, at www.umkc.edu/lib/spec-col/ww2/.

Skip Pizzi is contributing editor of *Radio World*. 

MARKET PLACE

LED Flashlight Offered

LEDtronics is on the market with a pocket flashlight that uses three white LED lamps. It retails for \$19.95.

The White Mini-Flash LED is 5 inches long and weighs 2.1 ounces. The light turns on and off by a twist switch or a pulse-only switch.

The light output is 90 end foot candles. It will operate for three to four days on three replaceable E90 N-cell alkaline batteries, which the company says is 20 to 50 times longer than equivalent incandescent-lamped flashlights.

The company also makes LED lamps to replace incandescents, panel-mount LED lamps, circuit board status indicators and other LED products.

For information contact the company in California at (800) 579-4875 or visit www.ledtronics.com. Ask for datasheet 105.

Dielectric Software Update Helps With RFR Compliance

Dielectric is offering a new version of its antenna system planning software, DASP 5.0. It includes elevation patterns for Dielectric FM DCR series antennas.

"Of particular interest for broadcasters concerned with RFR compliance, this software includes a selection of special bay spacings designed for minimum downward radiation," the company stated.

Several output formats are available, including PDF for filling FCC applications, as well as V-Soft, EDX and Radiosoft-compatible formats.

DASP 5.0 includes a system summary tool. After selecting an antenna type, elevation and azimuth pattern, the system summary tool provides pull-down menus for selection of standard transmission line types and calculates the transmitter output power requirement.

DASP 5.0 is a free download available on Dielectric's Web site.

For information contact the company in Maine at (866) DIELECT or visit www.dielectric.com/broadcast/Welcome.asp.

MARKET PLACE

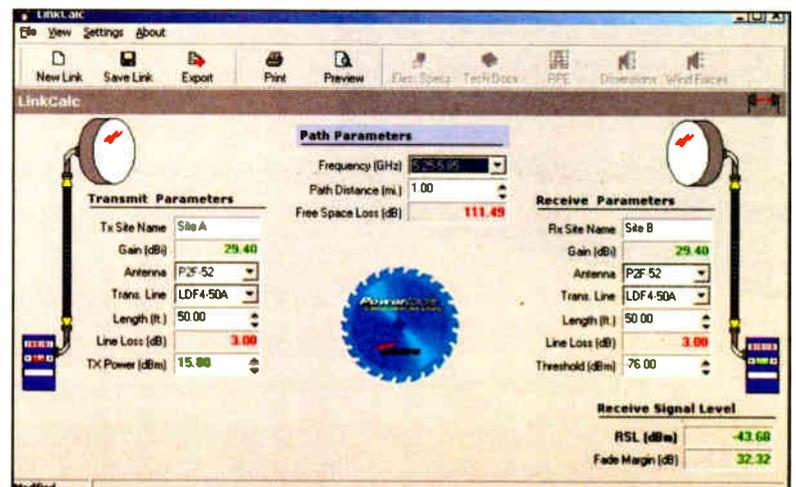
Andrew Adds Link Calc Feature

Andrew Corp. has added a design option called Link Calc to its Microwave System Planner software. The option helps users calculate communication system link budgets based on their chosen design parameters and products.

"Once the required fade margin is achieved, Link Calc users can, within seconds, generate a fully itemized bill of materials," Andrew stated. "The (software) automatically checks system components for compatibility."

The feature lets you choose components from Andrew's line of microwave products. The planner is part of the company's free Powertools telecommunications design software line.

For information contact the company in Illinois at (708) 349-5661 or visit www.andrew.com/downloads.



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BUSINESS DIGEST

V-Soft Settles Into New Quarters

V-Soft Communications is in new offices. The engineering software and consulting firm run by Doug Vernier is based in Cedar Falls, Iowa. He recently retired after 30 years as director of broadcasting services at the University of Northern Iowa, where he helped launch its public radio stations. "The V-Soft Communications software business has had my part-time involvement since its inception some 20 years ago. The business literally occupied the lower floor walk-out of my home," he said. "Having retired from the university, I didn't really want to go to work at home, and the wife was ready to see the business move out." The company is leasing space in a building, right,



where it could design the workspace and facilities for its computer LAN and high-speed Internet capabilities. Vernier, a collector of old radios, decorated the offices with several dozen. "We really like our new space," he said. Photos of the facility are at www.v-soft.com/web/NeweOffices.htm.

Woodline Launches Broadcast Furniture Division



Dave Howland

A familiar name will team with a new one to offer furniture systems for broadcasters. Dave Howland is heading up Designcraft, a new division of Woodline Furniture, based in the Grand Rapids, Mich., area. Howland was with Audio Broadcast Group for 27 years, working his way up from the shipping department through sales, eventually to become part-owner. ABG was sold to Harris Corp. in 1999. Woodline is owned by Rob Smit, who met Howland during the latter's ABG tenure. "Woodline built the furniture for ABG for the last four years we were in business," Howland said. "I found Rob and really liked his work ethic and the way he treated customers. "When we sold (ABG) and I went to Harris, he kept getting jobs, but it really wasn't his focus. (Broadcast) was about 15 percent of what he was doing. This is what I know and what I did at ABG, among other things. It's what I love doing." Howland is coming off of a year's retirement to work as vice president of sales and marketing for Designcraft, which he says will offer three lines of furniture, called Dura Tech, Pro Standard and Premium, with various degrees of customization. Howland's sales office is in Rockford, Mich. For information contact Designcraft in Michigan at (616) 874-2037 or visit www.woodlinefurniture.com.

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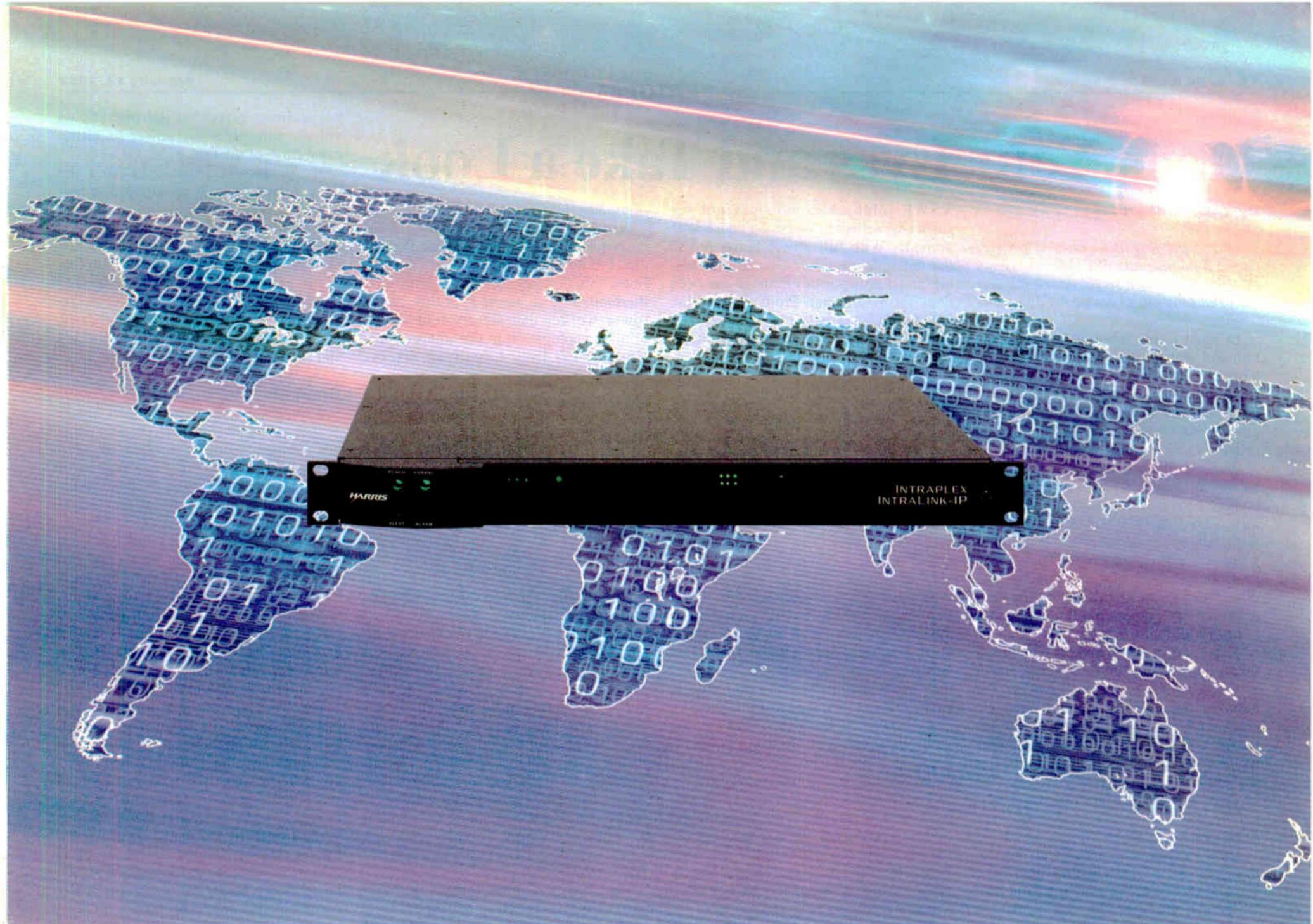


RadioSoft License Agent

What are the "other guys" up to? A new product from RadioSoft is intended to help your station keep track. The company is offering a service that will permit tracking of FCC license data for AM, FM, TV and other parts of the spectrum. The License Agent service tracks items of competitive interest, including "those that could cause potential interference or allocation problems with the subscriber's facility or location," the company stated. The supplier says this is the first service generally available that covers all activity in FCC Parts 22, 73, 74 and 90 in a single format. "License Agent is a first warning to allow ample time to allow further investigation when necessary. It can be used not only to identify potential interferers but to see the details of what is being proposed and the possible effects on the flagged site." The user enters a latitude, longitude and radius distance for each site he or she wants to flag, or just the call signs of interest. Daily, weekly or monthly e-mails notifications are available. "Any flag will generate an online list of information that pertains to a facility or market the user wishes to monitor. Flags are available for one site or hundreds of sites." Pricing starts at \$39.95 per month and varies based on the number of flags you want. For information call the company in Florida at (386) 426-2521 or visit www.radiosoft.com.

Changes

Alert readers will notice a change in the frequency of some features in Radio World. We've added a new column called "Technology for Managers," which will appear in alternating issues. It is intended to help non-technical readers understand the trends that are discussed elsewhere in the paper and in radio stations every day. That column reported on recording and storage media in the Jan. 1 issue and consumer radios in the Feb. 1; we'll feature "digital plumbing" next time. Also, we've consolidated the *Studio Sessions* section into alternating issues, to present that popular content more efficiently; and our Internet Radio coverage now appears within the *GM Journal* section.



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FEED LINE

Open Your Eyes and Take a Look

by W.C. Alexander

This is the last in a series of articles on the fundamentals of FM transmission systems. The entire series appears under the Feed Line tab at www.rwonline.com.

In most cases, once a transmission line and antenna have been installed on a tower, little thought is given them until something goes wrong. That is unfortunate, because they do require a certain amount of maintenance to keep them reliable and operating at peak efficiency.

Regular mechanical maintenance of an FM antenna system should include a complete visual inspection at least annually. This can be done in conjunction with relamping or other tower maintenance to minimize costs. Excitation must be removed from the antenna and other steps taken to ensure that the tower is safe for workers to climb and work in the vicinity of the antenna.

The tower worker making the visual inspection should look at each element in the array for proper installation; for burns or pitting on the element ends; for cracks, carbon traces or defects in insulators; and for any evidence of abnormal mechanical stresses. Weep holes in the antenna elements, if any, must be oriented so that they face down.

Deicers

If the antenna is equipped with deicers, they should be turned on during the inspection. The tower worker should then verify that the deicer in each element is working by feeling of the element.

One of the most dangerous icing situations for an FM antenna occurs when all the elements' deicers are working except one. All of the elements except that one remain clear of ice, and a serious mismatch occurs in the interbay line.

Because the mismatch is limited to that one element, the transmitter's

VSWR foldback circuit may not see sufficient reflected power to cause it to activate. With full power being fed to the antenna, an arc can occur and sustain itself until serious damage has been done to the antenna. From a protection standpoint, it is better to operate with no deicers than with a partially operating system.

Maintenance of an FM antenna system should include a complete visual inspection at least once a year.

A good deicer maintenance tool is a permanently-installed AC ammeter on the deicer circuit. With the deicers operating normally (and after a 10-minute warm-up period), mark on the meter face the nominal current. From time to time, the deicers should be turned on and allowed to warm up. The current then can be checked against the mark. If there is a deviation, a tower worker should be dispatched to investigate.

Transmission lines likewise should be inspected visually every year. Inspect the connections at the top and bottom for security, and investigate any evidence of movement. Ground connections should be checked and tightened and any corrosion removed.

In the case of rigid transmission lines, the length of each hanger spring should be checked against the manufacturer's recommendation. If necessary, adjust the springs. Check nylon buttons or bushings in the spring hanger collars. Should these fall out or become damaged, the copper transmission line will chafe against the metal of the hanger. This eventually will wear through the copper

of the line, leading to line failure.

Rigid and semi-flexible lines should be checked for "hot spots" near flanges and connectors. In the case of rigid lines, this is every 20 feet. An infrared thermometer can be used for this, or the tower worker can simply feel of the joint and compare it to the adjacent portions of the line. Localized discoloration in rigid lines is a good indicator of abnormal heating.

Maintenance of an FM antenna system should include a complete visual inspection at least once a year.

of the line, leading to line failure.

The cause of any significant heating should be investigated, as heating at a joint is a precursor to a line failure. Such heating often is caused by a "split bullet" or chafing in the inner conductor where it makes contact with the "bullet." The heating is evidence of I^2R loss in the joint, which is power not being radiated. In many cases, heating in the joints can quickly produce a thermal runaway situation leading to catastrophic failure of the line.

Infrared

One tool available today that is of great help in locating hot spots in a transmission line or antenna is infrared photography. Hot spots will show up as a lighter color. The advantages of this method are that it can be done from the ground and it can detect subtler temperature rises. While IR photography has several advantages, it is not a substitute for a good visual inspection.

In some situations where an FM antenna is mounted on an AM tower, the transmission line will be mounted using insulated hangers. Inspect each insulator for cracks and carbon traces. Check the shorting stub, usually located somewhere close to 90 electrical degrees (at the AM frequency) above the tower base, for a good electrical connection at the line and the tower.

Other FM on AM situations employ an isolator to cross the base insulator with the FM transmission line. In these cases, it is important that the transmission line be electrically bonded to the tower frequently along its length. Check each bond for good electrical connection.

In addition, check the entire outer jacket for evidence of arc-through to the tower. If such evidence is present, it likely indicates that more frequent bonding is needed. Such arc-through, if permitted to continue, eventually can penetrate the outer conductor of the line and open the line to the elements.

Grounded-base AM towers, such as folded unipoles and shunt-fed antennas, likewise require the FM transmission line to be bonded frequently to the tower steel along its length. The same checks of the bonding and outer jacket should be made on grounded-base AM towers.

Proper pressurization of air-dielectric lines is critical to their performance. Pressurization with dry air or nitrogen

has a direct effect on the breakdown voltage (and thus the power handling capability) of the line.

If moisture is allowed to enter the line, corrosion will result, producing higher losses, hot-spots and eventual line failure. The pressure integrity of the line and antenna should be checked by closing the air valve feeding the line at the bottom of the run and observing the line pressure over a period of several hours. If the pressure bleeds off, there is a leak and it should be located and repaired.

Good air

Maintain an adequate nitrogen supply at the site to ensure that the supply is not exhausted before another delivery can be made. If the pressure integrity of the line is maintained, very little nitrogen should be used. Inspect pressurization equipment regularly, at least weekly, and maintain it in good working order. Desiccant should be rotated out and dried or replaced whenever it begins to turn from blue to pink. A dehydrator with a saturated desiccant pumping moist air into a line is almost as bad as having no pressurization at all. Use a self-recharging dehydrator to prevent this from ever happening.

Finally, make a check of the system reflected power during every site visit. A significant change, up or down from the nominal value, should be investigated. A more sensitive indicator of load impedance in some power amplifier designs is the screen current. Higher screen current generally indicates a lighter (higher Z) load. If PA tuning is otherwise correct, an increase in screen current may be an indicator of a developing antenna or line problem.

Infrared photography is a great help in finding hot spots.

In addition to checking the reflected power, the VSWR foldback and trip circuits in the transmitter or external protection device should be checked from time to time to ensure that they are working. Transmitter manufacturers usually provide a procedure for checking and adjusting the internal protective circuits.

If the directional coupler(s) use removable slugs to detect forward and reflected power, check regularly for proper operation and good connections. A reflected power meter that reads zero all the time may be an indication that the connection, either between the slug and the coupler or between the coupler and the transmitter, is bad. If that is the case, chances are there is no VSWR protection in place, which can lead to a catastrophic failure of the line/antenna and damage to the transmitter.

Cris Alexander is director of engineering for Crawford Broadcasting. He welcomes questions on this topic and suggestions for future series via e-mail to crisa@crawfordbroadcasting.com.

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Keep Your Transmitter Cool

by Richard J. Fry

Landscapers say, "A \$50 tree takes a \$100 hole," and that concept is pretty much the case when installing broadcast transmitters.

Inattention to the operating environment of a transmitter can reduce its performance and reliability greatly. Following are some comments that may help understand and plan for this important need.

A little-recognized fact about broadcast transmitters is that their internal air system is designed to move the CFM needed for cooling the transmitter

only when its air interface ports are looking at essentially zero differential in static pressure.

Adding ductwork directly to a transmitter can drastically change the amount of air flowing through it. There have been cases where a transmitter has had ductwork coupled directly to its air outlet to carry that air outside through a narrow, long and twisted path, with no assist fans. The back pressure of such a path will reduce greatly the CFM that the transmitter blower can provide, and the unit will run hot.

Sometimes an installation does not even provide a path for makeup air into

the transmitter room, so the unit is starved for air to begin with. No transmitter is designed to withstand such conditions. This is a recipe for early and frequent failure.

Heat load

This is not to say that an air system using ductwork coupled directly to a transmitter cannot be made to work, but it needs some careful system engineering by an experienced HVAC designer.

One approach in planning a transmitter room air system is to calculate the solar heat load on the closed building (it depends on building design, location, ori-

entation, insulation, etc.), then add the heat produced by all the equipment in the building when in operation, including standby transmitter, air-cooled RF load, racks, lights and other sources. This number is used to calculate how much air is needed to move through the room to keep its heat rise to 1-2 degrees above outdoor ambient, and/or how many tons of A/C is needed.

There are variations on this, where the transmitter/equipment is isolated by a wall around the fronts of the cabinets and use ambient air cooling, and only the work space in the room has A/C.

The on-air reliability of even the best transmitter can be improved if it doesn't have to 'fight' its installation environment.

Most transmitters will run fine and with excellent service life as long as well-filtered air at the specified CFM and inlet air temperature is flowing through them. If this is observed, A/C is not required in many climates. However, using A/C and closing off the room to outside air helps keep the room and transmitter clean — at the expense of the A/C hardware and extra mains power needed, and with some reduction in system reliability (without a backup air system).

In some seasons it may even be necessary to add heat to the room to keep the transmitter air inlet temperature above the minimum value specified by the manufacturer. Often this can be done by recirculating the heated air from the transmitter, in some cases assisted by supplementary heat from an electric element, or other means.

A good air system for the transmitter room tends not to get the attention and budget it needs. But the on-air reliability of even the best transmitter can be improved if it doesn't have to "fight" its installation environment.

Richard J. Fry, CPBE, is a veteran FM RF system analyst and author of technical papers and software. Reach him via e-mail to rfry@adams.net.

How to Submit Letters

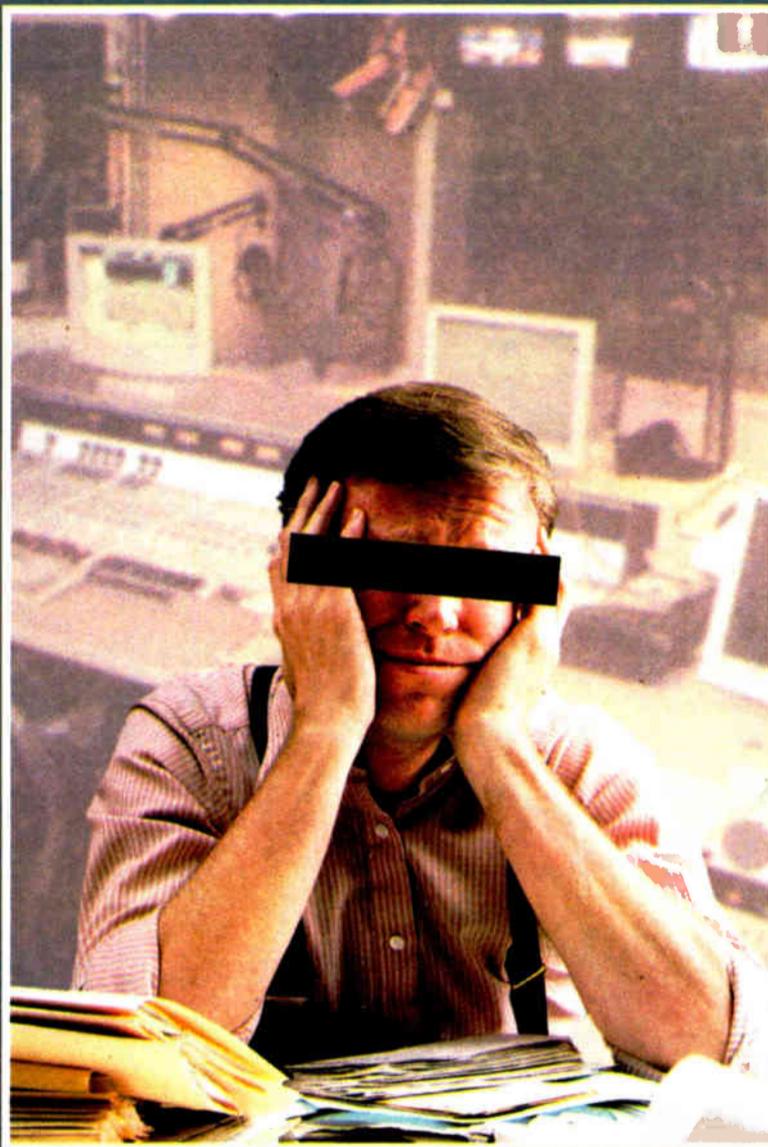
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Workbench

Radio World, February 12, 2003

Past columns are archived at www.rwonline.com/reference-room

Hey, Don't Flip Out — Flipit!

by John Bisset

ISDN is a mainstay for many stations — so much so that most stations have a backup ISDN line, and even a backup ISDN unit.

Wisconsin Public Radio developed a useful line-switching device to be shared with *Workbench* readers. Called the WYK Flipit Box, it was designed around the program "Whad'Ya Know?"

Two Telos Zephyr ISDN units are used

with this adapter. Both Zephyr units are programmed so that their status outputs (pin 3 of the parallel port DB-15 connector) are activated should lines 1 or 2 (stereo mode) fail. Other programming options are available by referring to the

Telos manual.

Should the main Zephyr fail, Flipit instantly will switch to the backup Zephyr, restoring the audio. Tests on the bench show that simulating a failure of the main audio source will switch instantly to the backup source, with no discernible interruption of the program.

In reality, a failure in the main Zephyr may produce a momentary "hole" in the program, but this is certainly better than the seconds or minutes that it would take to either play with a patch panel, or redial the ISDN connection to restore audio.

Main and standby

Two simultaneous ISDN feeds are provided for the "Whad'Ya Know" origination. Flipit assumes that ISDN 1 box is the "main" unit. If the main unit fails, Flipit will switch automatically to the ISDN 2 box, and sound an alarm.

Operation of Flipit is straightforward. The dial-up connection is established with ISDN #1 and then ISDN #2. Then the ARM button is set. If a failure occurs, pressing RESET will toggle the audio back to ISDN #1.

The first stage of the Flipit box consists of two level shifters, consisting of Q1, Q2, Q3 and Q4, as seen in Fig. 1. Because the Zephyr's status outputs are open-collector ground logic, and the Flipit is bipolar logic, a conversion is necessary.

The outputs of the two level shifters are combined in AND gates IC7C to produce a RESET command, to restore Flipit to its standby state. The standby state is attained on power-up or by pushing RESET. This closes solid-state switch IC5 and allows Zephyr 1 audio to pass through to your console, uplink, or router.

With both Zephyrs connected (off-hook) their STATUS outputs are at ground LOW. This causes the collectors of Q2 and Q4 to go LOW lighting

See WORKBENCH, page 20 ▶

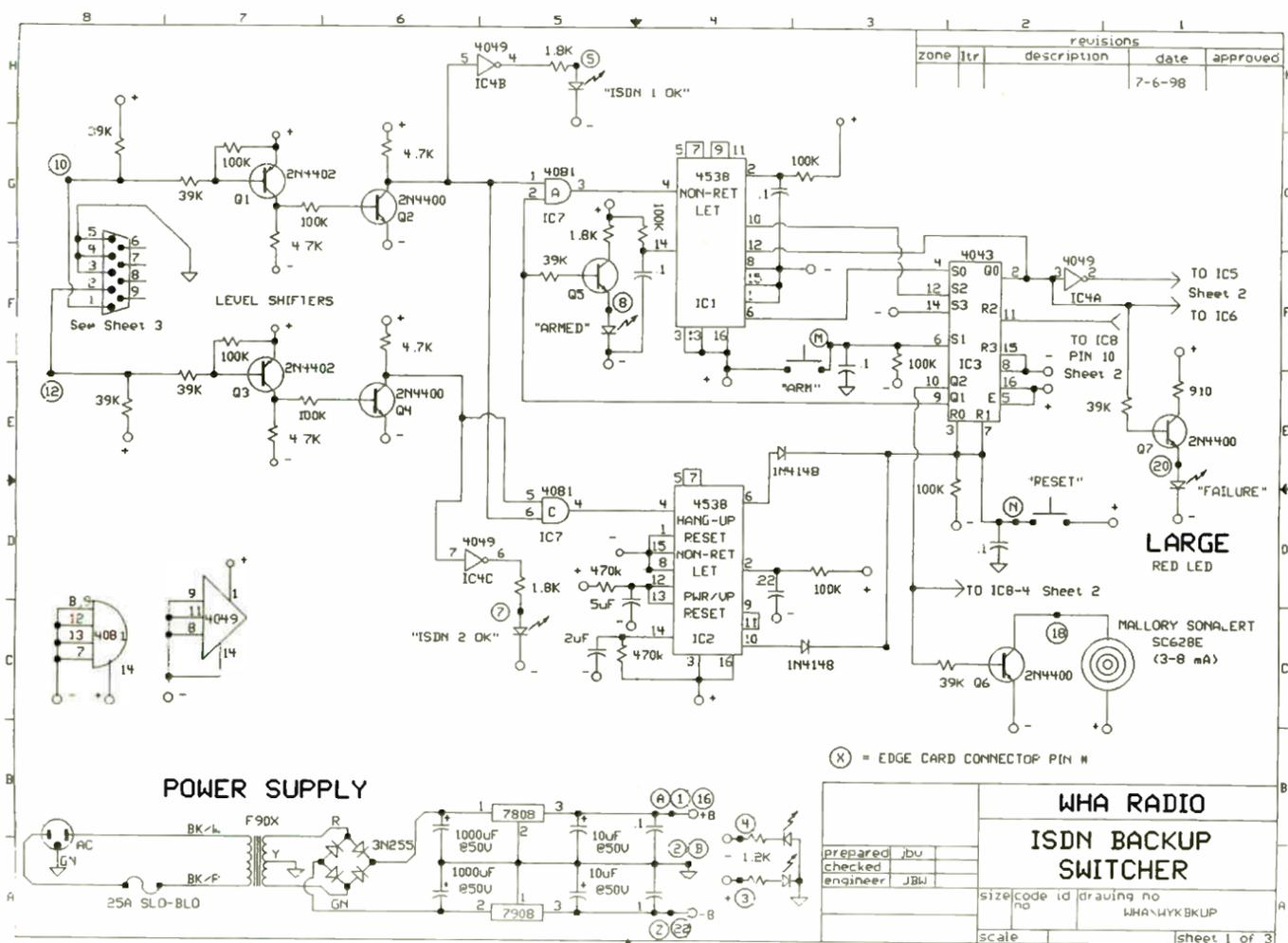


Fig. 1: Schematic for the ISDN Backup Switcher Developed by Wisconsin Public Radio

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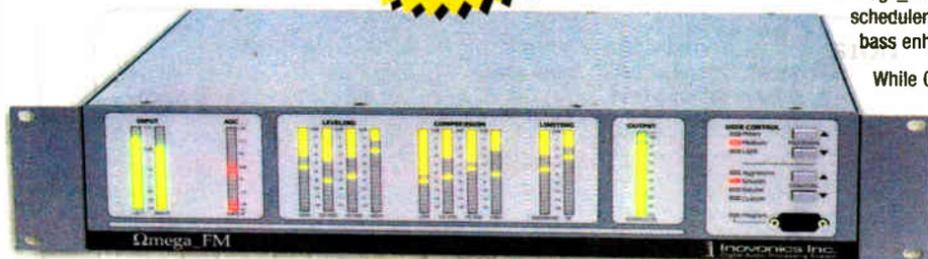
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Retaining for \$199.99, C. Crane Co. says this radio, designed by chief engineer Chris Justice in cooperation with Sangean, is "the best AM radio available."

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"I talked about this wonderful radio on my own radio show 10 days ago," said Tim Carter, broadcaster and nationally

known host of the *Crane* radio show in Silicon Valley, where he worked as a designer, to Fortuna in 1983, "I couldn't get any AM radio stations."

Determined to get talk radio one way or another, Crane eventually tracked down the Select-A-Tenna (www.selectantenna.com). A strange-looking device resembling a standing plastic car tire with a tuning knob in its center, the Select-A-Tenna

This said, Bob Crane is prepared to face the IBOC challenge: just as he faced the challenges of distant analog AM reception years ago.

"If and when the IBOC format is consummated, we will have some real technological advances for receivers that use the system," he said. "We will remain a radio performance leader, whatever happens."

learned a lot from you." That was a fine compliment. When Jeff passed on, I lost not only a colleague but a friend.

Jeff is survived by his parents and a daughter, age 11.

Tom Osenkowsky is a consultant and Senior Member of IEEE, SBE and NARTE, based in Brookfield, Conn.

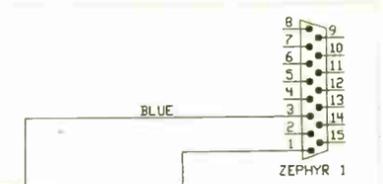
Workbench

▶ Continued from page 19
the "OK" LEDs via IC4. At this point, LOW on the IC7C output

turn on, allowing Zephyr 2 (backup) audio to pass on to your console. At the same time, the FAILURE LED will go on via transistor Q7.

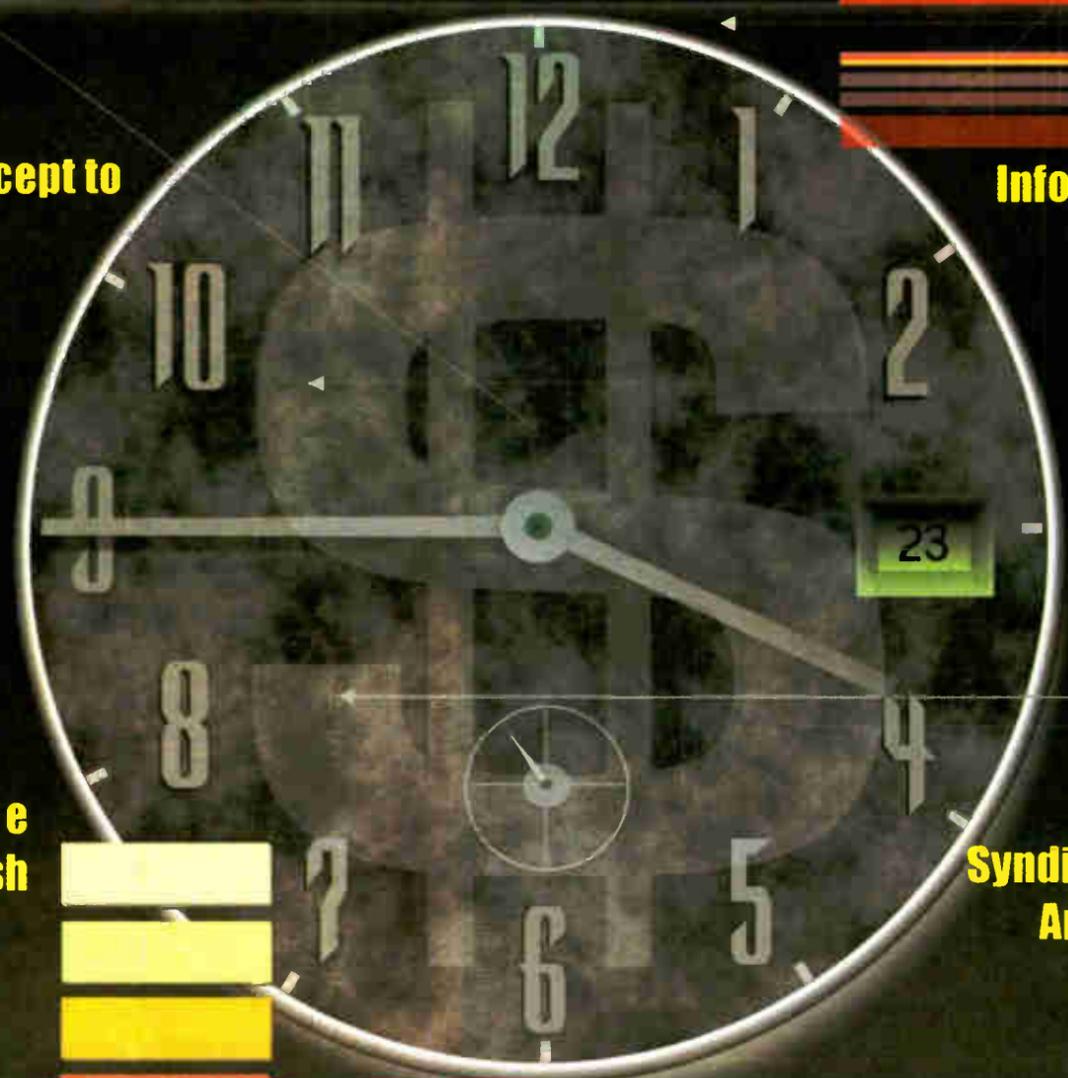
The IC3-2 Q0 output also leading-edge triggers the second half of IC1, which sends a HIGH pulse out to pin 10

With the broadcast concluded, the operator can either push RESET to return Flipit to its standby state, or let the Zephyrs hang up. With the system armed, and both Zephyrs on-hook, both inputs of IC7C are HIGH, output IC7C4 is HIGH, leading-edge trigger-



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Workbench

Radio World, February 12, 2003

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Hey, Don't Flip Out — Flipit!

by John Bisset

ISDN is a mainstay for many stations — so much so that most stations have a backup ISDN line, and even a backup ISDN unit.

Wisconsin Public Radio developed a useful line-switching device to be shared with *Workbench* readers. Called the WYK Flipit Box, it was designed around the program "Whad'Ya Know?"

Two Telos Zephyr ISDN units are used

with this adapter. Both Zephyr units are programmed so that their status outputs (pin 3 of the parallel port DB-15 connector) are activated should lines 1 or 2 (stereo mode) fail. Other programming options are available by referring to the

Telos manual.

Should the main Zephyr fail, Flipit instantly will switch to the backup Zephyr, restoring the audio. Tests on the bench show that simulating a failure of the main audio source will switch instantly to the backup source, with no discernible interruption of the program.

In reality, a failure in the main Zephyr may produce a momentary "hole" in the program, but this is certainly better than the seconds or minutes that it would take to either play with a patch panel, or redial the ISDN connection to restore audio.

Main and standby

Two simultaneous ISDN feeds are provided for the "Whad'Ya Know" origination. Flipit assumes that ISDN 1 box is the "main" unit. If the main unit fails, Flipit will switch automatically to the ISDN 2 box, and sound an alarm.

Operation of Flipit is straightforward. The dial-up connection is established with ISDN #1 and then ISDN #2. Then the ARM button is set. If a failure occurs, pressing RESET will toggle the audio back to ISDN #1.

The first stage of the Flipit box consists of two level shifters, consisting of Q1, Q2, Q3 and Q4, as seen in Fig. 1. Because the Zephyr's status outputs are open-collector ground logic, and the Flipit is bipolar logic, a conversion is necessary.

The outputs of the two level shifters are combined in AND gates IC7C to produce a RESET command, to restore Flipit to its standby state. The standby state is attained on power-up or by pushing RESET. This closes solid-state switch IC5 and allows Zephyr 1 audio to pass through to your console, uplink, or router.

With both Zephyrs connected (off-hook) their STATUS outputs are at ground LOW. This causes the collectors of Q2 and Q4 to go LOW lighting

See WORKBENCH, page 20 ▶

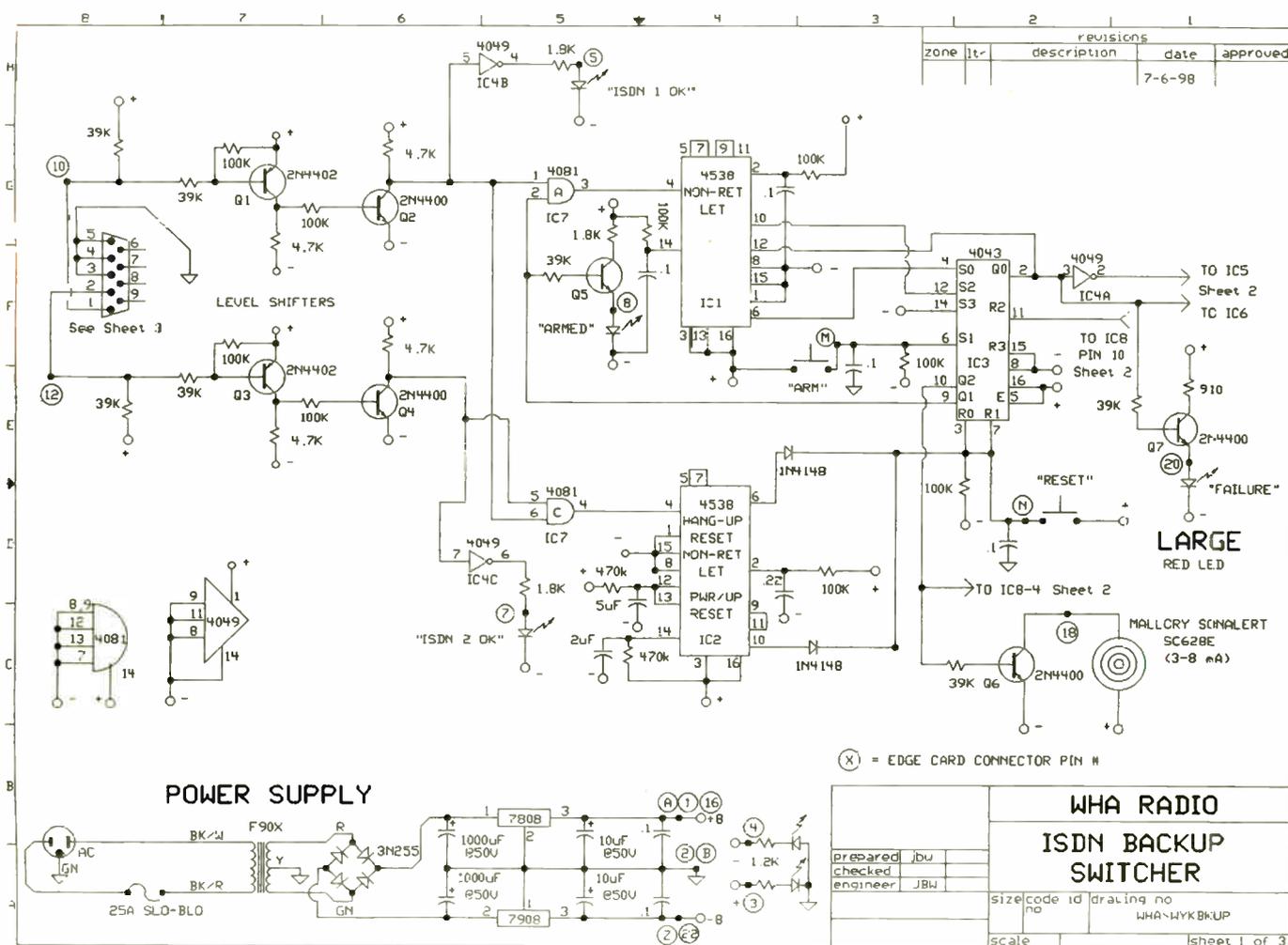


Fig. 1: Schematic for the ISDN Backup Switcher Developed by Wisconsin Public Radio

Digitally Diverse Omega_FM - \$5880

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Hear It... Processing doesn't get any better than this.

Workbench

► Continued from page 19
the "OK" LEDs via IC4. At this point, there are two LOWs on the IC7C and IC7A inputs, hence their outputs are LOW.

Pressing the ARM button sets the Q output of latch IC3 HIGH, turning on the ARM LED, via transistor Q5, and applying a HIGH to IC7A-2. Now if Zephyr 1 glitches and hangs up, the Zephyr 1 status output will go HIGH via the 39k-ohm pull-up resistor. This forces collector Q2 to go HIGH, placing a HIGH on IC7A-1.

IC7A-3 goes HIGH, leading-edge triggering IC1-4, which produces a HIGH pulse out on pin 6. This pulse latches the Q0 output of IC3-2 HIGH, causing the solid-state switch IC5 to turn off, and solid-state switch IC6 to

turn on, allowing Zephyr 2 (backup) audio to pass on to your console. At the same time, the FAILURE LED will go on via transistor Q7.

The IC3-2 Q0 output also leading-edge triggers the second half of IC1, which sends a HIGH pulse out to pin 10. This pulse latches the Q2 output of IC3 HIGH, causing the alarm to sound via transistor Q6.

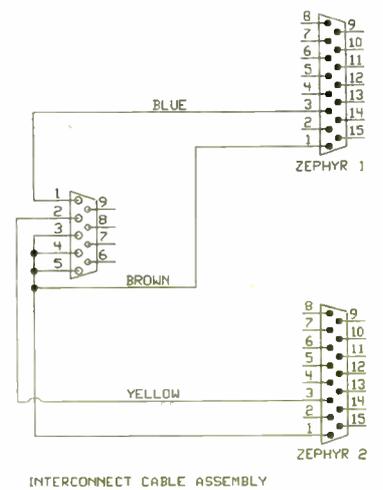
The Q2 output of IC3 also leading-edge triggers IC8-4, and after approximately 5 seconds, IC8-6, 11 is trailing-edge triggered. This produces a HIGH pulse out on pin 10, which unlatches the Q2 output of IC3 silencing the alarm.

With Zephyr 2 (backup) audio now online, the operator can re-establish the Zephyr 1 connection, push the RESET button, which puts Zephyr 1 audio back online. When the ARM switch is depressed, the system awaits for another Zephyr 1 failure.

With the broadcast concluded, the operator can either push RESET to return Flipit to its standby state, or let the Zephyrs hang up. With the system armed, and both Zephyrs on-hook, both inputs of IC7C are HIGH, output IC7C4 is HIGH, leading-edge triggering IC2-4, producing a HIGH reset pulse out on pin 6 to IC3-3, 7. This puts Flipit back in its standby state. The alarm will always sound if Flipit is armed, and Zephyr 1 hangs up.

The schematics are shown including the Zephyr interconnect logic cable schematic. The front panel of the Flipit is a standard 19-inch rack plate drilled for the appropriate alarm, lamps and switches.

This is the kind of project that will win you points with your manager and program director. Minimizing down time saves on make-goods, which translates to the bottom line. Make sure you advise them of your initiative.



INTERCONNECT CABLE ASSEMBLY

RIBBON CABLE	PIN #
BN +8U	1
BK -8U	22
W +8 LED	3
GY -8 LED	4
V ISDN 1 LED	5
BE ISDN 2 LED	7
GM ARM LED	8
Y ISDN 1 CTRL	10
O ISDN 2 CTRL	12
R ARM PB	M
BN(2) RESET PB	N
Y(2) FAILURE LED	20

Fig. 3

Ralph Jones of Entravision Radio and Dave Fortenberry of Salem Communications, both in Sacramento, Calif., pass along a Web site that offers ISDN long-distance service 10 ten cents per minute. The site is www.ISDNlongdistance.com.

The service is transparent, just dial the 10-10 number and the destination ISDN number.

The phone bill can be reviewed online (with password access), and a paper copy can be sent to the accounts payable manager.

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

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

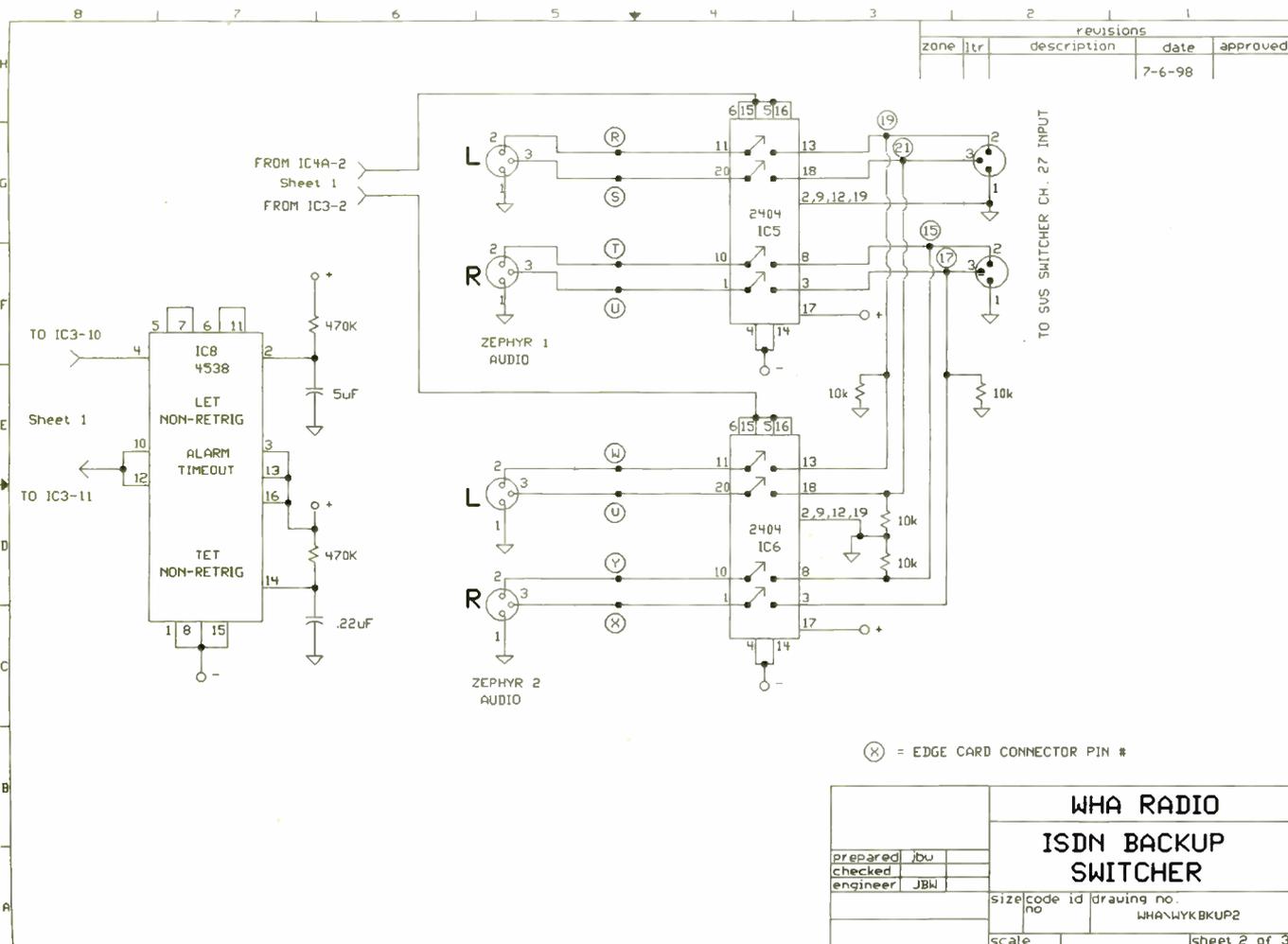


Fig. 2

revisions	
zone	description
1	7-6-98

prepared	Jbw
checked	Jbw
engineer	Jbw

WHA RADIO			
ISDN BACKUP SWITCHER			
size	code	id	drawing no.
			WHA-WYK BKUP2
scale			sheet 2 of 3

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C. Crane Loves AM Radio

by James Careless

Once upon a time, the world's best radios were designed and built in the United States. But times have changed, and today Asian manufacturers dominate the consumer radio market.

syndicated newspaper columnist of "Ask The Builder."

"Within moments I received three phone calls from listeners who own a CCRadioplus. They sang its praises louder than me. The bottom line is this: If you want an awesome portable radio that has

passively adds up to +30 dB signal gain when placed close to a radio's internal AM ferrite antenna.

Bob Crane liked the Select-A-Tenna and started to sell them. Then he added radios — quality radios only, please. Today C. Crane Co. — the C. salutes the middle initials of both Bob and his wife, Susan — is a respected radio designer and retailer.

In the case of the CCRadioplus, he said, "We approached Sangean in 1988 with plans for a top-end AM receiver. However, we didn't have the clout of financing to convince them to do it. Then, when they let us know they were building their own AM receiver a few months later, we replied, 'What's the point of competing, when we can work together?' And that's what happened."

Coil boost

Since then, C. Crane has developed other AM products. A case in point is the Justice AM Antenna. Also designed by Chris Justice, the \$99.95 Justice is meant to be the "best compact AM antenna available."

The patent-pending Justice Antenna's secret is its use of twin coil on its ferrite bar antennas.

"A conventional ferrite bar antenna naturally has north and south magnetic poles," Crane said. "Chris realized that if you put a second coil on the ferrite bar and combine the signals electronically, you can boost the signal 6 dB."

So does the Justice AM Antenna perform as billed? Yes, says the fan-run Web site Philly Talk Radio Online.

"The Justice antenna is an amazing unit," PTRO says. "C. Crane has come up with some new technology here and they have every right to be proud of it."

In addition, the Justice antenna has been adopted by many cable TV operators, who have connected it to their EAS radio receivers.

"Our product was initially recommended by an EAS radio manufacturer to a cable TV operator," said Justice. "Since then, we've been supplying these antennas to cable TV operators nationwide."

After 26 years in radio design, Bob Crane's enthusiasm shows no sign of waning.

"I love radio, pure and simple," he said. "It's the only addiction I know of without a treatment center. Until they come up with one, I guess I'll keep at it."

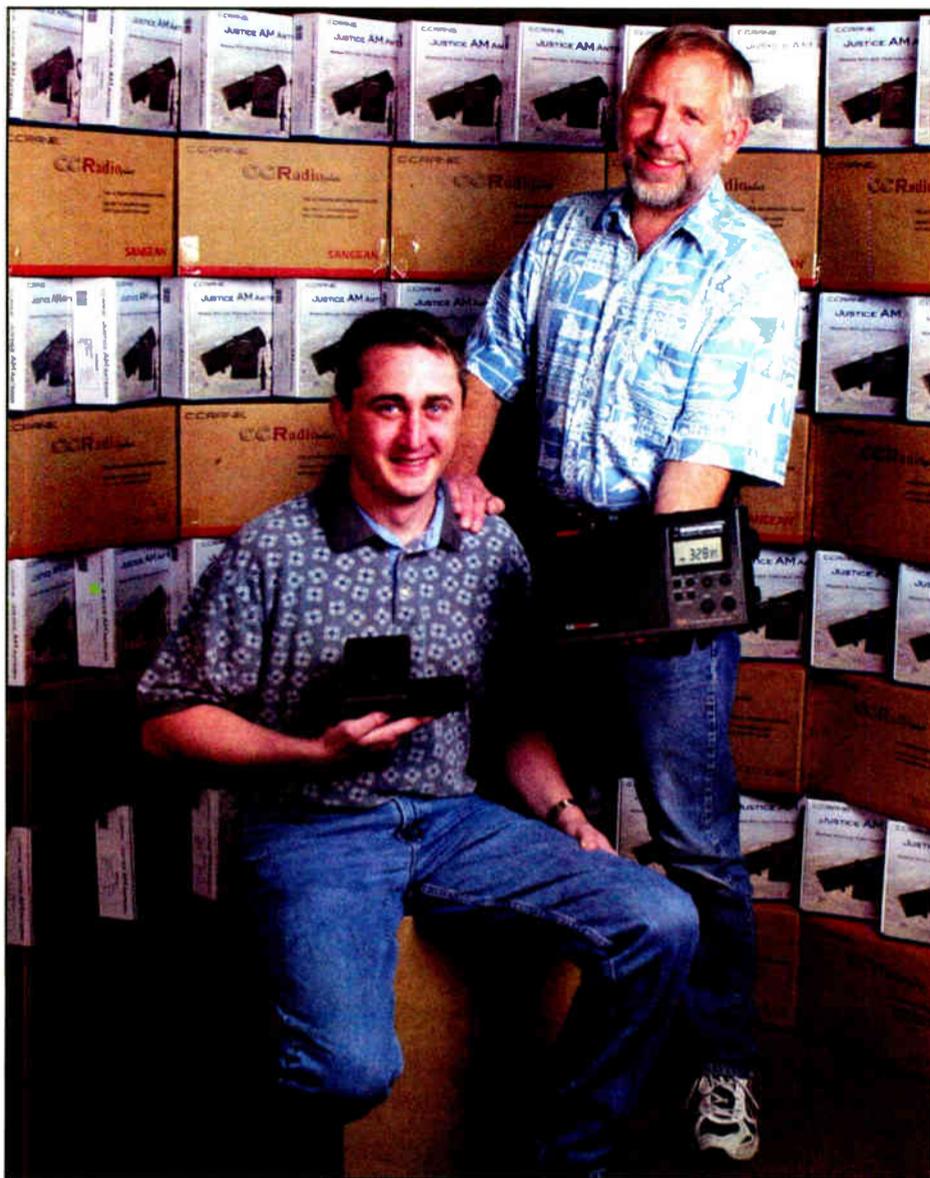
"Besides, I like making products for people who appreciate them. The old slogan about 'making life better with technology?' That's what we're all about."

As for the future, Bob Crane is monitoring IBOC's progress; the company's Web site talks extensively about the digital radio technology, and Crane himself wrote to the National Radio Systems Committee in early 2002 with his opinions about it.

"I recommend that the initial rollout tests be watched closely by station owners and the public," Crane said. "This is a real big change, and I believe it will affect broadcast communications for ever more."

This said, Bob Crane is prepared to face the IBOC challenge; just as he faced the challenges of distant analog AM reception years ago.

"If and when the IBOC format is consummated, we will have some real technological advances for receivers that use the system," he said. "We will remain a radio performance leader, whatever happens." 🌐



Chris Justice and Bob Crane pose with the CCRadioplus and the Justice AM Antenna. The latter, held by Justice at left, uses twin coils on a ferrite bar antenna to boost signal gain.

However, this doesn't mean America is out of the race. For instance, in the northern California town of Fortuna (population 10,000), stands a rustic two-story farmhouse that's home to the C. Crane Company. For 26 years, it has been an innovative family-owned designer and marketer of leading-edge AM radios and accessories for talk radio fans.

Why AM?

"Talk radio is the No. 1 format in the U.S., and has been for years," said Bob Crane, the company's president and owner. "However, most radios are designed to reproduce music, rather than voice. In contrast, our products emphasize accurate, full-bodied voice quality; especially on AM."

Today, C. Crane's flagship product is the AM/FM/TV/Weather Alert CCRadioplus. Retailing for \$159.95, C. Crane Co. says this radio, designed by chief engineer Chris Justice in cooperation with Sangean, is "the best AM radio available."

Audacious, yes. The claim is backed by numerous online testimonials, plus a 30-day money-back guarantee.

"I talked about this wonderful radio on my own radio show 10 days ago," said Tim Carter, broadcaster and nationally

unparalleled reception, then you should consider the CCRadioplus."

"A hands-on evaluation confirms that the CCRadio lives up to its promise," wrote Stephen A. Booth, in the January 1999 edition of Popular Science magazine. "It is the best AM radio I've ever had the pleasure of trying," said MSNBC's Gary Krakow.

Okay: so the CCRadioplus is a great AM radio. But still, why would anybody bother to make a great AM radio these days? Especially when the GE Super III, the legendary AM long-distance tuning receiver, is also available — at www.ccrane.com — for \$64.95?

The answer is that Bob Crane personally loves talk radio.

"You can actually get an education just by listening to some of the shows," he said. "I listen to this format all the time."

However, when Crane moved from Silicon Valley, where he worked as a designer, to Fortuna in 1983, "I couldn't get any AM radio stations."

Determined to get talk radio one way or another, Crane eventually tracked down the Select-A-Tenna (www.selectantenna.com). A strange-looking device resembling a standing plastic car tire with a tuning knob in its center, the Select-A-Tenna

APPRECIATION

Jeffrey Lalumiere Remembered

by Tom Osenkowsky

On Nov. 29, 2002, Jeffrey Lalumiere, 42, owner of Signal Step Communications in Dayville, Conn., and former director of engineering for Tele-Media Broadcasting Co., died following a brief battle with cancer.

Jeff began his broadcast career in May 1985 while attending the Rhode Island School of Electronics. Robert W. Knott, chief engineer of WSBE(TV), recalls hiring Jeff as a Master Control and camera operator.

"Once he learned operations, Jeff was not one to just sit at the console, but wanted to get into the equipment," Knott recalls. "In a strange twist of fate, I became answerable to him, as we rent space on the WPRO(FM) tower for our TV."

Teen student

According to Matt Lightner, president of Lightner Electronics, "I started working with Jeff when I was only 16. His nickname for me was Matlock. He would always call me and ask what broadcast engineering mysteries I was solving today."

"Jeff trusted me when I was starting in radio, and helped me learn a lot about engineering. He always was very appreciative of anything I did."

I remember working with Jeff on many field projects for Tele-Media, in Providence, R.I., and State College and York, Pa. I found Jeff to be professional in his attitude and attentive in his work.

I hired Jeff for projects and was extremely satisfied with his performance. I first met him while on a field visit to WINY in Putnam, Conn. Jeff was at the station to observe the adjustments I was making to the station's ATU. Jeff told me he was impressed with my work and taking the time to explain everything I was doing.

While at Tele-Media Jeff hired me to prepare an exhibit as part of its application to purchase WPRO(AM-FM). This was the beginning of an association that lasted through preparation of many exhibits during Tele-Media's acquisition phase until Citadel purchased the Tele-Media properties.

He was an accomplished guitarist and played in the Killingly High School band Pioneer and played with The Drive Band for 21 years.

Ironically, it was at WINY in October of 2002 that I learned that Jeff had cancer. I visited him in the hospital. His parting words were "I learned a lot from you." That was a fine compliment. When Jeff passed on, I lost not only a colleague but a friend.

Jeff is survived by his parents and a daughter, age 11.

Tom Osenkowsky is a consultant and Senior Member of IEEE, SBE and NARTE, based in Brookfield, Conn. 🌐

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Will Arbitron Walk the Talk?

Spanish Radio Holds Arbitron Commitment to the Fire

by Dee McVicker

Recent attempts by Arbitron to avoid fallout from low Spanish listener turnout in at least one book have only earned it more criticism from Hispanic broadcasters.

Hispanic radio groups lobbed missives the size of Manhattan at the ratings

research company after a November summit meeting, in which Arbitron announced it will begin language-preference weighting but didn't give a timeline when it would do so. In January, the research company indicated it would take at least three years, according to several published reports.

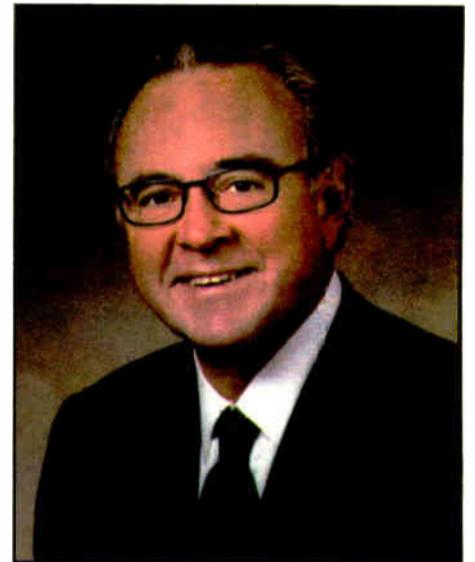
"Arbitron is putting out into the market what amounts to a defective product," said Joaquin Blaya, the chairman/CEO of Radio Unica, Miami, after the November meeting. "In any other industry, if you put a defective product into the market you are forced to recall it."

Criticism

Arbitron has been the target of criticism by Hispanic Broadcasting Corp., Spanish Broadcasting Systems, Entravision Communications and Radio Unica Communications since its summer Los Angeles book, which under-sampled Spanish-speaking listeners to the detriment of Hispanic stations' ratings in the market.

Language weighting would help repair the relationship between Arbitron and Hispanic broadcasters, who long have

See SPANISH RADIO, page 26 ▶



Hispanic broadcasters lose more than \$150 million annually in ad revenue because of current tabulation methods, said Joaquin Blaya, chairman/CEO of Radio Unica, Miami.

CES Showcases New Web Radio Devices

by Craig Johnston

There is plenty of copyright royalty news to report, some of it really depressing. So Web Watcher was happy to return from January's Consumer Electronics Show with optimism: Manufacturers are making non-PC devices that promise to move Internet radio listening into the stereo room of the house.

Prior to CES, the pickings of Webcast listening devices other than PCs had been slim: Philips Streamium MC-i200 is one of the few that come to mind.

But if imitation is the greatest form of flattery, Philips ought to be flattered by Sony's introduction of its Universal Music System. The device is a stereo component that allows the listener to tune among FM, AM, various other audio component sources and Internet radio.

Highlights

Another shelf radio device making a debut at CES was the GlobalTuner InTune200 from Promotion and Display Technology of the United Kingdom. A



wireless transceiver plugs into the USB port of a PC connected to the Net. It provides wireless service to the InTune200 within 300 feet of the PC.

Internet stations, as well as FM, can be tuned by the InTune200. The unit is not yet available. PDT is looking to bundle it into broadband Internet access offerings by Internet service providers.

If Internet radio listeners yearn for the freedom the pocket transistor radio gave traditional radio listeners in the '50s, a new Dell Computer Corp. product takes them almost there. Its Axim X5 Pocket PC uses a Compact Flash wireless card to connect to the Net via a WiFi network.

This unharnesses the listener from a wired Internet connection and a bulky

See WEB WATCH, page 28 ▶



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... Schweiger* who will probably immediately protest that he's being stereotyped, since he's equally expert at discussing the technical specs of microphones, consoles, CD players or studio monitors.

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*Paul wishes you to know that nepotism isn't as rampant at BSW as it might seem. Paul's last name is spelled Schweiger, unlike, BSW President Tim SchwIEger. The rule is "i before e except when hiring terrific, experienced staff."



Broadcast Supply Worldwide's Sales Order Center looks nothing like this stock photo we found.

All BSW Sales Representatives' cubicles are much larger and have individual jacuzzis and mini-bars.



Powerhouse Aphex FM Processor

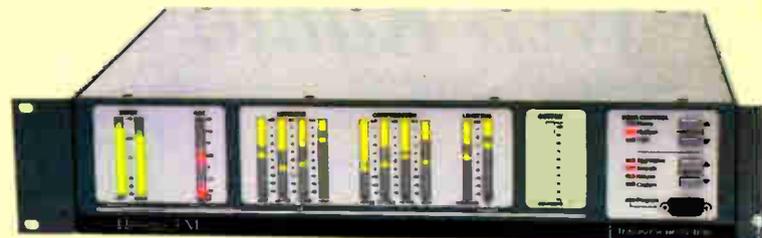
The Aphex Model 2020 MkIII is a complete FM broadcast audio processor contained in a single chassis. All functions are integrated within one interactive, stable, and optimized processing framework. Over 12 Aphex patents in audio signal processing technology are incorporated in the Every stage of processing is crafted to work seamlessly so there is no of competition or "fighting" for control between the leveler, compressor, limiter elements. At every stage, the sonic effect of the process was tuned for the minimum objectionable artifacts and maximum performance. Importantly, no multiband or composite clipping are used, minimizing grunge, listener fatigue and multipath distortion. Aphex developed techniques to gain comparable and even greater loudness while generating far less artifacts.

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The Amigo AM is a complete audio processing system for AM stereo. A wide range dual band AGC ensures consistent station loudness, by automatically monitoring and adjusting your audio levels. Three-band matrix limiter maximizes your station's coverage area and loudness. Stereo sound enhancement provides additional stereo separation to make your station stand out.



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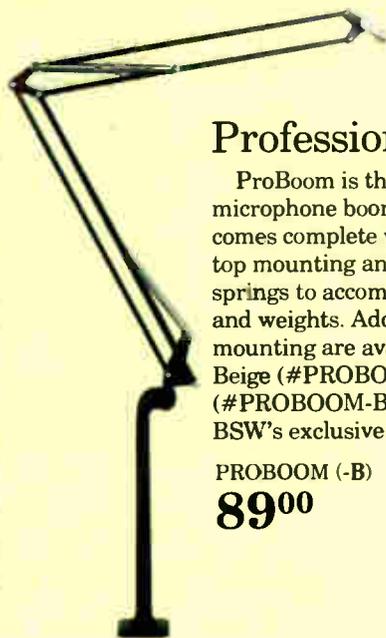
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Spanish Radio

► Continued from page 23

argued that Arbitron short-shrifts them because their Spanish-speaking only listeners are not represented accurately in audience measurements. But without a timeline for implementation, these operators feared that Arbitron was long on promise and short on action.

Jeffery Liberman, president of Entravision Radio in Santa Monica, Calif., suspects Arbitron made the weighting announcement to diffuse tensions during the two-day meeting in which Spanish-language operators voiced their concerns with existing measurement practices. Instead of placating them, the announcement ignited anew Hispanic broadcasters' frustra-

tions with a ratings company that they claim consistently under-rates Hispanic language stations and costs them millions of ad dollars each year.

stated Owen Charlebois, president of U.S. Media Services, Arbitron, New York, after the November meeting. "We told Hispanic broadcasters when we got

Arbitron is putting out into the market what amounts to a defective product.

— Joaquin Blaya, Radio Unica

The four broadcast groups have banded together to "explore our options," according to Liberman. "We are definitely committed to this."

back an independent analysis ... (that) gave us an indication we may not be collecting quite as many Spanish-dominant diaries as we might need ... we would



Owen Charlebois, president of U.S. Media Services, Arbitron, said the ratings service will add language-preference weighting to its tabulation methods.

commit to language-weighting. We got that indication on Nov. 5. On Nov. 12, we made the commitment.

"We didn't say, 'I don't know how long is it going to take us.' We committed immediately. We lived up to that obligation very quickly, and we're going to live up to this obligation, too."

To make good on that promise, Arbitron will need to update its computer systems. It also will need to get accurate statistics of language preferences in Spanish-speaking markets, which is proving to be more of a challenge.



Media researcher Norman Hecht said language-preference weighting and larger sample sizes would reduce the likelihood of inaccurate ratings of Spanish-speaking stations.

Charlebois said the U.S. Census Bureau doesn't collect the information in sufficient detail. A possible solution might be to plug in figures used by Nielsen Media Research, already widely accepted by advertisers.

"We're looking into that to see if the Nielsen numbers will work. But even if they do work, we need to move on to something bigger. We need to get numbers for all 68 of our Hispanic markets. We have 68 Spanish-controlled markets and Nielsen has about 16," said Charlebois.

He said Arbitron was moving as fast as it can to make the necessary changes.

Yet even as Arbitron announces a new statistical model for Spanish-speaking See SPANISH RADIO, page 31 ►

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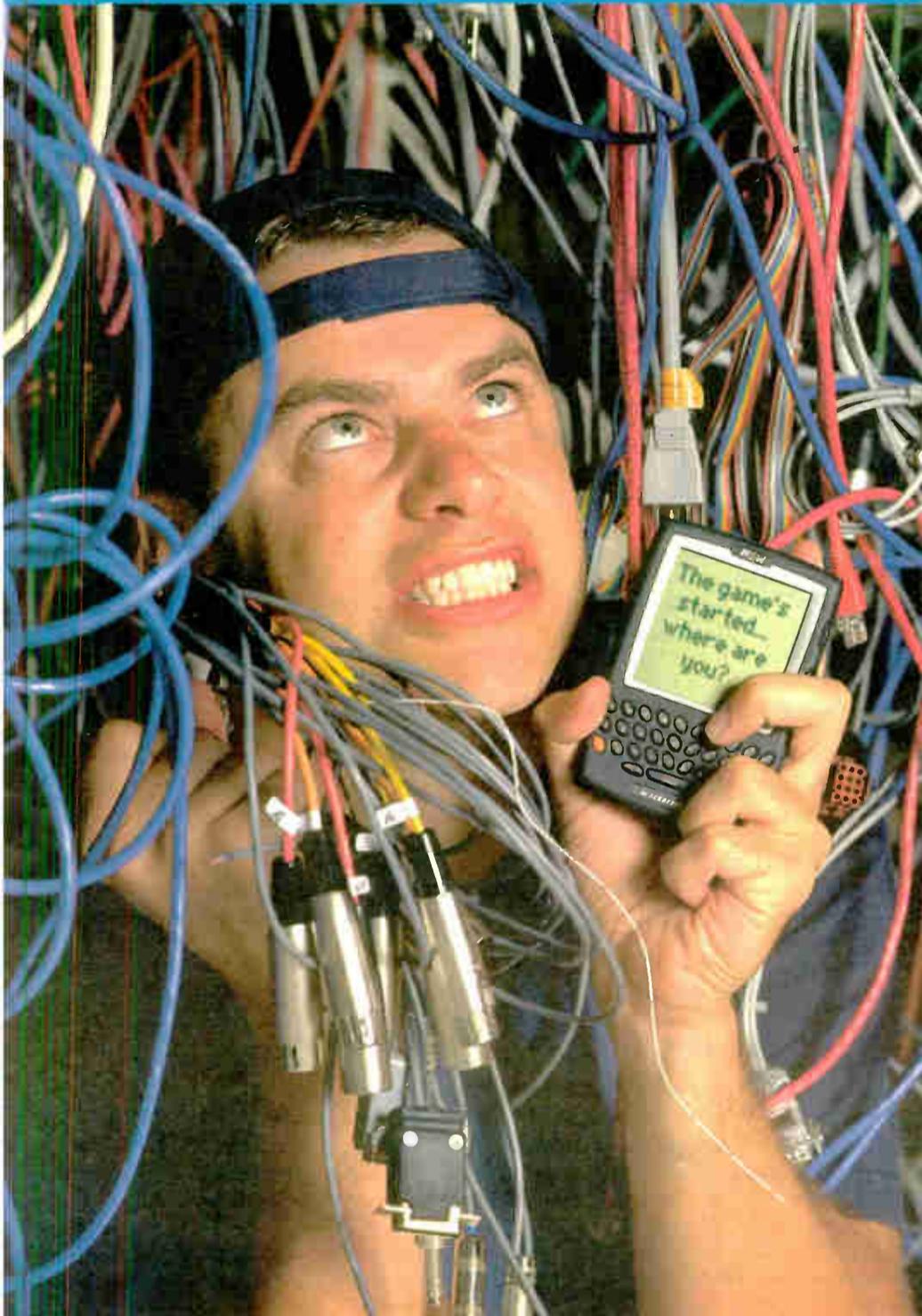
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World Radio History



Web Watch

► Continued from page 23
PC. Internet stations can be changed on the Pocket PC itself, and sound through headphones is terrific. (A built-in speaker/microphone is unsatisfactory for music listening.)

Because of the need to be within range of a WiFi network, the Axim doesn't offer the ability to listen while walking through the woods. But it could allow listening around the company office or in a person's backyard.

The Axim isn't the first handheld computer to be able to receive Internet radio, but at around \$250 it debuted at half the price of its predecessors. Apparently the public was excited about the unit. Dell customers waited two weeks and longer for their orders to be filled, about triple the normal period.

Web Watcher expects a lot of imitation of the Dell unit.

Web Watcher thinks the confidence of all Webcasters had to be shaken when, the first day of 2003, approximately 150 Clear Channel Communications stations pulled their simulcast streams from the Net.

Prior to Jan. 1, financial responsibility for Clear Channel stations' streaming activities had been covered by corporate. Clear Channel Interactive's VP of Technology Brian Parsons told Web Watcher that in December, the decision was made to move that responsibility to individual stations.

Faced with the choice of adding a possible drain on the bottom line at the 11th hour of the budgeting cycle, all but 55 of the company's stations chose to quit streaming. A week or so later, 45 of the stations that had yanked their streams returned to Webcasting.

"We have a trial agreement with

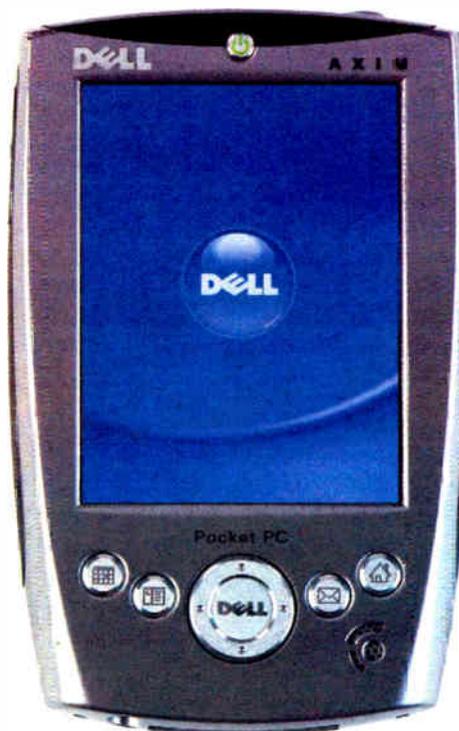
The confidence of Webcasters was shaken when numerous Clear Channel stations pulled their simulcast streams in January.

Someone who has been in the Internet radio business a long time cautioned Web Watcher on his enthusiasm for non-PC Web radio listening devices. He noted that even if hundreds of thousands of the devices are sold in the next few years, Internet radio operators need to keep their focus on monetizing the tens of millions of PCs that can listen to them.

Sage advice.

HiWire," said Parson, "that engages some stations that they wanted to run the trials on."

HiWire, the ad-insertion provider, has been bullish on Internet radio sales at both the local and national level. "For over a year, we have been changing our model to provide more services for stations under our all-in-one pricing," HiWire CEO Steve Goldberg told Web Watcher. "What we're doing right



Dell Axim X5 Pocket PC

now with Clear Channel is a continuation of that attempt to do it."

Parsons said more of the Clear Channel stations can be expected to return to Internet radio operations as they revise their strategies.

"We are going to take successful practices from the stations that are making it work, document and distribute those to other stations," said Parsons.

To gauge how big a blow Clear Channel's announcement was to Webcasting, it bears reminding that before the bulk of the company's streams left the Internet, Clear Channel was the No. 1-ranked Web radio network in Arbitron Inc.'s MeasureCast Ratings. The company delivered a December total of more than 5.5 million hours of Total Time Spent Listening or Aggregate Tuning Hours. (See chart, page 30.)

While the old saying about the two things you don't want to see get made, sausage and law, may be true, it was still fascinating to Web Watcher to see how H.R. 5469, the Small Webcasters Settlement Act, wound its way through the legislative process.

Legislation that ultimately benefited small commercial and non-commercial Webcasters was shaped by the political power of another Internet-radio group that had only a defensive interest in the language of the bill: religious broadcasters.

Small commercial Webcasters were being heard and served by Congress last fall, but non-commercial Internet radio stations, including college stations, were being left out in the cold. Fortunately for them, as legislation ignoring their plight was racing toward passage in the Senate, religious broadcasters got help from an old friend, the soon-to-retire Sen. Jesse Helms, R-N.C.

The reason religious broadcasters prevailed upon Helms to block the Sensenbrenner bill was that all broadcasters, included religious broadcasters, feared the bill's percentage of revenue formula might be viewed as precedent setting by the next Copyright Arbitration Royalty Panel.

Russ Hauth, National Religious Broadcasters' Music Licensing Committee executive director, told Web Watcher their fear was the percentage of revenue formula

would be applied to their broadcast revenues as well.

"Let's say you're a million-dollar radio station, or thereabouts, and your Webcasting part of that is basically no revenue or very little revenue," said Hauth. "But they're going to calculate your fee based on your total revenue. It would be awful."

By the time Helms' staff and NRB lobbyists finished rewriting the bill during the 2002 general election recess, not only had the potentially precedent-setting language been clarified, but non-commercial Webcasters had their copyright royalty payment obligations suspended until June 30, 2003. (It is expected the non-commercial Webcasters will come to an agreement with the recording industry royalty collection agency, SoundExchange, by that date.)

H.R. 5469 didn't solve all of the religious broadcasters' copyright royalty issues, and the group was expected to discuss these matters when the NRB convention kicked off Feb. 7 in Nashville. But Robby Richardson of the NRB's Internet Committee gave Web Watcher this note of caution:

"Any time, obviously, that you get something through, it's going to be harder to get their attention the second time. If you come back and say 'Wait a minute, that's only half the answer,' (Congress feels like they've) done that, before I listen to you I've got 30 other people hollering at me that I've got to listen to. So there's that danger."

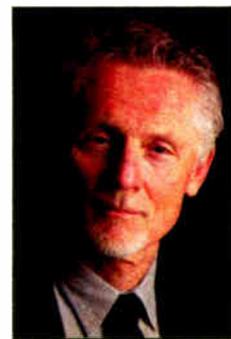
That doesn't mean religious broadcasters or Webcasters in general will get a deaf ear from a group of legislators who pushed the Internet Radio Fairness Act to rewrite the Digital Millennium Copyright Act last session. But when Web Watcher checked in with prime sponsor Rep. Jay Inslee, D-Wash., he found the congressman ready to wait before reintroducing the legislation.

"It makes sense to see how successful the parties are in negotiating new terms on their own before reintroducing the Internet Radio Fairness Act," said Inslee. "I plan to continue talking with members about the issue to gauge their interest in the issue, and to move forward with legislation if appropriate."

Inslee observed that Sensenbrenner continues to have a strong interest in reforming the Copyright Arbitration Royalty Panel in general. As Web Watcher has noted before, it is hard to gauge what direction the new Senate leadership, and particularly Senate Judiciary Committee Chairman Orrin Hatch, R-Utah, will go on this issue.

Regardless of what may or may not be brewing in Congress, the U.S. Copyright Office is obligated to determine copyright royalty rates for 2003 and beyond. Toward

See WEB WATCH, page 29 ►



Russ Hauth



Robby Richardson

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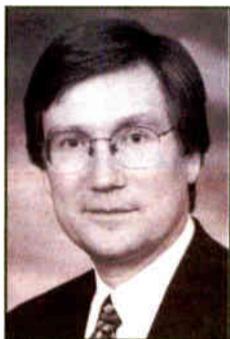
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Web Watch

► Continued from page 28
that end the Copyright Office will be empanelling three new CARPs:

- One CARP will recommend royalties for the same non-subscription Webcasters as the prior CARP.
- A second CARP will recommend rates for the pre-existing subscription services, those that were in existence as of the adoption of the DMCA. This will primarily be aimed toward XM Radio and Sirius Radio.
- A third CARP will recommend fees for new subscription services.

"Any of these CARPS could be avoided if there is an industry-wide settlement," said David Oxenford, attorney at Shaw Pittman LLP. "Whether or not any settlements occur remains to be seen."



David Oxenford

Oxenford, who is representing some of the parties to the CARP process, told Web Watcher at the beginning of January that the timing of the various CARPs is not yet clear.

It is well to remember that the CARP recommendations are only that: recommendations. Last spring Librarian of Congress James H. Billington made major changes to the CARP's recommendations, including cutting copyright royalty fees to be charged to non-broadcaster Webcasters in half.

Several radio group owners and the NAB are expecting in February to hear the decision of the Court of Appeals for the Third Circuit in Philadelphia, where their appeal of a Copyright Office determination was heard in December.

The broadcasters have insisted from the start that the DMCA's instituting sound recording copyright royalties does not include simulcasts of their terrestrially broadcast programming. The Copyright Office ruled they are included, and has denied broadcasters' every appeal on the subject.

As this episode of Web Watch is so heavy with copyright royalty material, it is fair to close by noting a small crease in the copyright zone that has emerged.

U.S. copyrights had long extended for 75 years, and in 1998 Congress extended them an additional 20 more years. That means that to find a U.S. sound recording in the public domain (where it wouldn't be subject to copyright royalty fees), you would have to go back to something in the pre-1908 genre. How many pre-1908 sound recordings are there?

Well, Web Watcher doesn't know. But from the "more than you ever wanted to know about something" category, Web Watcher's extensive research has found that the French developed the phonoautograph, a device that recorded sound wave on a rotating cylinder, beating Thomas Edison to the punch by 20 years.

But that's all smokescreen around the

fact that there's not a lot of pre-1908 recordings out there, and probably even less audience to listen to them.

What about the early '50s? There are a lot of recordings from the early '50s and the decade before, recordings from Glenn Miller, Ella Fitzgerald, and (gasp) even Elvis Presley. Now, if the U.S. copyright extends back 95 years, what brings the early '50s into question?

It turns out that European Union copyright protection lasts only 50 years. But you note that Elvis recorded in the United States, for American labels. It turns out that though the recordings were made and released in America, the door is open for any European recording company to release albums that had been owned an individual label.

Selling those physical European CD or cassette recordings of U.S. copyrighted



Thomas Edison and His Early Phonograph

material in the United States might be difficult, but there's a real question as to whether European-based Webcasters can

legally deliver this early '50s and before material via Internet-radio to listeners in the United States copyright royalty-free.

So this year an all-Elvis Europe-based Internet radio station might only be able to play "My Happiness," but next year they could add "That's All Right, Momma" and "Baby Let's Play House."

Though Web Watcher makes light of this situation, it's not all that funny for recording companies or U.S.-based Internet radio operators. If the duration of European Union copyrights on American sound recordings are half of that for the United States, how long might they be in an offshore tax haven?

Craig Johnston is a Seattle-based Internet and Multimedia developer who is a frequent contributor to RW. Reach him via e-mail to craig@johnston.com.



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Radio Sales Continue to Gain

Money continues to come into station coffers at a faster clip. Radio revenue rose 10 percent in November 2002 compared to the same period a year earlier, back when the industry was in the post-9/11 gloom. This makes nine months of increases in the monthly comparisons issued by the Radio Advertising Bureau, and three in a row of double digits. Breaking down the overall performance, national revenue was up 23 percent and local was up 7 percent in November. Year-to-date, radio was up 6 percent through November over the first 11 months of 2001. "We expect equally strong numbers for December, regardless of what some forecasters have predicted," stated Gary Fries, president and CEO of RAB.

STATION SERVICES

WOR, RCS and The Best of Everything'

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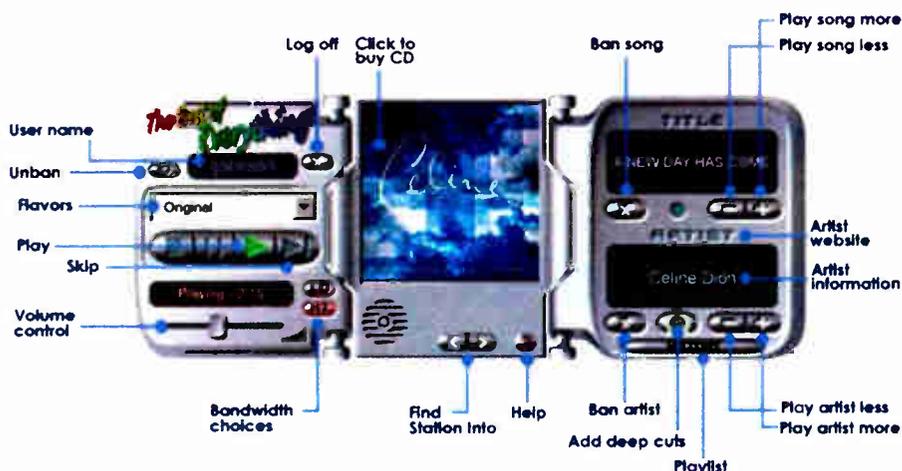
Buckley station WOR in New York is online with a new format called "The Best of Everything," a stream that lets listeners customize what they hear in exchange for a monthly fee. The service uses RCS iSelector, an Internet scheduling engine announced earlier this year.

"It has the blessing of all the major record labels and is 100 percent DMCA-compliant," said RCS President Philippe Generali. "As you start listening and interact with the player, it learns and remembers your musical tastes to create your specific music mix, different from any other listener's stream."

Listeners obtain a personalized online player from the WOR Web site for \$4.95 a month. The monthly fee covers streaming costs, database management, record label and music publishing company fees. Special buttons on the player allow listeners to play specific artists more, less, or not at all. The first 48 hours are free. Listeners also can buy songs.

WOR VP/GM Bob Bruno created the format. "It's targeted to the adults who think that radio has forgotten them. You'll hear everything from Mariah to Motown to Mozart, from Sinatra to Springsteen."

For information visit www.wor710.com and www.rcsworks.com or contact RCS in New York at 914-428-4600.



RADIOIO, MOONTAXI GAIN IN NET RATINGS

The names of the top Internet radio networks are familiar in the new Arbitron MeasureCast ratings for the month of December — although there was some jostling in the lower ranks of the top 10. Clear Channel Worldwide, MusicMatch and StreamAudio were again first, second and third. But the gap between Clear Channel and MusicMatch, as measured by total time spent listening, narrowed.

Meanwhile, Warp Radio moved from fifth to fourth in the rankings, switching position with Radio Free Virgin. Internet Radio Inc. held at No. 6.

StreamGuys jumped from 10th to 7th, Moontaxi, which wasn't ranked last month, came up to 8th, while SurferNetwork held at 9th and Virgin Radio fell to 10th from 7th.

ABC Radio, last month's No. 9, didn't make the top 10 networks this month. MusicMatch Artist Match was the top individual channel with 1.18 million hours of TTSL. Radioio jumped from 4th to the No. 2 position. JazzFM was ranked third.

Top 10 Internet Radio Networks (December 2002)

Rank	Company	TTSL	CUME
1	Clear Channel Worldwide	5,585,467	796,330
2	MUSICMATCH	5,272,302	1,361,611
3	StreamAudio	3,824,927	364,724
4	Warp Radio	2,479,659	301,669
5	Radio Free Virgin	2,318,960	276,151
6	Internet Radio, Inc.	1,915,731	518,131
7	StreamGuys	1,747,059	368,083
8	Moontaxi	1,686,787	283,162
9	SurferNETWORK	1,589,182	96,611
10	Virgin Radio	1,320,181	186,055

Arbitron's MeasureCast Top 20

Rank	Station	Format	Owner/Network	URL	TTSL (ATH) ¹ (in hours)	Cume Persons ²
1	MUSICMATCH Artist Match (Internet-only)	Misc.	MUSICMATCH	www.musicmatch.com	1,183,194	459,139
2	RADIOIO (Internet-only)	Adult Alternative	RADIOIO/IO MediaPartners Inc. / LimeLight Networks	www.radioio.com	1,012,992	166,092
3	JazzFM/102.2 FM & 100.4 FM (London)	Jazz	Guardian Media Group	www.jazzfm.com	890,620	161,196
4	Virgin Radio/1215 AM & 105.8 FM (London, UK)	Hot AC	Virgin Radio New Media	www.virginradio.co.uk	846,585	110,652
5	WQXR-FM/96.3 (New York)	Classical	New York Times	www.wqxr.com	787,094	95,949
6	MUSICMATCH Top Hits (Internet-only)	CHR / Top 40	MUSICMATCH	www.musicmatch.com	606,991	322,867
7	K-LOVE Radio (Sacramento)	Contemporary Christian	Educational Media Foundation	www.klove.com	495,292	57,721
8	Beethoven.com (Internet-only)	Classical	Beethoven.com	www.beethoven.com	426,433	50,451
9	MUSICMATCH Traditional Christmas (Internet-only)	Holiday Music	MUSICMATCH	www.musicmatch.com	409,999	146,635
10	3WK Undergroundradio (Internet-only)	Alternative Rock	3WK	www.3wk.com	353,350	88,395
11	KPLU-FM/88.5 (Tacoma)	Jazz	Pacific Lutheran University	www.kplu.org	324,398	41,816
12	KING-FM/98.1 (Seattle)	Classical	Classic Radio Inc. Real Broadcast Networks	www.king.org	322,888	42,138
13	MUSICMATCH Contemporary Christmas (Internet-only)	Holiday Music	MUSICMATCH	www.musicmatch.com	317,960	117,093
14	WFXZ-FM/93.7 (Wilmington, NC)	Classic Rock	Sea-Comm Media / Warp Radio	www.937thebone.com	288,964	19,455
15	WBLS-FM/107.5 (New York)	Hip Hop	Inner City Broadcasting BroadcastURBAN.com	www.wbbs.com	287,692	23,890
16	BlueGrass Country (Internet-only)	Country	American University Warp Radio	www.bluegrasscountry.org	287,026	56,623
17	MUSICMATCH Artist On Demand (Internet-only)	Misc.	MUSICMATCH	www.musicmatch.com	280,492	112,515
18	KNAC.COM (Internet-only)	Pure Rock	KNAC.COM	www.knac.com	262,603	47,027
19	WSHI-FM/106.3 (Fort Wayne, IN)	AC	Shine Broadcasting / Warp Radio	www.sunny106fm.com	254,696	38,829
20	MUSICMATCH Soft Hits (Internet-only)	Soft Hits	MUSICMATCH	www.musicmatch.com	214,822	51,663

Notes:

1. TTSL (Total Time Spent Listening), sometimes referred to as Aggregate Tuning Hours (ATH), is the total number of hours streamed by the broadcaster in the reported time period.

2. Cume Persons is an estimate of the total number of unique listeners who had one or more listening sessions lasting five minutes or longer during the reported time period. This estimate is derived using an algorithm that takes into account unique media player GUIDs, unique IP addresses, and other variables during the reported time period.

About Arbitron

Arbitron Inc. (NYSE: ARB) is an international media and marketing research firm serving radio broadcasters, cable companies, advertisers, advertising agencies and outdoor advertising companies in the United States, Mexico and Europe. Arbitron's core businesses are measuring network and local market radio audiences across the United States; surveying the retail, media and product patterns of local market consumers; and providing application software used for analyzing media audience and marketing information data. Arbitron Webcast Services measures the audiences of audio and video content on the Internet, commonly known as Webcasts. The Company is developing the Portable People Meter, a new technology for radio, TV and cable ratings.

Arbitron's marketing and business units are supported by a world-renowned research and technology organization located in Columbia, Maryland. Arbitron has approximately 800 full-time employees; its executive offices are located in New York City.

Through its Scarborough Research joint venture with VNU Media Measurement & Information, Arbitron also provides media and marketing research services to the broadcast television, magazine, newspaper, outdoor and online industries.

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Spanish Radio

► Continued from page 26

markets, it is standing by its existing methods and the resulting audience measurements.

"Just because you can put a side airbag in a car doesn't mean your car isn't safe (without a side airbag)," said Charlebois. "We stand by the estimates we produced."

The company refers to statistical weighting as an enhancement to its methodologies rather than an outright fix, therefore implying that it's not giving out flawed results in the interim. Others, however, disagree.

erences of the market to uncloak those 250,000 listeners plus others obscured by current tabulation methods.

Arbitron committed to language-preference weighting, according to its November press release. It proposes dividing Hispanic survey samples into two language groups, either Spanish-speaking only or partial-Spanish-speaking, and weighting the returned diaries for each group against a predetermined estimate of the language preference of the Hispanic population in the market. It currently weights by age, sex, geography and ethnicity.

Until it acts on that promise, however, it's business as usual, say Hispanic broadcasters, who claim that existing Arbitron measurement methods miss the critical correlation between listeners who speak Spanish only and the

stations that broadcast in Spanish.

Radio Unica's Blaya estimates Spanish radio markets are under-estimated by at least 20 to 25 percent in an Hispanic radio ad market now bringing in \$700 million annually. As a result, Hispanic radio ad sales are down \$150 million annually, he said, with accumulative loss to the value of Spanish broadcast entities.

"We're not only *not* getting the sales, we're not getting the value of the company. Broadcasting entities are sold on a multiple of the cash flow, so this is impacting the whole industry," said Blaya.

"Everybody focuses on Los Angeles. But it happened in San Francisco, it happened in Denver, it happened in Las Vegas. It is happening in every marketplace there is," added Liberman.

Adding insult to injury are the thou-

sands of dollars Spanish-language operators spend on Arbitron fees. "I pay to get less than my fair share," he said.

Still, the news from Arbitron hasn't been all bad for Hispanic broadcasters. The year 2002 will be a watermark year for Spanish radio stations in terms of their total share of radio listening across the United States. Spanish language stations earned a 7.7 percent share of radio listeners across the United States in 2002, compared to a 6.2 percent share in the fall of 1998, according to Arbitron.

Getting Hispanic broadcasters to trust those numbers, however, is a different matter.

Dee McVicker can be reached at (480) 545-7363 or via e-mail to deemcv@qwest.net.

We stand by the estimates we produced.

— Owen Charlebois, Arbitron

"Arbitron doesn't have estimates of the markets' speaking ability, like Nielsen does. Therefore when it sends out its one-week radio-listening diaries where people can make entries, it's as if they get back a smaller percentage of the diaries from Spanish dominance than they should," said Norman Hecht, the CEO of media research firm Norman Hecht Research Inc., Syosset, N.Y.

Nutty numbers

That missing variable from ratings tabulations could explain the bizarre results of the summer 2002 Los Angeles book, which bucked an upward trend in Spanish radio listenership and surprised analysts with a downturn in the market share of Spanish-language stations.

"It was as if 250,000 Spanish dominant listeners 'vanished' from the market," said Hecht. And, in fact, a sampling representative of that market subset vanished from the raw data.

"The percent of Spanish-dominant Hispanics in our sample did decline. It went from 53 to 47 percent," Charlebois said.

Los Angeles stations whose listeners speak predominantly Spanish were affected the most.

"We have a Spanish pop format that is more apt to be (listened by) bilingual listeners, so we weren't as affected as some other stations. There are stations that dropped a whole share," said Liberman, who estimates a rating point to be worth \$7 million in annual ad revenue in the Los Angeles Hispanic marketplace.

A larger sample would have increased these stations' odds for a higher turnout. But even better, according to Hecht, would be to increase sample size and weight the Spanish-only diarykeepers against the speaking pref-

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Engineers rate Tieline POTS Codecs #1




- Clay Frienwald, Senior Facilities Engineer, Entercom/Seattle
"Where other codecs give problems or won't work, Tielines connect and give no problems when we're on the air".

- Mike Rabey, Radio Magazine field report, April 2000
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- Dave Kitley, Engineer, KGNZ
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Radio World

Portable Audio & Newsgathering

February 12, 2003

USER REPORT

Sonifex Courier at BBC London 94.9

by Ben Wilkins
Senior Reporter
BBC London 94.9

LONDON Six o'clock in the morning on Jan. 8 and I've just arrived at a dingy flat in North London, the scene of the recent M15 swoop on an Algerian terrorist cell producing deadly ricin poison. I'm there because I'm BBC London 94.9's senior reporter and my job is to do on the spot reports for "The Danny Baker Breakfast Show."

Courier is the on-board editing facility. A proper waveform appears in the screen and you can use a scrub wheel to move the cursor around and put in edit points. It's a simple matter to top and tail clips or turn a string of interviews into a vox.

The final step is to drop all the clips and links into a playlist and put them in the right order. Without a hangover it can be done in around six minutes. This morning it takes me a couple of minutes longer!

It's not a perfect machine. I'd like to be able to mix tracks together and fade

clips in and out. Also it takes a bit too long to boot up for my liking. But it's light enough to run with, can be bashed around and rained on without failing and the loudspeaker is nice and loud.

Also the XLR sockets mean I don't have to carry a bag of leads around with me. When I first started at BBC London 94.9, we were using Uhers. Radiocar reports either had to be live or fed back raw to studio and mixed there. With a Courier, I easily can make three different packages during the show on my own.

The BBC has bought almost 400 in total and we have about 20 in the station. Our sports team use the ISDN facility to send reports back from football grounds, Radiocar reporters use the more complex editing functions, but anyone can pick one up and go out and record something...

"Just turn it on, slide the big red button to the right, point the spongy end of the mic at your face." Like I said, child's play.

For more information, including pricing, contact the company's U.S. distributor, Independent Audio, in Maine at (207) 773-2424 or visit www.independentaudio.com.

SPECIAL REPORT

Comrex Codecs and a Moving Train

by Willem Bagchus
Technical Director and Co-Host
'Travel World Radio Show'

ABOARD THE CANADIAN In an unusual broadcast in November of 2002, Southington, Conn.-based WNTY(AM) aired the syndicated "Travel World Radio Show" live from Via Rail Canada's west-bound transcontinental train.

The wireless capability of the Comrex BlueBox and cellular technology can make exciting, creative remote broadcasting practical at minimal expense.

The first moment I heard the WNTY audio feed coming through the Comrex BlueBox via cell phone, I knew that I could share the excitement of being on a Canadian transcontinental train by doing a live remote of the show.

Taking a chance

The "Travel World Radio Show" in its present form was born in 1997 on Montreal's CIQC(AM), formerly CFCF and CXWA, and is hosted by Stephen Pickford and myself.

He's a travel agent; I'm a computer engineer. We've been doing travel broadcasting together since the 1980s. It seems people liked our stories and adventures. Today, CAB Radio syndicates us, and WNTY is our flagship.

We have always enjoyed trains. Via Rail Canada's Canadian is one of the most interesting trains of them all. It captures the imagination. The Canadian is the legendary transcontinental, running on tracks that united Canada in the 1880s. British Columbia's entry into confederation was contingent on the building of the railroad. Pierre Berton wrote about it in "The National Dream."

"Travel World" decided to run a piece on this great train. Of all of the routes of Via Rail Canada, none is more celebrated.

It snakes through Toronto, the Great Lakes, Winnipeg, Manitoba and makes its way northwest through Saskatoon, Saskatchewan to Edmonton, Alberta, crossing the Canadian prairies. Its most

exciting run is through the foothills to the Rocky Mountains.

Stephen and I have covered Via Rail since the beginning of "Travel World." We were beside ourselves with excitement at the idea of riding in The Canadian. In addition to our regular broadcasts, I wondered whether we could actually do a live broadcast from the train.

I know that people have done remotes from trains, but they usually involved some kind of chase vehicle and complicated, costly methods. That made exciting radio remotes prohibitive. We sought a way around this.

for the HotLine warns specifically, "Don't even think about connecting this to a cell phone." So no wireless ... until now.

Comrex recently introduced its BlueBox. Not only is it actually blue, but its land-line audio quality is way better than the company achieved with the HotLine, and it works with cellular phones. For the first time, wireless broadcasting is practical using cell phone technology. But even Comrex didn't have in mind what we wanted to do.

Comrex was supportive of the idea but cautioned that a train remote via cell phone and BlueBox had never been



Ben Wilkins, BBC London 94.9's senior reporter, holds a Sonifex Courier.

On this occasion, I've got about half an hour to look around the scene, find out what's going on from the police, record some interviews with the neighbors and produce a two-minute package. All this has to be done from the field and fed live into the program from the Radiocar. The only thing I need is my Sonifex Courier.

At first sight, it looks like a Fisher Price toy made of plastic, with big colored buttons and knobs. The good news is that compared to a domestic MiniDisc recorder, it's child's play to use. Recording is simply a matter of sliding the red button to the right and setting the record level with a round dial much like that of a Uher, a line of portable recorders popular overseas.

When the recording is finished, the file name pops up and the duration is displayed in the LCD window on the front.

This morning I recorded a couple of minutes with a police spokesman and ran around grabbing a few words from worried neighbors. After roughing out my script and recording three links, I'm ready to start turning it into a package. With eight minutes to go, it shouldn't be a problem.

For me, the best thing about the



Willem Bagchus and Stephen Pickford broadcast on-board across Canada.

Remote broadcasts often present engineering challenges. Usually, an engineer would connect matching audio codec units on either side of some kind of landline.

We already rely heavily on the Comrex HotLine POTS codec. It allows us to broadcast remotely from WNTY from virtually anywhere we can get a plain old phone line and electricity. This makes the show fun and entertaining. You never know where we will be.

But what about cases where a landline just isn't available? Comrex's own manual

done, that this basically was experimenting. Obviously, with anything technical, there are gotchas and snafus, but we were ready.

Armed with cell phones, mics, a mixer and a Comrex BlueBox, "Travel World" boarded Via Rail Canada's train Number One from Toronto Union Station heading west to Vancouver.

The BlueBox allows cell phones to be used in one of two ways. You can connect the codecs if you have a GSM-based

See TRAIN, page 35

SPECIAL REPORT

Rayovac Rechargeable Battery Test

by Paul Kaminski
News Director
Motor Sports Radio Network

Radio field reporters and producers can tell you many stories about the "one that got away" simply because of batteries going dead in the middle of an interview recording session.

The fear of losing an interview to dead batteries causes some of us to change batteries in our recorders before every major use. That can get expensive if you change out four disposable (single-use) batteries at a time. Rayovac's line of rechargeable batteries makes that practice economical.

When I quit using a cassette deck to get field sound in 1998, I began using Rayovac rechargeable alkaline AA batteries for my MiniDisc recorders, the Sony MZR-37s. Rechargeable alkaline batteries come fully charged and you can put them in a machine right out of the blister pack. I've used the batteries and the portable PS1 charger for years and also have a PS3 charger in the office that can charge eight AA batteries at a time or four C or D cells.

At the 2002 Indianapolis 500, Rayovac sponsored driver Alex Barron in Indy Racing League competition. Its press release contained a boilerplate item about a one-hour battery charger for AA batteries. The batteries used in this new charger, called the PS4, weren't the rechargeable alkalines, but were rechargeable nickel-metal hydride, or NiMH.

Recharging the NiMH batteries wouldn't be a problem, because the MZR-37 has charging circuitry and the PS1 charger, which I carry in my field kit, will charge NiMH batteries, rechargeable alkalines and nickel-cadmium (NiCad) cells. The Rayovac PS4 works on AC and in that mode, four new NiMH AA batteries will come to full charge in an hour.

NiCad cells because I wanted to test the products generally available from Rayovac.

The test consisted of making a stereo recording of 74 minutes, 59 seconds with a microphone and earbuds attached and marking seven to eight tracks while recording.

The criterion was the number of bars in the battery display of the MZR-37 MD recorder after the 74:59 test was complete, with four bars indicating nominally full and a flashing display indicating battery recharge



or replacement. The control set of Rayovac single-use alkaline AA cells displayed four bars throughout the entire 74:59.

The set of rechargeable alkaline Renewal batteries in service for more than a year started to lose power at the 16-minute mark when three bars were displayed. At 21:44, the display went to two bars. At 31:19, the batteries went to one bar in the display until the 45:37 mark, when the single bar started to flash. The flashing continued to 58:55,

42-minute mark, when the display went to three bars, and stayed there until the end of the recording. It took 13 minutes in the PS4 rapid charger for the NiMH batteries to come back to full charge.

Pricing

The PS4 rapid charger charges both AAA and AA NiCad and NiMH batteries. I found one at retail for \$29.99. Four NiMH AA batteries cost \$10.99 at retail (Walmart, Target, HomeDepot, etc.). The PS4 also charges NiMH and NiCad 9-volt batteries but can't charge C and D cells.

The PS1 charger retails for \$9.99. Rechargeable Renewal alkaline AA batteries were found for \$6.99 for a set of four. The PS1 won't recharge C, D or 9-volt batteries, just AAA and AA batteries. It will only run on AC power. The single-use Rayovac alkaline batteries are sold in four-, eight- and 12-packs. I've seen eight AA cells available for \$3.99 at retail.

So what do I do when I forget to charge up the batteries? In theory, that ought not to happen because my MD

recorders have come with a recharger circuit, and the PS4's charge in a car or with a regular AC plug. The real world doesn't run on theory, though.

For such instances, I have a set of the single-use Rayovac which will get me

through those periods of brain fade, while the rechargeables are getting back up to full power.

If you can develop the habit of putting one set of batteries on charge while you're using the other, like the TV camera folks, you might never need to buy a single-use battery again. The NiMH cells will lose some power in storage (over 30 days), like the NiCads. Rayovac suggests that the rechargeable alkalines can be charged up to 100 times, and the NiMH can be charged up to 1,000 times.

Both alkaline and NiMH systems have no appreciable memory effect as do NiCad batteries. Memory effect is simply the shortening of a discharge cycle, usually caused by recharging NiCad batteries before they are fully discharged.

The chart details the cost for using single-use batteries in two recorders (four AA alkaline cells) vs. the rechargeable NiMH and alkaline systems in the field over a two-year period. I'm assuming 36 weeks on the road each year and that you replace four batteries at least once a week with backup set at all times. I used Rayovac pricing for comparison and sales taxes weren't included.

There may be generic store single-use alkaline brands that are less expensive, but over time, the rechargeable systems will pay for themselves in less than a year when compared to the cost of disposable single-use alkaline batteries. If you replace batteries more frequently, you will see a quicker payback.

Even if you follow my practice and have one set of single-use alkalines as a backup to the rechargeable battery system, you will still save serious money on batteries while not giving up anything in performance.

For more information, contact the company in Wisconsin at (608) 275-3340 or visit www.rayovac.com.

The author is a contributor to Radio World and president of PK Communications Co.

Total Savings

Battery type	Cost of charger/batteries	Total cost over 72 weeks	Savings
8 AA	\$3.99 per pack	\$143.28	\$0
Rechargeable alkaline systems (100 X)	PS1 = \$9.99 8 AA recharg. alk. = \$13.98	\$23.97	\$119.31
Rechargeable NiMH system (1000 X)	PS4 = \$29.99 8 AA NiMH recharg = \$21.98	\$51.97	\$91.31

It also works on 12-volt power, which need three hours in the car for a full charge. Because I spend a lot of time in a car, I thought the new charger could solve problems and give me no excuse for missing a recording because of dead or low batteries.

The question here was whether the NiMH batteries would work as well for me as the rechargeable alkalines.

That question led to a somewhat unscientific test at the 2002 Indy Racing League season finale at Texas Motor Speedway.

During a lull in action, I tested four sets of AA batteries made by Rayovac. The first was a set of Renewal rechargeable alkalines in service for more than a year, probably closer to two; an almost new (one use) set of Renewal rechargeable alkalines, the NiMH rechargeables, and as a control, a set of Rayovac single use alkalines. I did not test

when the unit shut down. An attempt to recharge these cells failed (although the charger light went out, the cells did not get warm, which they do when charging — it was time to recycle those batteries).

The almost-new rechargeable Renewal alkaline batteries did better on the test. At the 13:39 mark, the display went to three bars. Two bars were displayed at 19:09. At 26:06, the display went to one bar, and stayed there until the 72:19 mark, when the single bar started to flash, and flashed until the 74:59 mark. Those cells showed two bars before recharging in the PS1 charger and became warm, taking 1 hour and 45 minutes to recharge back to the four bar level. This is the usual performance.

The rechargeable NiMH batteries performed almost as well as the single-use alkalines. The display showed four bars until the

TECH UPDATE

HHB, Recording on the Move

The HHB Portadrive combines 24-bit/96 kHz multichannel recording with mixing facilities in a portable package, a system for pro location recording.

The Portadrive records audio onto a shock-resistant, removable 2.5-inch hard drive in BWF and SDII formats. For compatibility with Mac- and PC-based digital audio workstations, it connects via a drive docking station. The company says more than two hours of 8-track 24-bit/96 kHz recording, or more than nine hours of 4-track 24-bit/48 kHz, is possible on the supplied hard drive.

A 6-into-2 digital mixer enables the recording of a stereo mix alongside six discrete inputs. Microphone inputs offer increased sensitivity with six high-gain, low-noise balanced XLR mic/line inputs with individual phantom powering, gangable limiters, attenuation, high-pass filter, delay and phase reverse. The two-channel return input and the main and auxiliary analog stereo outputs are balanced.

Digital connectivity includes eight channels of AES I/O, one S/PDIF input and AES and S/PDIF stereo digital outputs.

The Portadrive is equipped to read and generate time code at popular frame rates and will synchronize to word clock, video sync and digital inputs. A SCSI interface is provided for data transfer to and from external storage devices. USB and Ethernet ports are included for control, logging and upgrades. Remote control is facilitated via RS-422 and a parallel remote socket. A keyboard port is available for logging and labeling.

For more information, including pricing, contact the company in California at (805) 579-6490 or visit www.hhbusa.com.



Train

► Continued from page 33

cell phone service that supports circuit-switched data — that is, if you can plug your GSM phone into your computer's serial port and dial out to any modem using Hayes-style AT commands. In other words, the BlueBox will see your cell phone and service as if it was an ordinary modem.

The dial-out part is the tricky one because some cell providers switch this feature off in their GSM service and want you to use their GPRS (General Packet Radio Service) instead. This won't work because the GPRS' only application is the Internet. You get Internet connectivity using the cell provider as an "access point." This is not suitable for the BlueBox.

There are two GSM providers in Canada: Microcell, marketed as "Fido," and Rogers AT&T, formerly known as "Cantel." Neither one of these providers allow circuit-switched data. Therefore, we could not use the GSM data service to connect the codecs.

Armed with cell phones, microphones, a mixer and a Comrex BlueBox, we boarded The Canadian.

Rogers' TDMA service did allow the circuit-switched data, and they connected the codecs this way. Comrex's manual cautions against using TDMA service for this due to data-delivery delays. An interactive show would have been impractical as the delay in getting the audio from one side to the other was rather large, more than 5 seconds.

Even so, we did manage to do some tests for approximately five minutes.

Eventually, we used the second method offered by the BlueBox, its cellular hands-free port. You can still use your professional mikes and mixers to get good audio this way. You connect the hands-free port on the cell phone to the BlueBox using a special patch cable. You might have to make this cable. If you do, Comrex has detailed technical notes to walk you through it. Its service is first-class.

The entire set-up time took less than a half hour. "Travel World" did a one-hour broadcast as The Canadian pulled out of Edmonton station and headed west. The cellular coverage along the highway was great and the views out of the scenic dome where our broadcast was done were spectacular.

The cellular signal within the stainless-steel Budd-made trains was great. This proved that fun remotes like this are not only possible, but also practical.

Yes, it did happen — towards the end, one cell antenna did not hand off the call properly to the other and the show was interrupted briefly. WNTY and Charlie Profit, the station manager, were right there on the ball and he helped fill in the blanks as they reconnected.

"Travel World" did three broadcasts in all. Two were from the train and one was in Vancouver. The BlueBox made this possible. Cellular coverage is only improving and other exciting remote



Via Rail's Canadian

broadcast possibilities await.

For a station contemplating an interesting wireless remote, this is an excellent choice. You do not need a senior technician to run it, and you will get first-class quality and service. Your expenses are minimized.

The performance and versatility of the Comrex BlueBox were amazing. Using landlines, the Blue Box delivered an FM-quality signal (15 kHz), and using cell phones, the sound quality was noticeably better than by just using a cell phone.

Listeners will be in for a treat when stations begin to use their imaginations and do really fun remotes. Imagine the possibilities.

For more information, including pricing, contact the company in Massachusetts at (978) 784-1776 or visit www.comrex.com.

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USER REPORT

CellCast Passes 'Manual' Test

by **Andy Disterhaft**
and **Mike Gannon**
Operations Manager
and **On-Air Personality**
Hometown Broadcast, LLC

BERLIN, Wis. Just turn it on and go.

Plenty of remote units can make the claim, but not all can actually live up to it.

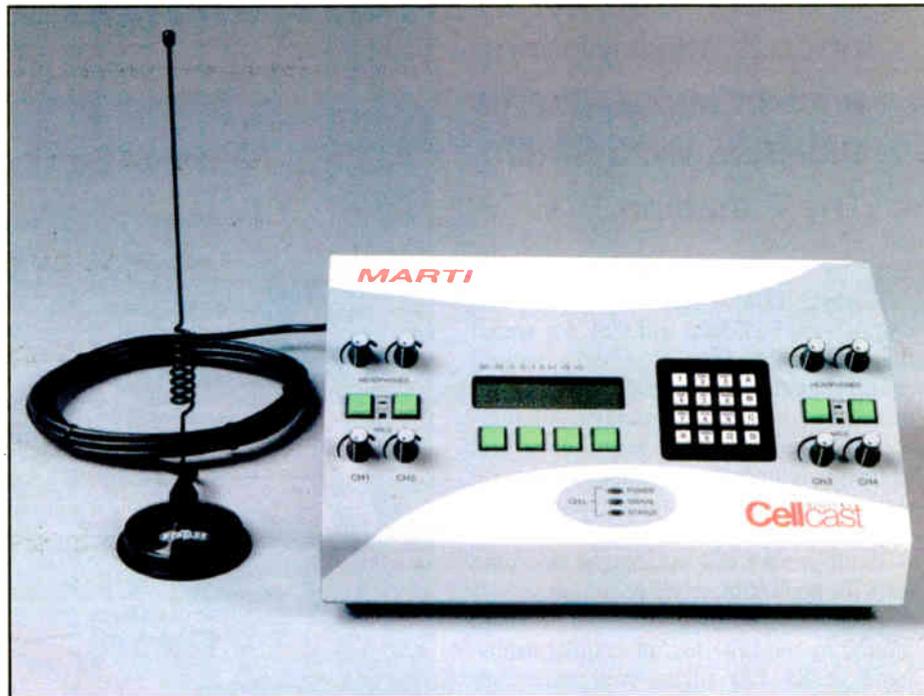
A "manual" test is the best litmus test we know of to find out which ones make the grade and which ones do not. The premise is simple: if the equipment can be set up and used without a field engineer so much as cracking open the manual, then it passes.

Add extra points if the gear in question is set up by a radio announcer in a small market — not that we're all thumbs when it comes to broadcast equipment. We're just simply busy with other remote broadcast duties, so most of us don't like to be bothered with the technology.

works would adapt to the various digital cellular services out there today, however.

But, the unit proved capable in this regard. It can be set up for AT&T's or Cingular's TDMA cellular service as well as for GSM services from providers like VoiceStream. Digital CellCast comes in several variations: TDMA Dual Band, TDMA Tri-Band, GSM 900 MHz, 1900 MHz and even for the European GSM 1800 MHz systems.

We were also impressed that such a small, lightweight unit (weighing only around five pounds) could have mixer and cell phone all rolled into one box. Its four-channel mixer has separate pots for each channel, which can be set up for program or cue, mix or line selectable. This four-channel mixer is especially useful for sportscasts. It has a single-line encoder built in, so we're able to set the frequency response to whatever the event demands. We no



In this respect, and others, we are happy to report that Marti's Digital CellCast passed the litmus test, thumbs up. This mixer and digital cellular phone was so easy and intuitive to use that we learned to use it effectively in a few minutes, without reading the manual. You can't say that about many remote units, or even today's consumer cell phones.

When we purchased the Digital CellCast three months and 15 remote broadcasts ago, we anticipated a steeper learning curve. Our primary concern was ease of use during a variety of remote scenarios. WISS(AM) is a classic country station with heavy involvement in Berlin, Wis., and neighboring communities. Remotes carried on WISS(AM) can take us just about anywhere, from school sporting events to the local car dealership. We need to adapt our remote broadcasts to all those environments.

Fortunately, in our search for a new remote unit, we didn't have to contend with line-of-sight, phone access and antenna issues. Marti had done away with those concerns years ago when it introduced the CellCast for the old AMPS analog cellular networks. We did wonder how Marti's newer unit for digital cellular net-

longer have to lug around equipment; it's just one unit.

Another plus in the adaptability area is the power options that come with CellCast. Just about any remote environment you can imagine (and remote broadcasts have their share of interesting scenarios!), the CellCast can take a power source from: electrical outlet, battery and even a car cigarette lighter, if it came to that. The unit comes with battery pack and AC/DC converter.

And, of course, as radio announcers, we're always sticklers for audio quality. Digital CellCast delivered on that, too. We were able to get good, solid audio through the Digital CellCast during all the remotes we've done so far. We traveled a good 45 minutes from the station for one remote, and the unit still delivered clean audio as if it were coming from the studio next door.

Needless to say, this remote unit proved to be a worthy road companion. It's adaptable, capable and easy to use. We have yet to crack open the manual, but we keep it around just in case.

For more information, including pricing, contact the company in Illinois at (217) 224-9600 or visit www.martielectronics.com.

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USER REPORT

ComPack Connects for Field Work

by Carl Lindemann

With the explosion of cell phones, interfaces that take advantage of the new connectivity are popping up. JK Audio's ComPack lives up to the company's claim of being a "universal telephone audio interface" bringing together everything needed to work with both wired and cell phones.

The ComPack is small enough (8 x 3 x 2.2 inches) to be an easy add to any field kit. The sturdy metal case makes sure that it survives the beating that such duty demands.

For wired applications, the ComPack plugs into standard and digital PBX lines. If there's a phone line handy, this lets you use it.

As you might expect given JK Audio's success in this arena, it earns its keep well as a full-function, clean-sounding hybrid. But the real bonus here is cell phone connectivity. Despite the decidedly "iffy" audio quality of cell phones, the simplicity and ubiquity of the services make it irresistible. Calling in live reports in a pinch via cell beats looking for a land line! But working with a bare cell phone means accepting many limitations besides the sound quality.

What the ComPack offers is the means to conduct interviews with a professional mic, monitor using real headphones and send actualities down the line as needed. It's not just a hybrid; it also integrates a mixer so that there's nothing else needed.

This extended functionality comes from taking advantage of the tiny 2.5 mm jack now included in many cell phones. These are designed to provide "hands-free" operation with headsets that integrate mic and headphone. Extending the capabilities of the 2.5 mm jack takes some doing, especially since these are unbalanced connectors. But the ComPack manages to work around these issues admirably.

I took a ComPack out for a test last election eve covering a gubernatorial campaign inside a local hotel. How well could I work the room with the ComPack? My assignment was to phone in hourly reports and to be set to deliver breaking news live as needed. Typically, the calls were recorded station-side and trimmed. Here, the ComPack offered two options. I could record with my standard MiniDisc setup, then feed the audio via the 1/8-inch line input. Or I could simply conduct interviews on the fly and have them recorded directly.

That, as it turned out, was the preferred method. The MD playback was reserved for clips drawn from speeches taken from the pooled feed.

The full rig consisted of using the ComPack to tie together a beyerdynamic MCE 58 mic, Sennheiser HD 25 headphones and a Motorola V60 cell phone. The mic and headphones just snapped into standard connectors. Bringing the cell phone online required the proprietary 2.5 mm-to-1/4-inch adapter cable.

At first, there was some RF interference. This is an inherent issue; the cell phone transmissions are problematic for the unbalanced connections. Fortunately, the noise only came through the headphones. It was not transmitted to the other end of the line.



It is a minor annoyance that can be minimized by carefully placing the cell phone as far away from the ComPack as possible.

I had it slung on my right side by the shoulder strap with the cable reaching behind me to the cell phone tucked away in a left side pocket. This all but eliminated the interference.

With the headphones on and the newsroom producer tapped in, it was easy getting good sound almost effortlessly, at least as good as the cell phone connection allowed. The unit itself was easy to operate. The only adjustments used were the headphone and mic levels. A third control adjusted the line input when that function was in play.

Newsrooms should find it easy to dispatch reporters with a ComPack and not have to make much effort in the way of training. Operation is virtually self-explanatory.

The beauty of the ComPack was its near-invisibility. It fast faded into the background, allowing me to focus on conducting interviews.

The only thing I had to be mindful of was the hit-or-miss qualities of cell phone audio. I avoided some "dead spots" in the hotel where the signal got sketchy. The beauty here is that if I'd found the cell connect unacceptable, it would have been easy enough to tap into a standard phone line.

With the ComPack, you don't have to worry about bringing separate devices. The single solution takes care of it all. If nothing else, that is enough to commend this for any remote work. Add the well-thought-out design, ease of use and superior sound quality, and you have an irresistible combination. Once you've had a chance to use a ComPack, you won't want to head out on assignment without one.

Carl Lindemann is a frequent contributor to Radio World.

For more information, including pricing, contact the company in Illinois at (815) 786-2929 or visit www.jkaudio.com.

TECH UPDATE

Porter Case Takes Audio on the Go

Porter Case has modified the interior of its larger carry-on, the 1502 AVCS, to help it adapt to a variety of uses.

For mobile applications, the broadcast industry can combine a Porter Case AVCS with a DV laptop notebook, a portable satellite uplink terminal, a portable three-chip digital camera and editing software. Porter Case says the package is being used by major broadcasting companies for field reporters in countries like Afghanistan and Iran.

For more information, including pricing, contact the company in Indiana at (574) 289-2616 or visit www.porter-case.com.



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TECH UPDATES

Fostex Explores DVD Recording With the PD-6

The PD-6 is Fostex's addition to a line of portable timecode machines, with six audio tracks, timecode-locked DVD-RAM recording and integrated mixing. It uses an 8cm DVD-RAM drive.

Normal DVD-RAM drives have become a recording format of choice but, Fostex says, they are not well equipped for location recording. Fostex says it designed the PD-6 for vibration stability, high-speed access and field reliability. It records to removable 8cm DVD-RAM cartridges; each side provides 1.46 GB or about 126 minutes per disc of four-track recording at 468 kHz/16 bits.

A six-channel mixer accepts microphone level, with T-Power (12 V) and phantom power (48 V) available, or line level. Phase reverse is provided on three even-numbered channels while each channel features adjustable input gain, a defeatable and variable high-pass filter and a digital limiter.

Fostex touts the routing capability of the PD-6 saying it works with each channel's level control mounted on its face. The "Disc Feed" switch allows the recording section to derive its audio feed pre the channel level control, meaning levels are set once with the earlier trim pot.

This leaves the front-level controls for bus mixing, post of the channel level control providing for regular level adjustment on the controls. This also can occur from the Stereo Bus, routed by the PAN switch, which gives stereo mixing of all six channels and using a combination of the modes, parallel mix (guide) tracks can be made while recording of either five tracks (mono guide track) or four tracks (stereo guide track). Fostex calls these "1+5" and "2+4."

The PD-6 is equipped with BWF file format in 2, 4, 5 and 6 track modes and simultaneous two file recording modes of 1 and 5 and 2 and 4 tracks for guide track audio. It records on UDF on DVD-RAM so the disc can be mounted and read on both PCs and Macs.

Retail price: \$9,995.

For more information, including pricing, contact the company in California at (562) 921-1112 or visit www.fostexdvd.net.



Tieline iMix Consolidates Remote Functions

Tieline is on the market with a product intended to reduce clutter in radio remote kit bags, including mixers, codecs and wiring.

It has developed the iMix, an integrated five-input remote mixer with 15 kHz POTS and optional 15 kHz ISDN codecs.

The digital mixer comes with five switchable mic/line inputs. iMix also has intercom talkback switching between each input channel, allowing off-air communications between headsets, channel on/off control, cue buttons, relay/RS-232 control, PA output and PA output level adjustment.

It also has a cellular telephone interface and provisions for an optional plug-and-play ISDN card offering 15 kHz audio over a 64K ISDN B channel.

Tieline targets dropouts and disconnections by using automatic line stabilization and an on-screen visual of link stability. The iMix is equipped with the "Tieline Toolbox," software that enables users to connect the codec to a PC and configure, control, monitor and text chat simultaneously while transmitting audio. iMix software is upgradeable over the Internet.

In addition to the standard 200 bps of raw data, which can be transmitted bi-directionally while broadcasting 15 kHz of bi-directional audio, the iMix will offer optional extra data capabilities. A software upgrade will be available offering up to 9,600 bps of bi-directional RTS/CTS flow controlled data with simultaneous audio.

A recent use of the iMix was a radiothon organized to benefit North Carolina Children's hospital. Six stations in Curtis Media Group set up individual remote broadcast tables at the hospital and raised \$183,000 in 20 hours. Due to the large number of interviewers, hosts and interviewees, many of the stations used iMixes to take the live programming back to their respective studios and broadcast the appeal live.

For more information, including pricing, contact the company in Indiana at (317) 259-8000 or visit www.tieline.com.



Maycom Offers Product Trio

Netherlands-based Maycom Audio Systems, a division of Solid Semecs, has released several portable audio and newsgathering products.

The Easycorder (not shown) is a solid-state MPEG-L2 digital portable recorder. Maycom says it targets reporters by offering reliability, audio quality, editing and real-time ISDN communication. The Easycorder costs around \$3,355.

The HandHeld II builds on the original HandHeld. Due to increasing demand for smaller and lighter devices, Maycom says, it developed a solid-state, MPEG-L2 portable recorder that fits in the palm.

The display comes with an omni-directional microphone situated atop the HandHeld. To use an external mic, Maycom's accessory program has a mono and stereo mic cable to connect with the preferred external mic. External cables like mic cables and a USB connection for laptop or PC fit into the multi input/output connector located on the bottom side of the HandHeld. The price, including docking station, is approximately \$1,047.

Maycom's MP3 ReporterKit / MicTube is its most compact recording product. The kit is a combination MP3 recorder/player and MicTube pre-amplifier, allowing customer to use their own professional XLR dynamic microphones.

The MicTube "clicks" into the microphone and can be connected to a recording device equipped with a line-level input. The MicTube will be available as separate product as well. The Maycom MP3 ReporterKit / MicTube costs about \$418.

Note: U.S. prices quoted here are subject to change based on euro fluctuations.

For more information, including pricing, contact the company's U.S. distributor, Bradley Broadcast & Pro Audio, in Maryland at (301) 682-8700 or visit www.maycom.nl.



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TECH UPDATE

Marantz Records to PC Cards, CD-R/RW

Marantz PMD Solid-State Stereo Portable Recorders and its CDR300 CD Recorder are two new choices for broadcasters who need portable audio recording equipment.



The PMD690 (not shown) records digital audio files to removable PC cards, including PCMCIA or compact flash cards.

IBM Microdrives are compatible with the PMD690; it can record 74 hours of MPEG Layer II compressed files on a 1 GB Microdrive. The user inserts the card into the computer's USB card reader and can drag and drop recorded audio files to the hard drive, avoiding real-time delay disadvantages of cassette, MiniDisc or DAT.

Marantz says the PMD690 can use

EDL markers to enable easier searches during playback or for file management and edit with the optional PMD Edit software, which has 48V phantom power, speaker and S/PDIF digital output.

File formats are compatible with third-party software for transcribing digital audio files directly from a computer with the use of a USB transcription foot-pedal system. It comes with a shoulder strap, AC adapter and battery holder.

The PMD680 monaural version has

similar features. It records with an RJ11 telephone jack, XLR and 1/4-inch mic. It does not include 48 V phantom power.

The CDR300 is, according to Marantz, the first device to merge the capabilities of a stand-alone portable professional tape recorder with the ability to record directly to blank CD-R/RW media.

Using the optional RPS300 battery system, users can record four hours in the field or have battery-backup capability in case of power loss to save the recording. The CDR300 is a tabletop design, with a condenser microphone,

internal speaker and two inputs for external mics. These CDs can be played back in standard CD players. The "Minute Track Recording Mode" provides the ability to navigate to a specific minute of a meeting on any CD player.

For more information, including pricing, contact the company in Illinois at (630) 741-0957 or visit www.marantz.com.

Marantz Deck Features At a Glance

PMD690:

- 32, 64, 96, 128 and 192 kbps MP2 files
- Uncompressed PCM .wav format
- 2 second pre-record cache
- Auto record level
- Limiter
- Mic
- Time/date stamp
- XLR mic/line in

CDR300:

- Live recording directly to blank CDs
- Transportable, table-top operation
- CD-R/RW compatible
- AC Power or 4-pin DC connection, for use with RPS300 Battery system
- Minute track mode for spoken word recording
- Preamp microphone
- 48 V phantom power
- Pro and consumer disc compatible
- Onboard limiter
- Adjustable digital and analog record level
- Create and display CD-TEXT
- Sample rate converter
- RCA I/O
- Coaxial digital I/O (S/PDIF)

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Ten Years Ago

"Seeing an all-digital future for radio broadcasting, Sony Corp. has announced a major new lineup of digital audio equipment especially designed for radio stations.

"At the debut news conference at its New York City headquarters, Sony introduced a digital broadcast console, MiniDisc cart machines, compact disc players and changers and the DATstation, a DAT field editing system built into a laptop computer."

— "Sony Digital Gear Targeted to Radio" by Frank Beacham March 24, 1993

Fifteen Years Ago

"Last year, the National Bureau of Standards was tasked by Congress to determine whether a proposed notch at 3840 Hz, placed in digital source material, would harm the sound quality of the material.

"The notch is part of the Copycode system, designed by CBS Records, and would trigger a device proposed for R-DAT recorders, rendering them temporarily inoperative and therefore useless for digital-to-digital copying. Home recording groups have protested this proposal, while its supporters maintain it would be an effective deterrent to copyright infringement.

"Soon the Bureau will release its report on the matter, drawn from exhaustive testing and statistical analysis."

— "What Is the Sound of a Notch?" by Alex Zavistovich March 15, 1988

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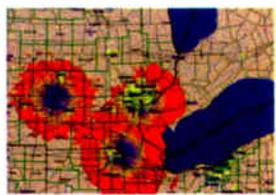
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◆ READER'S FORUM ◆

SBE handbook

I was reading the Dec. 18, 2002 issue and want to clarify the title of the Certification Handbook ("Engineer Shortage Worries SBE").

The book that is coming out early in the year is "Certification Handbook for Radio Operators." It is in the second review process, and I'm looking forward to offering this educational tool along with certification in 2003.

Linda Baun
Certification Director
Society of Broadcast Engineers
Indianapolis

No sexy models needed

While I may not be quite as offended as John Stortz (Dec. 4, "Sliding into sleaze?") about the StudioHub ad, I, too, am concerned about the slide into sleaze that appears to be happening in RW ads.

I remember the days before radio and TV were split into separate publications, when old man Townsend was advertising his UHF transmitters. One ad had him leaning against one of them, pointing at the reader, with the caption reading something like "You shouldn't need some sexy model to sell you a new Townsend UHF transmitter!"

Shame on any of us who buys something just because we were enticed by some sexy chick.

— Scott Todd

Shame on any of us who buys something just because we were enticed by some sexy chick. Let the products stand or fall on their own merits.

Scott Todd
Cambridge, Minn.

Processing

As a radio consultant based in California, I read with interest the claims from Omnia and Orban about market dominance (RW Online Special Report, "Omnia, Orban Issue Market Claims," Dec. 11, 2002). Especially interesting is

that both are claiming to have their processor on the same L.A. station.

First Omnia says that KIIS(FM) is using their box. Then Orban claims to have theirs on the top four L.A. stations. But KIIS has been in the top four for as long as I can remember. Is someone lying, or did KIIS fall out of the ratings when I wasn't looking?

You've got to love marketing!

Chris McKay
Radio Consultant
MC Broadcast
San Diego

Paul McLane's editorial about audio processor marketing was well done (Jan. 1, "From the Editor"). Thank you for the comments. I'd like to express that in Frank Foti's eyes, we'll always be No. 2.

I vividly remember conversations we've had over the years about the market position of Omnia, what my goals were, and still are; but in reality, nothing has changed. You see, we're in competition with every processor company ... including ourselves. That actually makes the challenge even more stringent than it was before.

The following is an excerpt from our welcome letter in the Omnia manual.

"1986 seems like just a short time ago! It was that year, in the engineering

shop at Z-100, WHZ(FM) New York City, that our first product was born ... the Vigilante FM Limiter. Now, 15 years later, along with an incredibly talented team of fellow broadcasters and engineers, we offer you the next progression in broadcast processing: Omnia-6! This processor is not just Frank anymore. It's a complex effort from a tremendous team that has had only one goal in mind ... to raise the bar, yet again, and present you with the best product possible."

I don't have enough space here to thank every one of the Telos/Omnia worldwide team members who have con-

For the Love Of Radio

Most of us are in this business because we love radio.

For many readers, the love affair began in the years when FM was coming into its own and DJs had more of a voice as well as choices in what was played and said. Over time, market research, demographic studies and computer-aided programming sanitized the experience. Consolidation accelerated the loss of spontaneity.

Today a few formats dominate the music airwaves: pop/rock, hip-hop, a small variety of adult contemporary and country. Quirky niche formats are rare and found mostly in smaller markets not dominated by the supergroups that arose during consolidation.

We wrote here last time about a recent survey that found Americans to be satisfied with radio. We agree but we feel this is true despite, not because of, recent programming and ownership trends.

Standing ready to profit from our errors are XM and Sirius, the satellite radio players, which aim to fill Americans' need for program diversity through paid programming, much as cable TV segments programming to narrower niches than broadcast TV does. While there may not be enough true jazz-fusion fans in Peoria to support a jazz-fusion station, there are enough jazz-fusion lovers nationwide who may be willing to pony up for such a channel.

Whether the satellite companies can survive their debt burdens is unknown. But it's a shame that satellite's best selling point is that it is not FM radio. Too common is the poor opinion of our business reflected in the title of a recent Washington Post article: "Can XM Put Radio Back Together Again?"

Satellite, of course, is not local. The great thing about radio has been the impact we have on our neighbors, conveying local information and fomenting a sense of community. Satellite radio, while catering to special interests, does not provide that localism.

But let us in radio not give lip service to localism while we work behind the scenes to diminish it.

The FCC is considering easing controls on media ownership even further. Opinion differs on how successful those efforts might be; but it's a good time to take a serious look at the effects of deregulation on communities as a whole.

Large segments of the population get news and views from a few large corporations. Fewer creative people can find jobs in an industry that relies more than ever on automation, voicetracking and "group think." These trends literally result in fewer voices on the air.

We don't suggest that radio throw all of its research tools out the window and start letting jocks pick any songs they want. Nor do we blame the tools of automation and voicetracking themselves.

But maybe the pressure brought to the industry by the satellite guys will help us see the obvious: consolidation and an over-reliance on market research have indeed helped make radio less exciting and more homogenous in most markets.

— RW

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