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Signal monitors catch up with HD Radio. In Buyer's Guide
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Good Job, Guys
George Beasley on his engineers. Plus SAW, CONELRAD and WWL.
In Opinion

Radio World
$2.50 The Newspaper for Radio Managers and Engineers November 23, 2005

Brazil Pushes Ahead With HD Radio

by Carlos Eduardo Behrensdorf

BRASÍLIA, Brazil Brazilian radio is heading into its greatest technological change since Westinghouse made its first transmission in the country in 1922, experts here say.

On Sept. 26, transmission regulator ANATEL authorized testing of Ibiquity Digital's IBOC digital radio system.

With this decision, Brazil becomes the third country on this side of the Atlantic to launch HD Radio broadcasts in the AM and FM bands, joining Mexico and the United States.

In contrast to Eureka-147 DAB, which uses different frequency bands, HD Radio places the digital carrier signal within the same frequency bands as analog AM and FM broadcasting.

Brazil has a population of approximately 186 million, according to U.S. government figures, so the potential to sell HD Radios in volume here is enticing to Ibiquity. The company hopes Brazil's choice to start using HD Radio on some stations will influence other Latin American countries to use the technology.

Ibiquity President/CEO Robert Struble told Radio World at the NAB Radio Show the spectrum efficiency of IBOC is "compelling" to the governments of other countries and said the company has seen increased interest recently from overseas. Broadcast Electronics, for example, is providing equipment to test HD Radio in Switzerland.

Tests launched

The first HD Radio transmission tests are being performed by stations owned by large radio groups in Brazil: Sistema Globo de Rádio, Bandeirantes, Jovem Pan, RBS and Eldorado. Digital signals from these companies are on the air in Rio de Janeiro, São Paulo, Belo Horizonte,

See BRAZIL, page 16 ▶

Gulf LPFM Airs Emergency News

WQRZ, Licensed to a Ham Group, Broadcasts During & After Hurricane

by Randy J. Stine

BAY ST. LOUIS, Miss. The creation of a low-power FM radio service in 2000 was supposed to enhance radio service, typically in smaller markets. It certainly worked in at least one rural Mississippi county during Hurricane Katrina, according to those familiar with the circumstances.

WQRZ(LP) was the only Hancock County radio station still broadcasting after Katrina decimated much of the western Mississippi coast in late August. However, managing to stay on the air involved multiple studio moves and the help of outside broadcast suppliers and engineers.

The 100-watt station, licensed to the Hancock County Amateur Radio Association Inc., was the only communications link with the outside world for many area residents in the days immediately following Katrina, according to local emergency management officials.

While some other regional signals could be heard in the area, sources said WQRZ was the only one based in the county that was on the air and trying to provide radio service and information specifically for county residents.

"This is exactly the reason why we put the station on the air in 2003. The concept was to put on a station with the intent to broadcast emergency information during emergencies," said Brice Phillips, chair of the Hancock County Amateur Radio Association Inc. board of directors. "This is exactly what radio is supposed to do, serve their communities.

"We are the only amateur radio group to specifically put on a station for this purpose. To have a ham radio operations center and radio station in the same building for civil defense purposes is unique."

Hancock County, with 17,460 households and more than 39,000 people,

See WQRZ, page 6 ▶

The crew responsible for getting WQRZ(LP) back on air. From left: Chief Engineer Brice Phillips; Alexandra Bobo, office manager of Radio Works R.F. Consulting; contractor Sara Allen; Gary Sessums, a TV engineer based in Tampa; and Gary Minker, owner of Radio Works. They are at the entrance to Phillips shed, WQRZ's transmission facility.

Cumulus, Susquehanna Sorting Out Merger

Companies Discuss Division of Engineering Work in Light of Merger Plans

by Leslie Stimson

ATLANTA Cumulus Media and Susquehanna Media are discussing the best way to merge staffs and manage operations in anticipation of their deal closing early next year.

Cumulus Media and investors formed a partnership to acquire Susquehanna Radio from its parent company, Susquehanna Pfaltzgraff Co. for about $1.2 billion.

Susquehanna is the nation's largest closely held radio operator by revenue, with $231.1 million in revenue last year.

If the deal closes as expected in the first half of 2006, Cumulus Media, directly and through its investment in Cumulus Media Partners, would own and operate 343 radio stations in 67 U.S. markets.

Cumulus Chairman/CEO Lew Dickey and media analysts believe the deal, the largest radio buy in years, could presage more transactions and potentially put Cumulus on more equal footing with rivals who are eyeing the assets of Walt Disney's ABC Radio.

Dickey said the company would evaluate all opportunities.

Both companies have committed to converting the bulk of their stations to HD Radio. Top engineers for both told RW no decisions had been made about the acquisition's impact on engineering.

Norman Philips, vice president/DOE, Susquehanna Radio Corp., said, "As far as digital rollout is concerned for the Susquehanna side we are continuing our installations according to our Ibiquity schedule. Three more stations have equipment ordered and will be on line before the end of the year."

Cumulus Corporate DOE Gary Kline said, "I've known Norm and many of the Susquehanna Engineers for a long time and regard their work and accomplishments as top notch. ... The combining of the engineering resources of our two companies will create an engineering team that is filled with many experienced and respected engineers from both groups."

Susquehanna has 33 radio stations in eight markets including San Francisco, Dallas, Houston, Atlanta, Cincinnati, Kansas City, Indianapolis and York, Pennsylvania.

Cumulus has stations mostly in medium to small markets and the deal would allow it to grow into larger markets, said Dickey. By combining its station resources in two markets, Houston and Kansas City, with those of Susquehanna, Dickey said Cumulus hopes to benefit from economies of scale.

Cumulus will contribute its two FM stations in Houston and two FM stations in Kansas City, in return for its membership interest in the partnership. Cumulus Media, Inc. will initially own approximately 25 percent of Cumulus Media Partners, with performance incentives that can increase that stake up to approximately 40 percent. Pursuant to a management agreement, Cumulus Media, Inc. will be paid a quarterly management fee.

Dickey said Cumulus would probably break even in the first year of that fee and then profit in subsequent years.

The acquired stations would comprise a fifth region for Cumulus, which has four now. The company anticipates hiring additional personnel in Atlanta to help manage the new stations, Dickey said.

Susquehanna Pfaltzgraff Co. has also agreed to sell its cable television and broadband division to Comcast Corp. for approximately $750 million, according to Wall Street Journal sources.

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Rehr to Lead NAB in New Direction?

Head of Beer Wholesaler Group Seen As a Connected Lobbyist and Rainmaker

by Leslie Stimson

WASHINGTON Members of the NAB board believe good political connections with Republican leaders on Capitol Hill and the ability to raise funds will help their new CEO lead the broadcast association over its coming political hurdles.

The association is in the midst of a battle to get members' local TV signals carried by cable companies as part of the DTV transition. For radio, an immediate goal is to get the FCC to authorize IBOC on AM permanently and to allow multicasting on a non-experimental basis.

In choosing David Rehr, NAB went with lobbying experience and connections over broadcast credentials. Rehr was president and chief lobbyist for the National Beer Wholesaler's Association. He joins NAB on Dec. 5 as its new president and chief executive officer. The board announced the selection in October.

Rehr made the top lobbyist list this spring in The Hill newspaper, which wrote, "Under Rehr's leadership, the beer wholesalers' political action committee has grown to be the fifth most generous in politics, doling out over $2.3 million in the last election cycle."

In his first address to the NAB board, Rehr pledged a "hands on" approach and said he would seek industry guidance, including meeting with station operators and state association executives.

After what NAB board members described as an "exhaustive" search, Bruce Reese, president and chief executive officer of Bonneville International and NAB joint board chairman, stated Rehr is "a highly skilled advocate with a passion for policy and a deep understanding of how Washington works."

Rehr, 46, has been named a "Top Association Lobbyist" by The Hill multiple times, and has been featured in "Beachum's Guide to Key Lobbyists." He succeeds Eddie Fritts, who held the job since 1982 and is considered among the most visible leaders of a lobbying organization on the Hill.

The National Beer Wholesaler's Association represents 2,200 businesses that distribute malt beverage products. Rehr became president of NBWA in 2000; previously, he was senior vice president of government affairs for the association.

Rehr signed a "multi-year agreement," according to the announcement.

Disney lobbyist Mitch Rose, a former staffer for Sen. Ted Stevens, R-Alaska, had been rumored to be on the short list. His network affiliation may have worked against him. The TV networks and NAB have argued over ownership cap implementation over the years, and one by one, the major nets have left NAB membership.

ABC recently rejoined and observers believe a priority for Fritts' successor is to get other networks back.

David Rehr

Business background

In a resignation letter to the NBWA members, obtained by Radio World, Rehr said his decision to leave was difficult, but, "I feel I am departing NBWA at a point when its membership, leadership and staff is at its strongest, and I know the future holds great things for

See REHR, page 5 ▶

More Receivers Hoped for Soon

By late this year or early next, the FCC likely will act on digital radio. That's the expectation of David Layer, director of advanced engineering in the NAB Science and Technology Department, speaking at an AES session this fall.

"We're waiting to hear back from the FCC on the standard and whether they think it's suitable for them to be able to craft IBOC rules," Layer said in October.

He was referring to the in-band, on-channel standard for digital audio broadcasting, dubbed NRSC-5, sent to the FCC earlier this year by the standards-setting National Radio Systems Committee. The FCC has already called IBOC a "de facto standard" for terrestrial radio to go digital.

Layer spoke at a panel on digital radio at the Audio Engineering Society convention in New York. More than 20,000 attendees visited 452 exhibitors for the event, according to organizers.

More to come

Mike Lyons, vice president of aftermarket business development for Ibiquity Digital, said the company predicts 3,000 or more stations could be on the air with IBOC within two to three years. As of Oct. 20, the company reported 546 on the air.

Ibiquity considers Chicago, which has 21 stations transmitting the digital/analog signals to be a so-called "saturated" market. Combined, those 21 stations garner a 43.4 share of the 12+ audience in the market, he said.

Ibiquity also introduced a receiver reference design in October. Lyons said the company hopes the component would be used by receiver manufacturers and enable them to cut costs for integrating IBOC into existing AM and FM product lines and getting HD Radios to market faster.

The company expects to see 20 to 25 models of HD Radios out in the next year using these reference designs.

Four new manufacturers — City Electronics, OPUS Art and Technology Co. Ltd., Sangean and Zylux Acoustic Corp — have acquired licenses to develop HD Radio modules and receivers. These companies, along with existing HD Radio licensees RockridgeSound Technology Co. and Orient Power, will use Ibiquity reference designs in manufacturing home and tabletop receivers.

Meanwhile, Dave Wilson of the Consumer Electronics Association said CEA is working on a system to make auto aftermarket product installations easier for dealers and retailers. Adoption of this network protocol in the car would, hopefully, help get digital radio into cars faster.

Based on a survey of CE product installers, 66 percent of respondents said it was relatively easy to install aftermarket products into Fords, while VW was at the other end of the spectrum, with only 24 percent. Video and wireless phones were more difficult to install, according to the survey. While radio was not mentioned specifically as difficult to install, "the trend seems to be down for ease of installation of all aftermarket products," said Wilson.

Spurred by strong consumer demand for iPod docking installations, Wilson said, several auto manufacturers and CE manufacturers are collaborating on the network protocol to ease aftermarket installation. The group is trying to reach agreement on what products and functions to include, Wilson said.

Also at the session, Leonard Kahn of Kahn Communications, developer of competing Cam-D technology, said his Web site lists seven stations that are using that digital radio system for AM. The stations, he said, have been using the technology for nearly a year.

Skip Pizzi, Microsoft's TV standards and regulatory affairs manager and a Radio World columnist, sounded a cautionary note about digital radio, saying how the digital rights management issue is a cloud hanging over the digital content industry and until that's settled, the IT industry likely would resist getting wholeheartedly involved in digital radio.

— Leslie Stimson

FROM THE EDITOR

Kahn and IBOC's 'Poor Connection'

by Paul McLane

In a recent posting on his Web site, technology innovator Leonard Kahn excoriated Radio World for the way in which we quoted one of his FCC filings. He told Web visitors that RW took what he wrote out of context, a serious charge.

Attentive readers know there is a history here. Radio World consistently has argued that the charismatic and contentious Kahn has important things to say about radio's future, that he's worth listening to. At the same time we have urged him to be more forthcoming with decision-making bodies and less confrontational in his approach to presenting his arguments not just with RW, but to the FCC, NRSC or anyone else.

In reaction he has withdrawn his cooperation from RW staff, writing publicly that we don't know what we're doing, we're not fair to him, that we've "put false words in his mouth," that we've spread false rumors, that we're out to scare you. He recently wrote on his site, "It's very difficult to know who you are talking with at Radio World," among many other things.

It's sad, actually, given our exceptional history of opening these pages to alternative viewpoints and informed debate.

(Kahn also refers to Clear Channel engineering executive Jeff Littlejohn — whom he identifies as "the 5 kHz guy" — by saying, "I understand that he is the iron-fisted leader of the iBOCers getting those 'lock-step' decisions out of NRSC." While you can argue about the influence of Littlejohn, such statements are unfair not only to him but to the hard-working radio engineers and standards makers at Greater Media, Susquehanna, Radio One, Beasley, Infinity and other companies as well as the non-broadcasters on the NRSC.)

So as I have said, it's hard to embrace him. I dispute the criticisms he's leveled at RW vigorously.

However, he's got a valid point with his latest gripe.

We quoted Kahn's filing to the FCC accurately but the quotation was not representative of his argument. In particular the large-print "pull quote" inadvertently left an impression Kahn was not trying to make.

In fairness to him and in the interest of full reporting to you, we reproduce his entire filing on page 20 of this issue. And lest there be any confusion about where he stands, I encourage you to read *all* of Kahn's filings about IBOC. They are sometimes funny, sometimes ranting but always thought-provoking. Go to *http://gullfoss2.fcc.gov/prod/ecfs/comsrch_v2.cgi*; then type "99-325" in Field 1 and "Kahn" in Field 4. Let the man speak for himself.

His own summary, from his Web site, is this: IBOC is a "proprietary system that literally jams neighboring stations, sounds like a poor phone connection, and *doesn't work at all at night* and can *never* provide the same nighttime service that the Public relies on from KSL, WOAI, WABC, WBZ, WCBS, WLW, WLS, WWL, KNX, WGN, WTOP, KFI, XETRA, KCBS, KNBR, WJR, KMOX, KOY, KRVN, KLAC, WRVA, etc. ... every night of the year."

Nothing fuzzy about that statement.

Meanwhile, Mr. Kahn:

RW's goal is fairness and accuracy. We take our job seriously, and I would love to have your side of the story told more often and completely. It's unfortunate that for whatever reasons, the communication between your organization and ours has been strained or cloudy.

Perhaps you and I can discuss it over coffee at some point; a personal relationship often solves these issues. Regardless, we should be able to disagree about ideas while continuing in these pages the debate over important technical arguments that you so ardently vocalize.

I invite you to write a Guest Commentary in our pages at any time and insist only that you follow the guidelines that we apply to all of our writers (the content must be relevant to radio and not be obscene or libelous).

And here are the names of the only people you really need to know at RW to make sure your views are reported accurately. We will always return your call. You can ask for U.S. Editor in Chief Paul McLane (that's me), or News Editor/Washington Bureau Chief Leslie Stimson. Our phone numbers are (703) 998-7600, ext. 117 and 129, respectively. You can write to me at *radioworld@imaspub.com* or her at *lstimson@imaspub.com*. All readers are welcome to keep our numbers handy.

★ ★ ★

Responding in a much different tone to criticism is George Beasley. In a recent issue we pointed out that his company had made a big deal of awards it gave to market managers, sales managers and other executives. We criticized the group for omitting any acknowledgement of engineering in making those awards.

On page 46 of this issue, Beasley replies graciously, and adds, "If there were ever a time the industry needed smart, efficient engineering and technology to propel our industry forward, it is now." I appreciate his reply.

One of my goals is to help the industry do a better job of acknowledging contributions of our engineers. That's why we've virtually singlehandedly prompted broadcast owners to begin issuing press releases when they hire or promote engineers; created the Radio World "Excellence in Engineering" Award honoring an Engineer of the Year; and regularly profiled engineers and technical managers. Engineering is about people, and you'll find them in these pages.

Please help by writing to me about any engineering success stories, job changes or other news.

★ ★ ★

Congratulations to Prophet Systems. Its Web site recently won the Print Media "Award of Distinction" from the Communicator Awards, an international competition honoring excellence in communications. The site is *www.prophet-sys.com*.

★ ★ ★

"High Times Radio." "Radio Garbanzo." "Voice of Laryngitis." "Voice of Gilligan." "Hitch-Hiker's Guide to the Galaxy Electromagnetic Emissions."

Ever see this list of pirate stations and their mailing addresses? Al Peterson shares a link. "Some of the names these bootleggers chose are hysterical," he writes. Go to *www.blackcatsystems.com/pirate/drops*.

★ ★ ★

Changes are afoot in IMAS Publishing editorial. Terry Hanley, who has done superb work as production editor for Radio World Engineering Extra as well as IMAS listings coordinator, becomes editor of contract publishing taking over duties from T. Carter Ross, who moved up to editorial department director a while back.

Kelly M. Brooks assumes the role of production editor for RW Engineering Extra, working with Technical Editor Michael LeClair and me. She will continue with her Studio Sessions duties here.

★ ★ ★

Is your radio station or group prepared for disaster?

More than a year ago, we published in these pages a checklist prepared by a network's contingency planning coordinator in support of the Web site *www.mediadisasterprep.com*. The article contained valuable information on helping broadcasters prepare for, mitigate and survive disasters that could threaten operational viability.

The topic has been in the news again this year thanks to the season of hurricanes, but really it's a critical matter at all times. In response to a reader request we've reposted that article. I recommend it to you.

Visit *www.rwonline.com*, click on Special Reports and scroll down to "A Checklist to Help Broadcasters Prepare for the Unexpected."

◆ NEWSWATCH ◆

CEA: CE Q4 Shipments To Increase 9%

LAS VEGAS The Consumer Electronics Association is projecting revenues from sales of CE devices to increase 9 percent in the fourth quarter. That's based on results of CEA's 12th Annual Holiday Sales and Forecast survey.

The trade association is forecasting that overall holiday spending will increase 14 percent per average household (from $1,254 to $1,430) over 2004, factoring in gifts, decorations, food, travel and other assorted holiday expenses.

The survey tracks the consumer electronics devices consumers intend to give as gifts, as well as those they hope to receive. The MP3 player topped both lists this year, displacing the digital camera at the top of the gift list and the plasma TV at the top of the wish list from last year's survey.

According to the 1,000 U.S. adults interviewed by phone, consumer interest in buying a portable MP3 player has increased eight percentage points from 2004, from 20 percent to 28 percent. Revenues from sales of MP3 players are up 105 percent so far this year, according to CEA Market Research.

Ibiquity Uses eBay For HD-R Upgrades

COLUMBIA, Md. Ibiquity Digital hopes to speed public adoption of HD Radios by enticing consumers to trade in their old analog radios on eBay to receive cash back when they buy a new digital radio on eBay or someplace else.

Those who buy their HD Radio through eBay or other retailers through Jan. 31 are eligible to receive an additional $20 mail-in rebate, according to Ibiquity.

Figures of how many people had taken advantage of the offer by mid-October were not available, said an Ibiquity spokeswoman.

The Ibiquity radio trade-in process is completed in four steps: A consumer would go to the "Trade in your old radio" link on *www.ebay.com/hdradio*. The individual then receives an estimate on the value of the analog radio he or she plans to trade-in using an on-line estimator.

After receiving an e-mailed shipping label, the customer prints a prepaid shipping label and ships the old radio with the proof of purchase of the new HD Radio to the trade-in center. Participants will receive a check for the trade-in value of their old radio, whether it was purchased from eBay or another retailer.

The following HD Radio receivers are eligible for the rebate program: Alpine (DVA-9965), Audio Design Associates (Quadri-tune), Boston Acoustics (Recepter Radio HD), Fujitsu/Eclipse (HDR-105 HD Radio tuner box only), JVC (KD-SHX900), Kenwood (KTC-HR100, Kenwood KTC-HR100MC, KTC-HR100TR, EZ 900 HDS - HD Radio tuner boxes only), Panasonic (CQ-CB8901U), Polk Audio (i-Sonic Entertainment System), Radiosophy (Multistream), Rotel (RT-1084 HD), Sanyo (ECD HD 1990M) and Yamaha (RX-V4600).

Robotics, Digital Home Hot CE Trends

ARLINGTON, Va. What's going to be hot on the consumer electronics front? According to the Consumer Electronic Association, you need to keep an eye on recordable high-definition content, domestic robotics, digital home studios, interactive gaming and innovative displays. These are five "technologies to watch" named by CEA.

"The ability to receive and record HD content at home is quickly becoming a reality of the digital age. The surge in HDTV sets and HD programming will see recordable high-definition devices, including Blu-ray Disc, HD DVD and HD DVR, also making a big impact in the market," CEA wrote. "Already, digital video recorders can be found in nearly 10 percent of American homes and the number is expected to rise in 2006 with more cable and satellite providers offering the HDVR service."

Robotic vacuums can already be found in a half a million American homes and other domestic robots that can control home networks, sort laundry or scrub the kitchen floor are not far off, according to the survey results.

The choice of digital cameras, camcorders, audio players, software and printers, along with other digital imaging and video recording devices and accessories, has created a new segment of savvy consumers that create their own digital home studios to create, edit, print, store and share digital content, according to CEA. In 2005, the group predicts consumers will spend about $14 billon on devices for DIY content creation, which represents about one third of the total sales of digital cameras and camcorders.

With a renewed focus on home design and space, flat panel DTV displays such as plasma, LCD and DLP have become increasingly popular. Sales of these sets will grow even as the average wholesale TV price increases from $323 to $533, according to CEA forecasts.

News Roundup

Eureka Radios: Semiconductor manufacturer Frontier Silicon says it has a new module that achieves 100-hour battery life for portable DAB digital radios. The change increases listening time and reduces implementation costs, according to the company. The Venice 4.0 DAB/FM/RDS module will be available to receiver makers by year-end.

Australia DAB: The Australian Federal Minister for Communications says the country will use the Eureka-147 technology for digital radio. Australia sees digital radio as a supplement to analog, rather than as a replacement; therefore, the new technology will be introduced in phases, beginning with large metropolitan areas, according to Senator Helen Coonan, minister for Communications, Information Technology and the Arts.

New commercial license allocations will be frozen for six years once the digital broadcasts begin.

Emmis: Emmis Communications plans to expand its European radio holdings by acquiring a 66.5 percent share in a radio network in Bulgaria for $3 million. The network, Radio FM Plus, programs an AC format. The deal is subject to regulatory approval; participants expect it to close next month. Emmis owns and operates national stations or networks in Belgium, Hungary and Slovakia.

RAB: The Radio Advertising Bureau has hired an executive search firm, Spencer Stuart, to help identify candidates for its top post, president and CEO. Gary Fries, who has held that job for more than 14 years, said in August he would not seek to renew his contract, which expires in December 2006.

Ballpark Promo: XM Satellite Radio gave a free satellite radio to every fan at the first game of the World Series in October, about 40,000 receivers. Fans received a coupon good for a Delphi XM RoadyXT satellite radio, which has a retail value of about $80. The giveaway promotes XM's first year with Major League Baseball.

Rehr

▶ Continued from page 3

this organization."

NBWA Board Chair Phillip Short, president and chief executive officer of P.A. Short Distributing Co., credited Rehr with helping NBWA to "hit record numbers in membership dues revenue and political action committee contributions. Just recently, NBWA had the best attended convention and trade show in more than 20 years."

In a statement, Short said NBWA was implementing a succession plan it had in place.

Prior to NBWA, Rehr served as director for Federal Governmental Relations, House, for the National Federation of Independent Business; he also worked for former Republican Rep. Vin Weber of Minnesota and as a staff member for the House Small Business Committee.

As reported earlier, Fritts signed a contract extension in 2004 and a consultant deal that will extend until 2008.

NAB Joint Board Chairman Phil Lombardo, the chief executive officer of Citadel Communications, and Immediate Past Joint Board Chair David Kennedy, president and chief executive officer of Susquehanna Media, co-chaired the search committee.

Lombardo and Kennedy retained executive search firm Spencer Stuart to identify possible candidates, the same firm now being used by the Radio Advertising Bureau to fill Gary Fries' position. They said some 80 candidates were considered for Fritts' role.

Rehr has a doctorate in economics from George Mason University.

WQRZ

▶ Continued from page 1

according to census figures, is also home to WBSL(AM), a 5 kW daytime station, owned by Hancock Broadcasting Corp. That station was severely damaged by Katrina.

"They are just mush at this point," Phillips said in October.

This is not the first time the Mississippi Gulf Coast has been devastated by a hurricane; Camille struck the same area, sometimes referred to as this country's "third coast," in 1969.

"In fact, our station's slogan was 'Broadcasting through rain, shine or another Camille,' and this was another big one. This area has historically lacked much emergency communications ability. I think we managed to change that this time," Phillips said.

Phillips built WQRZ's studio inside his home, which sits approximately three miles off the beach in Bay St. Louis. Once Katrina reached Category 4 status he realized he had to change locations for his own safety and in order to keep the station on the air, he said.

Phillips, who is a ham radio operator, climbed a 130-foot 25-G Rohn tower on his property and removed one bay of his four-bay, circularly polarized antenna. After scooping up as much studio gear as possible, he moved operations to the Hancock County Emergency Operations Center and resumed broadcasting in Bay St. Louis in the Justice Court Building.

"I mounted the one-bay on a 45-foot tower behind the building and used our DC-powered Crown FM100-E transmitter, which I had grabbed from the house. I ran the coax and was on the air," Phillips said. He used car batteries at one point to keep the transmitter running.

His temporary studio consisted of four 300-disk CD changers, a microphone and laptop computer, he said. However, the Justice Court Building was only suitable for a short time after part of the building's roof came off and the building flooded when Katrina's storm surge struck.

Several studio moves

Phillips next moved to a temporary emergency operations center at a vocational-tech center north of Bay St. Louis and later was forced to another facility near Stennis International Airport, further northwest of Bay St. Louis. It was the first of two locations the station would use near the airport, which sits adjacent to a NASA test site. By this time engineering help had arrived, Phillips said.

Gary Minker, president of Radio Works RF Consulting, said he arrived a week after Katrina hit and went to inspect WQRZ's transmission facilities at Phillips' house. He found the house "smashed," but an outbuilding and the tower remained intact.

Phillips surveys damage to his home and station headquarters with Minker. Phillips relocated some station equipment to the Hancock County Emergency Operations Center prior to Hurricane Katrina's landfall, but studio equipment left behind was destroyed along with his home. The shed to the right survived the storm and was cleaned up and outfitted with Harris gear.

"The high watermark on a telephone pole on his property was approximately 25 feet. However, we determined that the antenna on the Rohn tower was salvageable. The transmission line had failed, so we re-fed the antenna and mounted a new STL receive antenna," Minker said.

Meanwhile, Harris Corp. coordinated with the Florida Emergency Operations Center in Tallahassee in an effort to get broadcast equipment to the storm-ravaged area. When it became clear that WQRZ needed equipment to remain on the air and increase its signal strength, Harris shipped emergency studio gear and a 1 kW Quest transmitter within 24 hours of receiving the request, said Hal Kneller, manager of Public Radio Initiatives for Harris.

"Our GCSD (Government Communications Systems Division) had been talking with the Florida EOC, which was using Tallahassee as a staging area," Kneller said. "We immediately shipped cables, microphones, headphones, mixer and an Optimod from our facility in Mason, Ohio, and the transmitter from Quincy."

Harris offered turnkey installations to stations affected by Hurricane Katrina, shipping pre-made shelters with transmitters and equipment pre-wired, Kneller said.

Kneller said Harris would eventually have discussions with WQRZ officials regarding its equipment and long-term financing options available if the equipment provided is still needed.

Minker met the Harris shipment, which included a Dielectric one-bay FM antenna, in Tallahassee and loaded up his recreational vehicle.

"You just bring as much test equipment and do whatever you need to keep the station on the air. You assess the situation, assess for safety and get the job done," Minker said.

Rebuilding the transmitter site at Phillip's house became the priority for Minker. The utility shed was cleared of bayou mud and sediment to accommodate the Quest transmitter. A diesel generator powered the site, Minker said.

FCC grants power increase

With the WQRZ transmitter site functioning and the temporary studio at Stennis International Airport buoyed by the additional Harris gear, local Hancock County emergency managers requested that Phillips seek a temporary power increase to allow the station's signal to cover the entire county, Phillips said.

Sara Allen, president of Ciara Enterprises Inc., a broadcast engineering consulting firm, said she responded to a request from the Society of Broadcast Engineers to assist stations hard hit by Katrina.

"I did request special authorization from the FCC to get the power increase," Allen said. Local emergency managers "needed a tool to communicate emergency rumor control, health and welfare information directly to the people of that county." She arrived in Bay St. Louis approximately a week after the hurricane.

Allen, who also serves on the Toolkit Work Group for the FCC's Media Security and Reliability Council and is developing a model disaster recovery-planning document, said she received Special Temporary Authority to raise the station's power to 4 kW.

"The FCC expedited our request. However, the most we could use was 1,300 watts due to some technical limitations to the antenna, which was designed to handle only about 1 kW. Still, it was enough power to give us a radius of about 17 miles and enough to cover the entire county at 103.5," Allen said.

Allen spent several weeks helping Phillips with technical issues and even subbed on the air occasionally during that time.

"I learned that good radio can be produced with minimal equipment and that desperate times call for desperate measures, including finding fuel wherever and whenever possible," Allen said.

Acquiring fuel to keep the generator running at WQRZ's transmitter site was a logistical challenge, she said, with Phillips even floating in 10-gallon cans of diesel in chest-deep water during Hurricane Rita, which followed on the heels of Katrina, to keep WQRZ on the air.

Phillips said he expects to move WQRZ's studios to a building in Kiln, Miss., this fall before eventually rebuilding permanent facilities on his property.

"We may be eligible for a public assistance grant to rebuild. It's always been a financial struggle and things are even worse now," Phillips said.

Meanwhile, the STA expires in early December, but Phillips said he expects to apply for an extension.

As for the help Phillips received in the months following Katrina, he said, "We realized we were not in this alone. Hopefully this will inspire other folks in other communities that when you have to deal with man-made or natural disasters it can be done."

NEWS WATCH

To Replace Howard, It Takes a Village — Or Close to One

NEW YORK Infinity is replacing 27 morning shows at once — a move the company believes is unprecedented — to replace departing Howard Stern.

To serve the needs of various markets, the group said it will use 10 approaches, including a new "Free FM" format. Infinity hopes to syndicate some of the programming and said it would have more announcements.

Infinity will take a revenue hit when Stern leaves, but Chairman Joel Hollander declined to put a number on the likely impact. He said while Stern generated about $100 million in annual revenue, the departure is an opportunity to gain advertisers who wouldn't buy time on Stern, such as American Express and Mercedes Benz.

Singer David Lee Roth will host morning drive for stations in several Infinity markets beginning in January.

With the changes, Hollander also deepens his imprint on Infinity, which he took over from Mel Karmazin in 2003.

Hollander and programmer Rob Barnett chose a combination of entertainment talent who have not done radio, such as singer David Lee Roth and comedian Penn Jillette, and local DJs, such as The Junkies in Washington. He also promised a "significant" advertising budget for promoting the shows in the affected markets.

FREE FM

Infinity launched the "Free FM" format on stations in four top markets in October but was still carrying Stern on 27 stations. His last live Infinity broadcast is Dec. 16.

Hollander said Free FM features "personalities whose distinct creativity, perspective, sense of humor, intellect and unpredictability do not fall under the guiding principals of any particular narrowcast theme or ideology."

David Lee Roth, the original frontman for the band Van Halen, and radio and TV comedian Adam Carolla were named morning hosts in New York on WXRK(FM) and Los Angeles on KLSX(FM), respectively; they start on Jan. 3.

Converted to new formats already are KIFR(FM), Washington; WYSP, Philadelphia and KPLN, San Diego.

Other hosts of the format include Penn Jillette, half of the magician act Penn & Teller. He will host one hour of the new format in several markets.

A variety of morning options have been developed for the remaining Stern stations including syndication of Infinity personalities, format changes and the creation of live local programs.

Rover, now heard on Infinity's WXTM(FM), Cleveland and WAZU(FM), Columbus, Ohio, adds several markets.

WJFK(FM)'s The Junkies will expand their lineup to include WHFS, Baltimore.

For a full listing of station changes, go to: *www.infinitybroadcasting.com.*

Illinois Station Multicasts, and Explains Online

QUINCY, Ill. Non-commercial WBOI in Fort Wayne, Ind. is splitting its digital signal into three channels on 89.1 MHz. It will use the channels to air NPR news and jazz; classical; and a new 24-hour jazz format.

Representatives from Broadcast Electronics joined NPR President/CEO Kevin Klose in Fort Wayne in October to mark the first day of HD Radio multicasting on WBOI. BE and NPR believe it is the first public station in that state, and the first of any kind in northeast Indiana, to multicast.

Northeast Indiana Public Radio Inc. is the community licensee for WBNI and WBOI.

The organization also is promoting its multicasting offerings on WBOI HD1, HD2 and HD3, and HD Radio in general, on its Web site. Among the explanations: "How is HD Radio is different from satellite radio."

WBOI states: "While Sirius and XM use digital transmission, a key difference is that our digital broadcasts will be over-the air and available *free* to all listeners, whereas satellite radio is a monthly pay subscription service. There is no monthly charge to enjoy HD Radio.

"Further, while XM and Sirius offer a greater number of channels, they are national services that do not provide local news, weather, or other local content. However, like the satellite services, HD Radio listeners will have to purchase new receivers."

— Leslie Stimson

Radio World, November 23, 2005

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

Performance Rx for Reliable Tx

by John Bisset

We said earlier that the FM exciter's reflected power is a good place to start your "inside" transmitter site inspection checklist.

Check the reflected power on the transmitter itself. In this case, high reflected power indicates antenna matching problems. VSWR, return loss, match efficiency and reflection coefficient are related to forward and reflected power levels.

To assist in their calculation and interrelation, Bird Technologies Group offers a handy cardboard "slide rule" calculator that shows each of these parameters as they relate to the transmitter output power and reflected power levels. This slide rule will be helpful particularly to contract engineers, who must visit and evaluate multiple sites.

This slide rule is free, but quantities are limited. While supplies last, send a request to Nancy Black via e-mail to *nblack@bird-technologies.com*. Let her know you read about the slide rule in Radio World's *Workbench*.

If you're doing any HD installs, have Nancy include a data sheet on Bird's new BPME, the company's HD power meter, a must-have for the HD site. You can obtain more information on Bird's product line by heading to *www.bird-technologies.com*.

★ ★ ★

Whether you use the slide rule calculator or just read the Reflected Power Meter on the transmitter, like the exciter, this reading should also be low. A higher reading, as shown in Fig. 2, signifies a problem.

Depending on the transmitter output power, the reflected power value could be anywhere from 20 watts to as much as 100 watts on a 20 kW transmitter. If the output transmitter meter displays forward power, check that it is at the FCC-licensed value for transmitter power output, or TPO.

As you look over the transmitter meters, do a calculation of the indirect power for FM (Ep x Ip x effy = Indirect Power).

The efficiency factor, or "effy," can be found from the transmitter test data sheets or in the transmitter manual and should be posted if you determine power using this method.

If you cannot locate the transmitter test data, contact the manufacturer's field service department. The major transmitter manufacturers keep copies of this test data and will share it with you.

If there is no test data sheet and the transmitter is out of production, like the RCA BTF series, check the instruction manual for an efficiency chart.

Again, if you measure power indirectly, photocopy this efficiency sheet and post it at the transmitter site. An FCC inspector or Alternative Inspection engineer will most likely want to see it to determine that you are calculating output power properly.

See AT THE SITE, page 10 ▶

Fig. 1: Bird Technologies Group Broadcast Applications Engineer Bill Tobin and Customer Service Representative Nancy Black demonstrate a free slide rule that calculates FM transmission parameters.

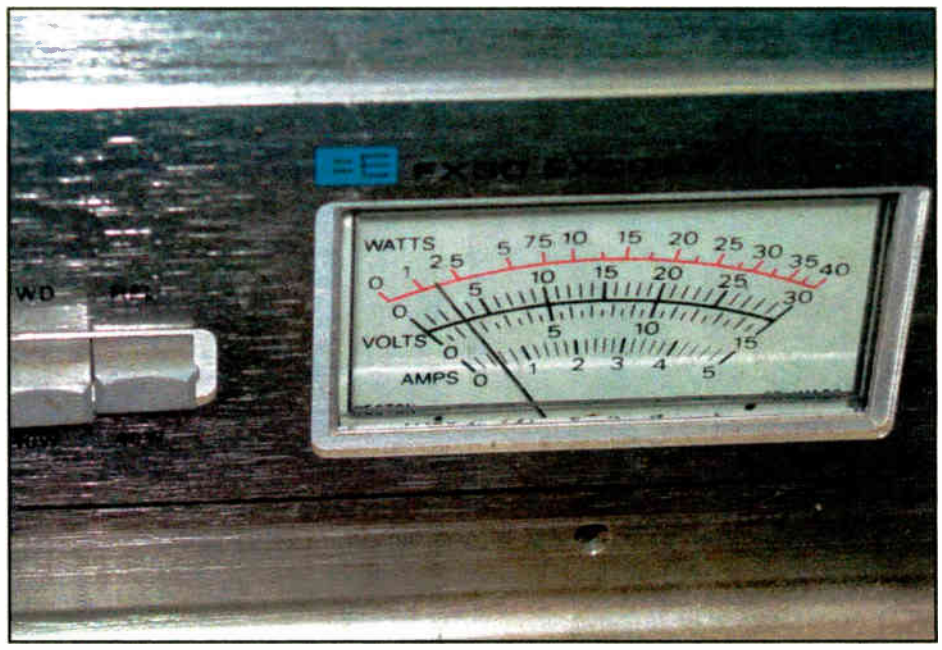

Fig. 2: Keep reflected power as close to zero as possible. This reading is less than desirable.

We're all talk.

And all action, too.

All talk and no action? That certainly doesn't describe any radio station we've ever seen. With guest interviews, news and traffic feeds, live reports and listener calls to juggle, a talk studio is one of the most active places on the planet. Seconds count, and there's no room for mistakes.

That's why we created Status Symbols® for the Telos TWOx12 Talkshow System. Instead of flashing lights to decipher, there's easy-to-understand picture icons that give talk pros the information they need with just a glance. What caller's next? Who's screened, and who's just holding? With Status Symbols, you'll know instantly. And only Telos has them.

TWOx12 has lots more benefits. Like Digital Dynamic EQ, for uniform caller audio despite less-than-perfect lines. Twin DSP-powered hybrids for quick, no-hassle conferencing. A unique Dual Studio Mode that lets you use your 12-line phone system like dual six-line systems for extra flexibility. And TWOx12 is the world's only talk show system that can work with either POTS or ISDN lines to deliver exceptional caller clarity. Impressive? You'd expect no less from the company that *invented* the digital broadcast hybrid.

Is TWOx12 the perfect union of word and deed? Thousands of broadcasters worldwide think so. Why not see for yourself?

Telos
AUDIO | NETWORKS

12 lines, two digital hybrids, and superior audio performance. Desktop Director controller features handset, speakerphone and headset jack. Drop-in controls available for popular consoles.

New Call Controller has Status Symbols, DTMF pad and recorder controls (like Desktop Director), but lets talent use their favorite wireless phone or any standard handset for call screening.

Status Symbols show exactly what's what. Intuitive icons show calls locked on-the-air, which hybrid they're on, who's next in queue and more. So much better than a panel of blinking LEDs.

Assistant Producer enables talk show production via LAN or WAN. Status Symbols, Caller ID support, instant messaging and caller database are just a few benefits. Supports touchscreens, too.

At the Site

▶ Continued from page 8

★ ★ ★

While we're on the subject of FM power: New licenses do not include the antenna gain or transmission line losses, and simply show the FM power in effective radiated power. Be prudent; keep a copy of the engineering calculations as to how you determined the ERP.

On older stations, it can't hurt to run

Fig. 3: Keep a written record of high-power tube serial numbers.

the calculations again. You might be surprised to learn that as stations change hands, antennas too are changed, sometimes to a different number of bays, without most people involved realizing it. An antenna system may not consist of the same elements as when it was licensed 15 or 20 years ago. Even a change in the size of the RF feedline will have an effect.

Although it's not required by the FCC, take a set of transmitter meter indications. This is just good engineering practice. A set of readings taken under normal conditions can aid in troubleshooting a problem later. If measurements are taken monthly, you can spot trends.

If the transmitter uses tubes, take advantage of the filament hours meter.

Fig. 4: Monitor line air pressure; it should never read zero.

Record this indication, especially when changing tubes. The tube warranty is calculated based on the hours the tube has been in use. This is true for new tubes and rebuilds. In your log, copy the serial number of your power tubes. The serial number usually is found on the side of the tube, as seen in Fig. 3.

Another critical meter should be read if you maintain an FM site: the line pressure meter. This may be located on the end of the transmission line, connected to a meter/valve manifold or run directly off the nitrogen tank valve assembly. Fig. 4 shows a typical valve assembly.

Regardless of its location, an indication of positive line pressure is crucial. When the line is purged with positive air pressure, moisture can't enter the transmission line.

This is probably one of the most overlooked and misunderstood meters, yet one whose indication can warn of impending danger. If the line pressure goes to zero, you could have moisture or condensation form inside the line. As the moisture builds, the impedance of the line changes, and reflected power increases.

At some point, the line will flash over and burn. The resulting damage can destroy the antenna, the line and possibly the transmitter — not the sort of accident you want on your watch.

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is the northeast regional sales manager for Broadcast Electronics. Reach him at (571) 217-9386, or jbisset@bdcast.com. *Faxed submissions can be sent to (603) 472-4944. Submissions for this column are encouraged, and qualify for SBE recertification credit.*

SUPPLY SIDE

Titus Technological Laboratories

Supply Side is a series of occasional interviews with industry suppliers. Here, Lawrence Titus speaks about his company, Titus Technological Laboratories.

You said business is booming. Why do you think that is?

IBOC is driving some of that. Also our ability to customize.

We have been involved in an array of projects, from routing for ABC to lighting for the Department of Defense. We recently created a custom door latch release for a client, for example, and are involved with the City of New York on developing an emergency audio switching network.

I like those kind of challenges. We like to say that there is no such thing as "not invented here" — if you have an idea we would like to try to build it.

What's your job there?

I'm the president, owner and creative soul.

Your company may be best known for its on-air lights. Talk about how the firm evolved.

I was a broadcast engineer for 20 years; I did engineering for Chase Broadcasting, wrote for trade publications and was an SBE chapter chairman and region liaison. I started the company in 1971, but manufacturing was a sideline until 1988.

At the start, most of the products we built were custom — simple applications for radio and TV stations. My first "real product" was an unbalanced-to-balanced level shifter, for adapting a cassette output to a broadcast input (a very long time ago). The air light fixture was the first nationally recognized product; it was carried by Allied Broadcast Equipment. We later introduced the Last Word, an automatic audio switcher and router with a built-in stereo synthesizer.

The 1980s and '90s were about growing the space. We've done work on custom information products, billboard display lighting, automatic dialers for weather services, prison escape notification systems, even airplane communication interfacing.

Larry Titus

We also make audio switchers, automatic redundancy audio and digital routers, air lights and vertical interval remote controls for television.

I run the company conservatively and as a result, despite the recession of the early 1990s, we survived. I also believe in "just in time" manufacturing practices. We stock parts, but we don't keep a big inventory of product.

What's your latest?

Our latest product is the Web-Rem 400, an Internet-driven remote control. It's a generic eight-channel control and monitor with eight relay outputs, eight opto inputs and four analog inputs.

It's part of the Web-Rem series, which lets users control and monitor Titus products or other devices via the Net — either local LAN or an Internet connection. The various configurations provide relays, open-collector outputs or both, for control and TTL level; some have analog inputs for monitoring a remote device. Monitoring and control is done via a Web page generated by its own internal Web server.

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(800) 806-TTL1 (8851)

E-mail: *info@tituslabs.com*
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HARRIS

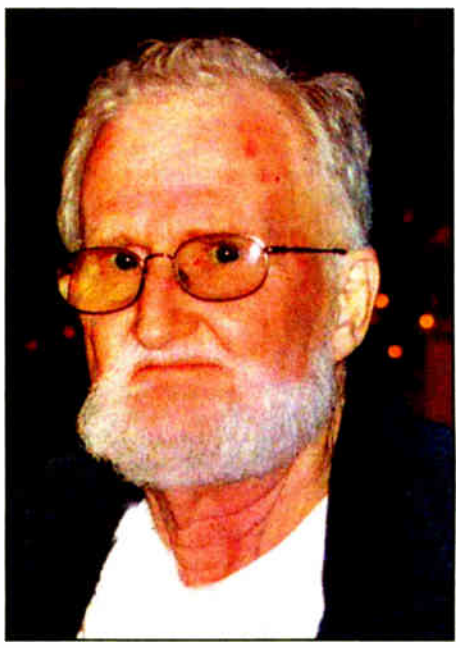
Colleagues Remember 'Bix' Bixby

by Scott Fybush

His given name was Jeffrey M. Bixby, but across the engineering community in Pennsylvania, Washington and beyond, the engineer who died this year at age 61 was known simply as "Bix."

A 1970 graduate of Juniata College in Pennsylvania, Bixby began his engineering career at WJUN(AM) in Mexico, Pa. Early work included consulting jobs with John H. Mullaney and Associates, Collins/Rockwell and A.D. Ring and Associates, where he developed a reputation as a hard-working, no-nonsense expert on AM directional antenna systems.

"He was a curmudgeon," recalled Anne Gallagher, now an engineer with



Jeffrey M. Bixby

the FCC. Her husband worked with Bixby at Moffet, Larson and Johnson, where Bixby was an engineering manager from 1985 until 1998.

Gallagher joined the firm in 1995, and she says Bixby served as her mentor there.

"You could hear him come in in the morning. He had a brisk stride and he always wore cowboy boots, so you could hear him before you'd see him."

Complex tasks

During his tenure at MLJ, Bixby worked on several projects that would become highlights of his career. In Pittsburgh, he handled the replacement

Courtesy of Mike Rhodes

Bixby was fond of this photo, taken as he did the KDKA station ID. He kept the picture hanging in his office in recent years.

of KDKA(AM)'s aging Franklin antenna with a new tower, specifically designed to minimize skywave.

When the new antenna was in place and KDKA was ready to sign on with it, Bixby did something that had become a signature for him.

"When a project was done, he would always insist that he be behind the mike giving the first legal ID when it signed on," said Tim Portzline, chief engineer for Clear Channel in Harrisburg, Pa.

A few years later, Bixby embarked on what would prove to be one of his biggest challenges: replacing the four-

Courtesy of Mike Rhodes

At the KDKA tuning unit.

tower array at Group W's WINS(AM) in New York with a new antenna system at the same site, navigating the complicated local politics and keeping the station on the air throughout the construction.

"When I got to WINS in 1995, (Bix) was the primary partner in MLJ and Westinghouse was their biggest client," said Mark Olkowski, now engineering manager for WINS, WFAN(AM) and WCBS(AM). "They had worked for Westinghouse for many years to get the WINS array licensed."

Instead of continuing to struggle to get the old in-line array to tune up, Bixby designed a four-tower parallelogram array for the station.

"One of the biggest challenges was keeping the station on the air," Gallagher said. "One of the new towers was going up right on top of an old tower. Rather than go nondirectional with 25 percent power, Bix cobbled together a three-tower directional array and phasor out of the parts that were on-site."

Such a move normally would require an expensive and time-consuming proof, but Gallagher says Bixby was able to persuade the FCC to approve it without a proof, arguing that the constantly moving construction cranes on the site would make a proof impossible.

Detuning

Olkowski recalls Bixby as "very much a man's man ... with a very low tolerance for B.S., at the corporate level or otherwise." He credits Bixby for a substantial increase in WINS' signal when the new antenna system went into use.

Other Bixby projects during the era included major directional system rebuilds at WBT(AM) Charlotte, WIND(AM) Chicago and WGBS(AM) Miami.

After leaving MLJ in 1998, Bixby worked with Tracy Corp. and Denny & Associates. In 2002, Bixby and his wife, P.J. McDaniels, moved from Washington to rural central Pennsylvania, where Bixby went into business for himself as BixTech LLC, working with Verizon Wireless and Sprint to detune their facilities near AM broadcasters.

"I think my husband pretty much developed that model of detuning," McDaniels said.

McDaniels met Bixby through a personal ad in 1982, and the couple had just celebrated their 21st anniversary in June with a renewal of their vows.

"He was just always surrounded by people," she said. "He always had great stories to tell."

In addition to his engineering work, Bixby was active in amateur radio under the call W4BIX. A Navy veteran, Bixby, with McDaniels, was active in Army MARS and as a Coast Guard Auxiliary radio operator.

BixTech "was becoming a nice little business," McDaniels said, when Bixby was diagnosed with cancer late in 2004.

As the disease took its toll, Bixby's engineering colleagues in the region moved to present him with a final honor. The Pennsylvania Association of Broadcasters created a "Broadcast Tube Plaque" for Bixby; in early June several SBE members made the drive north from Harrisburg for a small ceremony at Bixby's home.

Portzline says Bixby was confined to bed by then, but alert and appreciative. "He was very weak, but he was talking, reminiscing about projects he had worked on," Portzline said.

"The professional recognition at the very end kind of wrapped it up for him," McDaniels said. "He felt like he had accomplished everything."

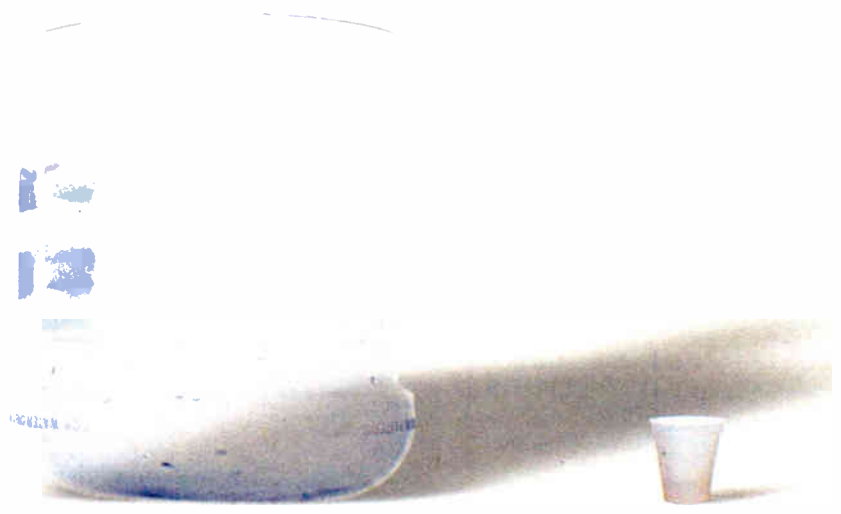
Portzline says what he'll remember best about Bixby is his modesty.

"He just came across as being very unassuming, a very down-to-earth guy. He could have made a big deal about the jobs he had done, but he was always very matter-of-fact," he said.

Multicasting.

It's like trying to fit —

well, you know.



Management has decided to multicast. Which seems like a terrific idea — until you consider just how little bandwidth each channel will get. How will the sound of your station(s) survive these shrinking bitrates? Omnia can help.

New Omnia Multicast with SENSUS™ restores the fullness and depth that bit-reduction steals. Our DSP gurus teamed up with the codec experts at Telos (the folks who introduced broadcasters to MP3 and MPEG AAC). Together, they developed a unique suite of tools to pre-condition audio for HD Radio™ multicasting.

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SENSUS technology enhances punch, preserves presence, and reduces artifacts. Even heavily bit-reduced channels (like multicast) can be significantly improved by Omnia running SENSUS. And like all Omnia processors, Omnia Multicast delivers the smooth, clean, pure signature sound that grabs your listeners and holds them hour after hour. No wonder the top stations around the world choose Omnia over all other processor brands.

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HD Radio News

HD Radio Scoreboard

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Radio World | Covering Radio's Digital Transition | November 23, 2005

Station IBOC Monitors Available

by Leslie Stimson

The days of trying to rack-mount an automotive aftermarket HD Radio receiver to monitor a station's digital and analog signals are soon to be over, judging by exhibits of new IBOC gear at this fall's NAB Radio Show. DaySequerra and Audemat-Aztec are shipping new HD Radio monitors; Belar has a unit in the pipeline.

Also in IBOC news at the convention were several multicasting demos. For HD Radio data vendors, displays showed how a digital station could use a portion of its signal to offer real-time traffic data to listeners.

While HD-R monitors have been shown at past conventions, Audemat-Aztec's and DaySequerra's recently were certified by Ibiquity, and those models are shipping.

The Audemat-Aztec Goldeneagle off-air HD-R and analog monitoring and remote control unit can be installed anywhere in the listening area and operates off an antenna or an RF feed, according to Tony Peterle, technical support manager.

Remote real-time monitoring

"For automatic monitoring, you select what areas of the signal you want to monitor. For example, if you lose any audio on the supplemental channels it can alert you, or take action," said Peterle.

A user can access the monitor through the Internet and monitor stations in real time. "You can dial in any frequency, not just the ones you have programmed into it," he said.

Users can check time alignment between the analog and digital signals, necessary to achieve a seamless blend, he said. "It essentially takes a sample of the analog and digital audio simultaneously, and tells you if the signal is off by a certain number of seconds."

The FM version is shipping; an AM version and AM/FM version are to be released in December, he said. A mobile version also was displayed.

Harris is selling the DaySequerra HD Radio tuner, which can also decode multicast signals. ATI Group Inc., which makes the DaySequerra line, showed the M2 Tuner HD Radio AM/FM Modulation Monitor and the M4 Tuner HD Radio AM/FM Broadcast Reference Tuner.

Linda Reed, sales and marketing manager for ATI Group, said the company offers an option to display the information on a PC for the M2 version.

Belar Electronics displayed its FMHD-1 Digital FM HD Stereo Monitor/Analyzer. The rack-mounted unit can be used at a transmitter or studio. The monitor decodes the digital and analog signals simultaneously, displaying HD Radio status, data, time alignment and configuration information, as well as audio metering and RF/audio spectrums.

The product is "working through the certification process" and Belar is "shooting to ship" by the end of the year, according to Mark Grant, staff engineer.

Also in news at the show, Harris recently promoted several executives involved in HD Radio products. Tom Jones, who had been director of radio transmission products, is now director of radio engineering. Rich Redmond, director of radio transmission products and strategy, is now managing all transmission gear while Jones' role is now more product optimization and cost reduction, according to Debra Huttenburg, vice president/general manager of Harris' Radio Broadcast Systems.

Harris introduced its Flexstar HDX-FM exciter. Redmond and Gary Liebisch, radio product line engineer, said the product is a combination analog and digital DSP-based exciter with two outputs. "Regardless of what type of combining method you'd like to use, we can drive it with one exciter," Redmond said.

Photo by Leslie Stimson

Brian Smyth hears a traffic report on his cell phone from Traffic.com.

The unit features real-time adaptive correction. "What this translates into in terms of performance is mask compliance, staying within the FCC mask and minimizing the amount of interference to adjacent channels," said Liebisch.

Harris said it was shipping 10 to 12 pilot units to customers and plans to release the exciter to production around Jan. 1.

Asked whether the unit can be used for a Digital Radio Mondiale transmitter, Redmond said not yet, although "certainly it's being developed with an eye to other standards such as DRM."

Surround sound

In its multicasting demo, Harris originated a main channel from an ENCO Systems server and the supplemental channel from a CD player, featuring Westwood One content at 64/32 kilobits-per-second respectively.

Radio One produced live 5.1 transmissions of Philadelphia stations WPPZ and WRNB using a Harris Z series FM transmitter and a Harris NeuStar 5225. The 5225 uses Neural Audio's technology to downmix 5.1 content to stereo and upmix the content back to 5.1 audio for transmission.

"We're showing real-world applications that show how easy it is to integrate the 5225 in a production studio, and turn stereo advertising into surround sound and liven up your commercials and station IDs," said Mark Seigle, Neural Audio president and chief marketing officer.

At Broadcast Electronics, the manufacturer added CD title/artist displays and message alert features to its Now Playing text management studio applications in The Radio Experience line.

"We're trying to make sure that we've got a product that will allow stations to feed their analog RDS, which is compatible with HD-R, and take that same data without having to generate separate data, and feed that through the HD Radio system, so that same data can be made available when listeners are in the HD-R mode on their radios," said Tim Bealor, vice president of RF systems for BE.

The Radio Experience "does that and more," he said. "It manages all the PAD and near-PAD data, through the HD-R system and through the IDi (data importer)."

The addition of Radio Experience products such as RDS generators allows

See DIGITAL, page 17 ▶

Radio World's HD Radio™ Scoreboard

The HD Radio Scoreboard is compiled monthly by Radio World using information supplied by iBiquity Digital Corp. and other sources. The data shown reflect best information as of Oct. 20. This page is sponsored by Broadcast Electronics. HD Radio is a trademark of iBiquity Digital Corp.

ON THE AIR WITH MULTICAST

Station	Freq.	Market	Licensee
WFCR(FM)	88.5	Amherst	Univ. of Massachusetts
WFAE(FM)	90.7	Charlotte	Univ. Radio Foundation
WVTU(FM)	89.3	Charlottesville	Va. Tech Foundation
WVTW(FM)	88.5	Charlottesville	Va. Tech Foundation
WJMK(FM)	104.3	Chicago	Infinity
WNUA(FM)	95.5	Chicago	Clear Channel Radio
WPJX(FM)	92.3	Chicago	Crawford
WSRB(FM)	106.3	Chicago	Crawford
WUSN(FM)	99.5	Chicago	Infinity
WVAZ(FM)	102.7	Chicago	Clear Channel
WYCA(FM)	102.3	Chicago	Crawford
WGUC(FM)	90.9	Cincinnati	Cin. Classical Pub. Radio
WMUB(FM)	88.5	Cincinnati	Miami Univ.
WYMX(FM)	94.1	Cincinnati	Clear Channel
WCSU(FM)	89.7	Columbus	Ohio State Univ.
KBCO(FM)	97.3	Denver-Boulder	Clear Channel
WCSX(FM)	94.7	Detroit	Greater Media
WDTW(FM)	106.7	Detroit	Clear Channel
WJLB(FM)	97.9	Detroit	Clear Channel
WMGC(FM)	105.1	Detroit	Greater Media
WMUZ(FM)	103.5	Detroit	Crawford
WRIF(FM)	101.1	Detroit	Greater Media
WVMV(FM)	98.7	Detroit	Infinity

Station	Freq.	Market	Licensee
WBOI(FM)	89.1	Ft. Wayne	Northeast Ind. Pub. Radio
WFBQ(FM)	94.7	Indianapolis	Clear Channel
WFYI(FM)	90.1	Indianapolis	Metro. Indianapolis Public B casting
KIIS(FM)	102.7	Los Angeles	Clear Channel
KOST(FM)	103.5	Los Angeles	Clear Channel
WKIS(FM)	99.9	Miami	Beasley
WLRN(FM)	91.3	Miami	Miami/Dade Co. School Bd.
WPOW(FM)	96.5	Miami	Beasley
KSJN(FM)	99.5	Minn-St. Paul	Minnesota Public Radio
KAZU(FM)	90.3	Monterey	California State Univ.
WDAS(FM)	105.3	Philadelphia	Clear Channel
WIOQ(FM)	102.1	Philadelphia	Clear Channel
WJJZ(FM)	106.1	Philadelphia	Clear Channel
WRDW(FM)	96.5	Philadelphia	Beasley
WSNI(FM)	104.5	Philadelphia	Clear Channel
WUSL(FM)	98.9	Philadelphia	Clear Channel
WXTU(FM)	92.5	Philadelphia	Beasley
WRAL(FM)	101.5	Raleigh-Durham	Capitol Broadcasting
KPLU(FM)	88.5	Seattle-Tacoma	Pacific Lutheran Univ.
KUOW(FM)	94.9	Seattle-Tacoma	Univ. of Washington
WAMU(FM)	88.5	Washington	American University

The HD Radio Bottom Line

	Total Licensed	On the Air
Now	937	546
Last Month	934	525

Market Penetration United States

13,557 AM & FM Stations ***(excludes LPFMs)***

Licensed by Ibiquity and on the air

Licensed by Ibiquity and not on the air

Number of FM Stations Multicasting: **43**

Brazil

▶ Continued from page 1

Porto Alegre, Curitiba and the country's capital city, Brasília.

ANATEL will evaluate the transmissions in terms of audio quality, coverage area, noise resistance, interference and the effects on the multiple routes of transmission. The authorization for the digital tests is set to last for six months, but may be extended for an additional six months at the discretion of the regulators.

Technicians are also studying the digital signals for compatibility with the host analog signal, the impact on analog adjacent channels and compatibility in coverage areas.

The transmissions will include data to help in evaluating how the system performs depending upon various field characteristics of each location such as buildings and topography.

ANATEL is a non-governmental organization, administratively independent and financially autonomous, and not hierarchically subordinate to any government entity. Its decisions can be contested judicially, and its directors have stability and a fixed mandate.

Accompanying and financing its initiatives is an advisory council of representatives of the executive and legislative branches of government, service providers, service users and the general public.

Standards established by ANATEL are submitted for public consideration. Its acts are accompanied by formal explanation and justification, and an auditor periodically receives critical evaluations of the agency's work.

Brazil is the third country in the Western Hemisphere to launch HD Radio broadcasts, after Mexico and the United States.

Infrastructure investments

According to José Inácio Pizani, president of broadcast association ABERT, "Many broadcasters already have digital equipment in their studios. The only thread that was missing was transmission."

For FM implementation, the average expected investment for a station is $120,000. Among the larger broadcast groups, the volume of resources is significant. Sistema Globo de Rádio plans to invest $5 million in infrastructure before 2006 to make the transition to digital transmission.

For Edilberto de Paula Ribeiro, president of the AESP broadcasters association in São Paulo, "IBOC was the technology best suited to Brazilian needs," because it can be operated in both digital and analog modes, he said.

What price Brazilians will have to pay for an HD Radio receiver has yet to be seen. In the United States, receiver prices range from $1,899 for a home unit from

See BRAZIL, page 17 ▶

Broadcasters Use Harris, BE For HD-R Transmissions

SÃO PAULO, Brazil Ibiquity Digital's HD Radio technology made its first splash in Brazil on Sept. 17.

Rádio Kiss FM became the first Brazilian station to launch a full-time digital radio service. Using a Broadcast Electronics FMi-73 transmitter, KISS FM is transmitting a 240 W digital signal alongside its analog FM signal. A Shively four-bay broadband FM antenna was also installed for the digital broadcasts.

The station began the transmissions during a Brazilian broadcast and cable convention; BE had an HD Radio receiver in its exhibit booth so attendees could tune in the Rádio Kiss FM digital signal.

A few days later, on Sept. 26, ANATEL authorized tests of digital transmissions across Brazil, and Rádio Bandeirantes, Rádio Globo and Grupo RBS launched HD Radio services. The launch date coincided with the Brazilian National Day of Radio and the 70th anniversary of the radio and TV broadcaster association of São Paulo. All three broadcasters chose Harris HD Radio equipment.

Rádio Bandeirantes chose Harris Z-Series Z16HD transmitters for its Band News FM outlet in São Paulo, along with a rack of IBOC equipment to add digital capabilities to its existing Harris DXD100 AM transmitter.

Rádio Globo acquired a 600 W Harris Mini-HD transmitter for Rádio BCN in São Paulo, along with IBOC conversion gear for its 3DX-50 AM transmitter for Rádio Tiradentes in Belo Horizonte, Minas Gerais.

Grupo RBS installed a 600 W Mini-HD for Itapema FM and an HD Radio-capable DXD100 for Rádio Gaúcha. Both stations are located in Porto Alegre.

— Karina Gerardi

Digital

▶ Continued from page 14

BE to offer customers the ability to log and keep a history and go back to the Internet to examine what messages stations have been sending out to both analog RDS, HD Radio and Internet tuners, he said.

BE featured an Audemat-Aztec monitor and a Boston Acoustics HD Radio displaying traffic information from Traffic.com on the BA unit. Supplemental channels on Beasley's WXTU(FM), Philadelphia, as well as its main channel audio, all transmitted with BE equipment, were picked up off-air.

HD-R overseas

BE is broadening its HD Radio focus overseas, providing equipment to broadcasters in such countries as Brazil, France and, soon, Switzerland and New Zealand. Hungary and Poland might be added to that list, he said.

While the Eureka-147 system is active in the U.K., Bealor said, the rest of Europe seems to be moving away from that technology. Commercial broadcasters like the ability to keep transmitting analog while adding a digital signal, he said.

"We'll be doing a lot (overseas) this fall and into next year. It's like the early days of the U.S. again."

Continental Electronics displayed a mock-up of an exciter controlling a 200-watt linear amplifier in its 811HD transmitter.

The product could be used "for someone who's looking to use space combining using separate antennas, where we just deliver the IBOC and they use their existing transmitter for the analog," said Michael Troje, sales manager for Continental.

Omnia introduced the Omnia Multicast audio processor; the company says the DSP technology works to improve fidelity and reduce encoding artifacts.

Data applications

Traffic.com and RealTraffic displayed their respective real-time traffic systems to show how stations can use the products as part of their HD-R data offerings.

Charlie Weirauch, director of operations for Metro Networks, which is marketing the service with its parent company Westwood One, said there are three elements to the system: live traffic reports, real-time routing and personal alerts. Using RealTraffic, customers can see their traffic reports on the Web, their radio, navigation system or mobile device, such as a cell phone or PDA.

"You can filter out what you don't want to see, such as filtering by major delays only," said Weirauch. "You can also use filters to sort incidents by time and severity."

The system can recognize your route and, using the personal alert feature, send a text message to your e-mail. "Some radio stations use the personal alert as a paid premium on their Web site while others offer it for free," he said.

Traffic.com says it launched the first HD Radio traffic service, on Greater Media's WBEN(FM) in Philadelphia. Using BE HD-R gear, WBEN interspersed traffic information with song title and artist text for an on-air demo.

Hearst station WBAL(AM) in Baltimore uses Traffic.Com information on its Web site and was also featured in a demo.

Traffic.Com gathers information using road sensors, government partners and its own staff to create real-time reports.

The company launched a call service in Philadelphia and plans to go nationwide with it, according to company representative Brian Smyth. "You tell your phone 'home' and it gives you a route. It calls you if there's a traffic incident of a certain level."

"You can build a route on the phone and speak the whole thing," said Smyth.

Brazil

▶ Continued from page 16

Yamaha, to $799 for a JVC aftermarket version. Panasonic, Kenwood, Fujitsu/Eclipse and Sanyo offer aftermarket tuner boxes for just under $500. To receive the digital signal, the customer also needs compatible HD Radio-ready headunits.

Tabletop versions, anticipated by broadcasters for giveaways, were expected to be available in small quantities by year-end.

Consumers will need to buy new receivers to hear the digital channels. HD Radios receive analog AM and FM signals as well and experts here believe Brazil's analog broadcasts will remain on air for the foreseeable future.

Minister of Communications Hélio Costa said he hopes that within five years there will be a large number of digital receivers in the Brazilian marketplace.

"I've already spoken with Minister of Development, Industry and Foreign Commerce Luiz Fernando Furlan about making production of receivers viable in the Zona Franca de Manaus or in another suitable Brazilian state," Costa said. The Zona Franca is similar to an enterprise zone in the United States. The zone is a tax-favored industrial area in the Amazonas state that is home to a consumer electronics manufacturing industry.

For broadcasters, the greatest boost for HD Radio will come when automakers start installing digital radios in cars in Brazil. OEM Visteon, developing HD Radio receivers for the U.S. market, produces automotive radios under the Kenwood brand in the Zona Frana de Manaus for the Brazilian market.

CASE STUDY

Off the Analog Copper, Onto Ethernet

Comerica Park's Gigabit Network Solves a Problem at the All-Star Game

by William R. Bennett

Here's the challenge: Your international broadcast clients are booked to cover the 2005 MLB All-Star Game in Detroit, but there're no audio circuits available at their commentary locations, nor can cabling be economically run. However, there is a robust Ethernet network running around the entire venue.

If this smells like an opportunity to innovate, do read on.

While broadcasting and information technology have been converging at a rapid pace, there's still plenty of uncharted territory. Bill Durham, president of Commentary Systems International, along with Major League Baseball International viewed this cabling challenge as an opportunity.

According to Durham, "The commentary positions along the first base line were temporary booths constructed for the event with zero broadcast infrastructure facilities." Moreover, the positions behind home plate had no circuits available. They needed another option: the venue's gigabit Ethernet network.

Questions

After determining a local Commentary Control Room, or CCR, and necessary cable paths were unfeasible, Durham and MLBI approached Comerica Park's helpful director of technical services, James Darrow, with the idea.

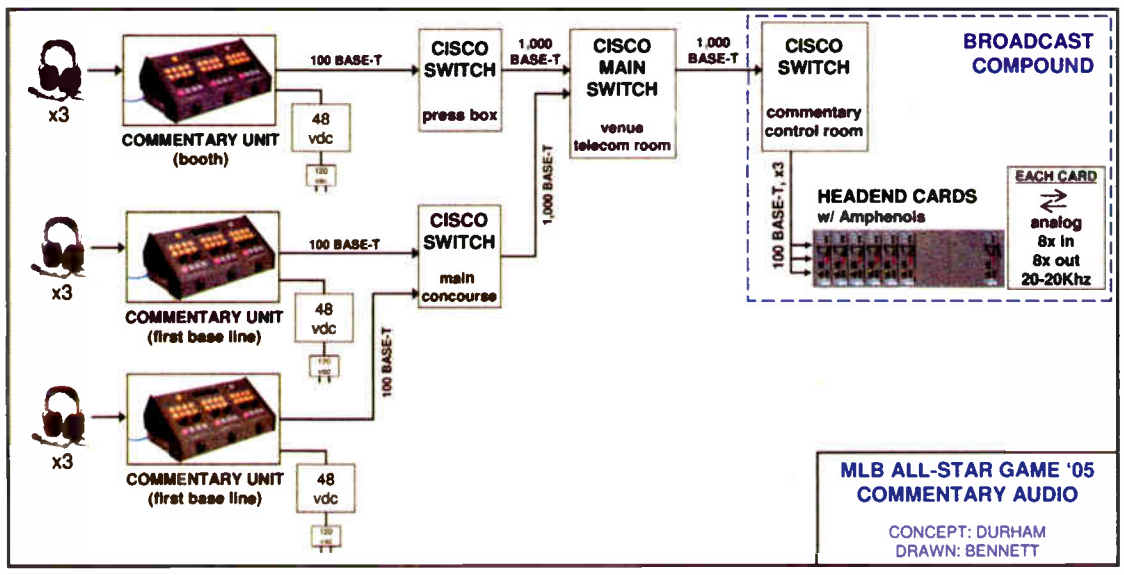
Durham found Comerica Park's in-house Point-of-Sale Ethernet data network and routers could indeed carry his systems' digitized audio throughout the venue, including the broadcast compound.

While some fiber would be dedicated only to CSI's data, traffic on the gigabit Ethernet backbone would be co-mingled with non-broadcast data.

Would heavy photographer and sports writer Internet traffic saturate the available bandwidth on game day? Would the sales of souvenirs, food and beverage be brought to their knees by higher-priority broadcast traffic? How reliable is the LAN/WAN, anyway?

CSI's commentary system is designed to run over Ethernet + CobraNet on a closed network. Normally, CSI runs Cat-5E cables from each position to their CCR, and DT-12 to link the CCR and the compound. Here, there was trepidation about utilizing an existing venue's Ethernet network for a mission-critical live broadcast. But it was also essential.

Durham got on the phone with Bill Lance of Lance Design, who built the Digital Commentary Units (DCU) and their Digital Signal Processing (DSP) engine, and Steve Gray of Cirrus Logic (formerly Peak Audio), whose CobraNet interface provides the real-time transport of uncompressed audio and control data via fully-compliant Ethernet Layer II.



After coordinating their comments with Darrow, the technical realities began to gel.

"I told him, 'As long as you account for the bandwidth used by other traffic on your trunk links, everything should work well; CobraNet co-exists quite nicely with data traffic," Gray stated. "If you want to add extra insurance, you can always set up your switches so the CobraNet devices are on their own VLAN."

The venue's telecom team ran Cat-5E cable to each commentary position from a nearby telecom closet, terminating each run at a Cisco 3548 switch via a simple RJ-45 connector.

From that Cisco switch, each DCU's dedicated 100 Mbps virtual-LAN (VLAN) "channel" was passed around on the venue's gigabit fiber backbone to a Cisco 6509 master switch, and from there over a dedicated, private (and existing) mil-spec, multi-mode fiber line to the compound patch panel, with an additional run of mil-spec, multi-mode glass running to a Cisco 3548 switch in CSI's Commentary Control Room located there.

As Darrow likes to say, "We have more fiber here at Comerica Park than you'll find in bran flakes."

Send and return

This isn't streaming audio or even "CD quality" audio; it's better. What's unique is that for each of CSI's DCUs there are eight channels each of audio send *and* return, all with 20–20 kHz bandwidth, 20-bit word depth, 48 kHz sampled uncompressed digital audio (partially) over inexpensive Cat-5E UTP wiring.

When Ethernet switches are uplinked together via a gigabit span, about 320 audio signals can be accommodated by CobraNet in each direction. Potentially, via standard Ethernet networking methodologies, this digital audio can be distributed literally worldwide without audio signal degradation.

Power for the DCUs in Detroit was provided by laptop-type switching power supplies providing 48vdc @ 625ma, connected to each DCU via an RJ45 jack. This was done to accommodate Comerica Park's Cisco switches, as CSI normally inserts power on unused pairs in the Cat-5E cable between the local Ethernet switch and the DCU's via propriety interfaces and their own switches.

Each DCU supports four discrete program outputs (three analog, one AES-3 digital), three return lines (feedback/mix-minus, studio off-air coordination, and local technician), and two ISO transmits (studio off-air coordination and technician). Using CobraNet and Ethernet also enables a technician to remotely adjust all DCU parameters including routing, mixing and control, and listen to exactly what the commentator hears, aiding setup and troubleshooting. With the split commentary positions in Detroit, remote administration was crucial.

In the CCR, a frame houses terminal cards corresponding to each DCU. Each card has a jumper cable linking it to a port on the Cisco 3548 Ethernet switch, and Amphenol 25-pair connectors organized by signal type on the backplane for analog audio breakout. Additionally, each DCU card can be put into standby mode, sending out tone and/or voice ID loops for the program and coordination circuits (with 1 kHz tone for program, and 700Hz for coordination).

As for the evolution of commentary-over-Ethernet, Lance states, "Five years ago this wouldn't have been as easy, but recent advancements in audio codec designs and embedded control systems make all this much more practical via Ethernet." Indeed, with changes in firmware an Ethernet-connected remote controller could even adjust EQ and compression curves at each DCU's DSP.

Regarding Ethernet, when asked about this unique application, Bob Metcalf, co-inventor of Ethernet by a memo in 1973 while at Xerox Palo Alto Research Center, admits, "It's tempting to say so, but when Dave Boggs and I were building the first Ethernets, we had no idea they would someday carry MLB commentary." Indeed, who knew?

Where are we headed? The recent growth of Voice over Internet Protocol popularity and podcasting alone proves audio distribution over IP-enabled networks such as Ethernet will grow beyond streaming radio. As more venues install Ethernets to support POS and Internet access as Comerica Park has done, more broadcasters should see the potential savings and growth in capability attained by moving off analog copper and onto Ethernet — and not just at the venue, but to their MCR's via value-added networks like T1s, or some form of "assured bandwidth" Internet.

And not just audio, but instant messaging for call-in shows, sports stats, show rundowns and support for digital camera images for Web publishing from commentators at the venues, and even video.

As MIT Media Laboratory's founding Chairman Nicholas Negroponte once said for his book "Being Digital," bits are bits. How these bits are created and exploited most effectively rests with the creative efforts of broadcast and IT engineers, technicians, talent, writers, producers, management and the venues to invent this converged future of ours. Let's play ball!

The author has worked as a broadcast, media and event producer, business development executive and engineer. He worked with Bill Durham on commentary systems projects used to cover World Cup Soccer, NBA All-Stars and the Atlanta Olympics. E-mail him at billb@bennett-ross.com.

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Kahn on AM Nighttime Service

The Sept. 28 issue of Radio World (page 6) highlighted an excerpt of reply comments sent to the FCC by Leonard Kahn on the topic of Ibiquity and HD Radio.

In a subsequent online posting on his Web site www.wrathofkahn.org, *he objected to the manner in which his comments were presented. (Kahn as a matter of practice does not reply to Radio World's requests for comments or information.)*

The full text of Kahn's comments to the FCC appears below, as posted by the FCC, headlined "Reply to iBiquity Ex Parte Notification of July 19, 2005."

Introduction and Background: Lawyers representing the iBiquity Digital Corporation ("iBiquity") met with Chairman Martin and other senior officials of the Commission to urge the FCC to *"authorize AM nighttime service."*

Since the undersigned has opposed this system for a number of years, and is now a proponent for a system he understands is the sole alternative IBOC system, the Cam-D System™, he believes that the Commission may find this Reply useful and somewhat surprising.[1]

(Footnote 1: It is believed that the Cam-D System™, developed by Kahn Communications Inc. ("KCI"), is the first and only on-the-air IBOC System that is in full compliance with FCC Regulations. The System first went on-the-air over 8 months. All of the Cam-D stations have operated full time, NIGHT and day, (24/7), since the stations independently determined that they fully complied with FCC Rules and Regulations. A number of these stations have filed Comments in these proceedings describing their operation. They also published additional details on KCI's website wrathofkahn.org, including Cam-D's doubling of coverage, reduced fading, reduced static and substantially reduced FIRST order adjacent channel and all other orders of interference.)

Conversely, to the encouraging reports of on-the-air Cam-D operation now in this Record, the undersigned has provided the Commission with, what he believes is proof that the iBiquity IBOC System violates FCC occupied spectrum rules by over 60 db and that the system's interference is spread over 7 channels, 140 kHz bandwidth.

The undersigned has also provided an opinion that the iBiquity IBOC system requires phase and time correlation over its extremely wideband bandwidth.

Thus, the iBiquity System, even if it fully complied with NRSC-5, can NEVER provide useful skywave operation. And this skywave limitation will apply to the system even if the FCC took the radical step of authorizing "all digital" operation, in effect confiscating the Public's TRILLION dollar investment in AM radio receivers.

The Commission has also received engineering analysis, using widely different procedures, from a number of independent prestigious engineers, both domestic and foreign, all reaching the same conclusion; the iBiquity System clearly violates FCC Rules and causes severe destructive interference. And, most importantly, the FCC has now received a number of reports from Engineers and Station Owners reporting that the theoretical determined interference is REAL and is being suffered wherever the iBiquity IBOC system is on-the-air.

However, on-the-other-hand, it is hard to believe that Bell Labs engineers, and certain engineers at Clear Channel, Viacom and ABC, who the undersigned has had long term close professional relationships with, assuming these highly skilled individuals were not coerced, would have advised their management to go forward with nighttime operation, knowing the System would fail.

Thus, I must concede that it is possible I do not understand the true IBOC situation and I must further concede that there is some possibility that iBiquity-IBOC will not destroy nighttime AM service.

Conclusion and Caveats: Accordingly, the undersigned supports the request of the iBiquity Digital Corporation that licensees using its IBOC system be authorized nighttime operation. Indeed, if as claimed by iBiquity, its system fully complies with FCC Rules and Regulations, it is hard to understand why it requires FCC Approval for nighttime operation.

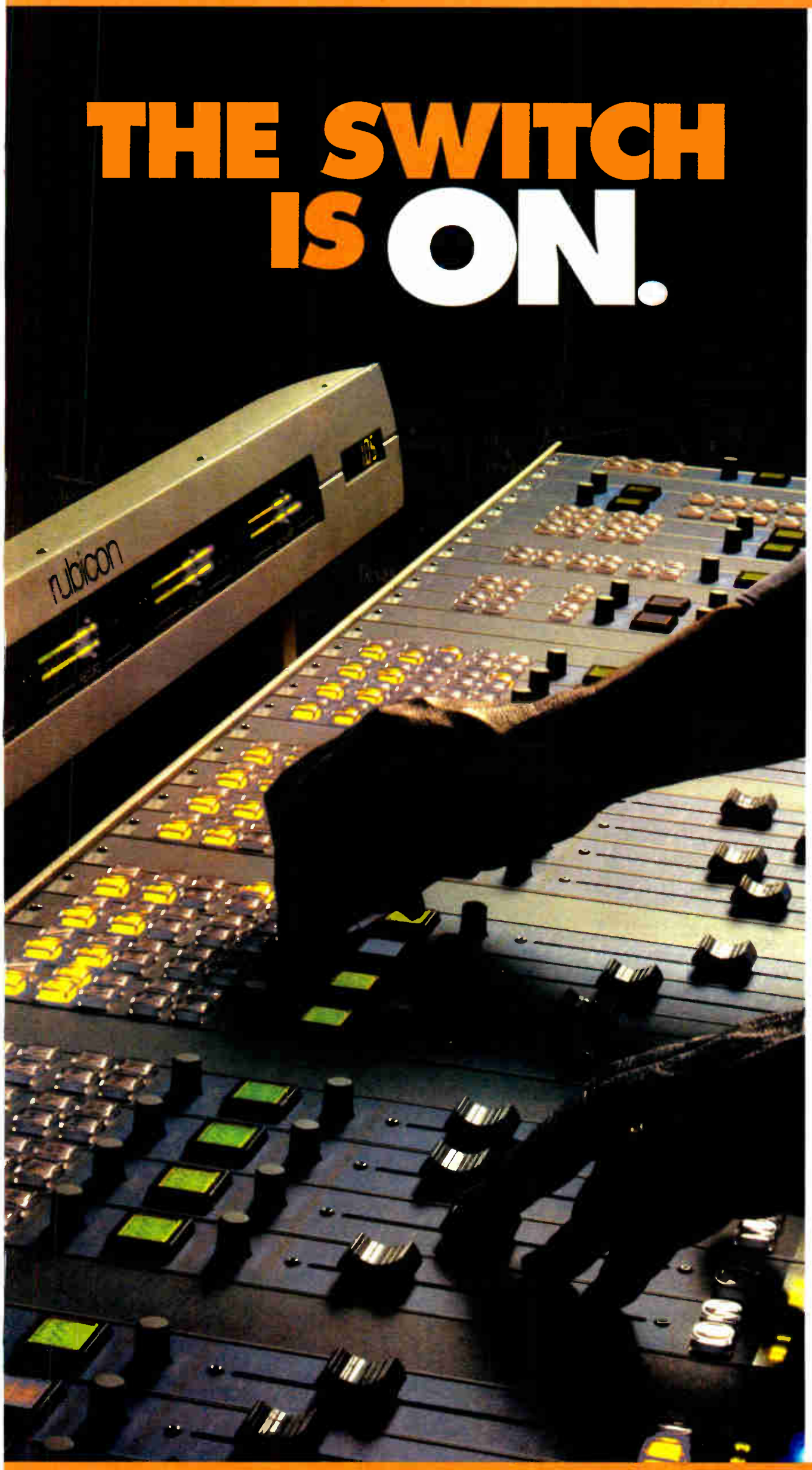
However, as one who believes that he is a responsible Professional Engineer and a loyal American citizen he must offer the following caveats:

That such tests start on a Monday or Tuesday of a week that does not have a national holiday, or a week when there is a forecast of severe storms. This will avoid loss of vital emergency AM radio services, if iBiquity expectations for its system are not realistic.

That only stations that have substantial financial resources be allowed to engage in the tests, so that stations that suffer damage from the prophesied interference can be fully compensated.

Respectfully submitted,
Leonard R. Kahn, PE, FIEEE
New York, N.Y.

THE SWITCH IS ON.



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Radio World — Resource for Radio On-Air, Production and Recording — November 23, 2005

FACILITY PROFILE

Infinity Makes 'Miracle' L.A. Move

After CBS Sells Columbia Square, KNX Moves With Sister Station KFWB to Facility on Wilshire

by Scott Fybush

There were few studio spaces as historic as the second-floor digs of Infinity Radio's KNX(AM), Los Angeles, in the venerable Art Deco Columbia Square building in Hollywood that once served as CBS west coast headquarters.

How many radio people can say they walked down the hall past a space where a live audience once watched Jack Benny do his show in the 1930s and '40s?

All that history, however, couldn't make up for the challenges of actually operating an all-news station from such antiquated facilities.

Photo by Scott Fybush

KFWB's old newsroom in its previous 1970s-era facility, which once had been a supermarket.

"All the news actualities were on cart, and with that all the inherent problems with audio quality and frankly, just keeping cart machines running these days," said KNX/KFWB Chief Engineer Paul Sakrison.

The layout left much to be desired, as well, with a long walk down two busy corridors separating the cramped newsroom from the studios. So when CBS announced a few years ago that it planned to sell the building and move its occupants, which also included KCBS(TV) and KCAL(TV), few tears were shed.

Settling in

KNX's sister all-newser KFWB(AM) also had been operating from Hollywood, in a 1970s-era studio facility built by former owner Westinghouse in what had once been a supermarket.

After briefly investigating a move to CBS' Radford studio lot, where the TV stations are moving, Infinity Radio decided to incorporate KNX and KFWB(AM) into a 130,000-square-foot facility shared with three Infinity FM stations (KTWV, KLSX and KRTH) along L.A.'s "Miracle Mile" of Wilshire Boulevard.

Construction in the two-story space, formerly occupied by E! Entertainment Television, began in early 2004 with a near-complete gutting. The three FM stations occupy the second floor, with the two AM stations getting most of the third floor. On the east side of the third floor, a large open space is filled with sales cubicles and offices. The west side — some 30,000 square feet — is home to news and operations for KNX and KFWB.

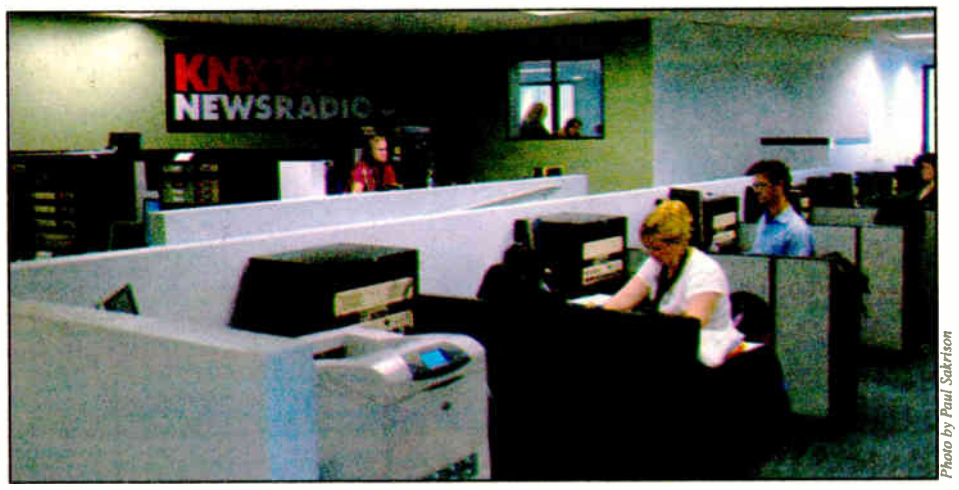


Photo by Paul Sakrison

The KFWB and KNX newsrooms now feature a raised area for the editors, overlooking desks for writers, anchors and reporters and the main studios. KNX is shown.

At the heart of the new operation are routers and consoles from SAS, including three frames of SAS 32000KB routers that are "just about full," says Sakrison, and 27 Rubicon consoles, which fill the 25 studios. (The main studio for each station has two consoles).

Sakrison praised the flexibility of the SAS system for its allowance of on-the-fly reconfiguration of those consoles, often from a laptop connected to the facility's wireless network.

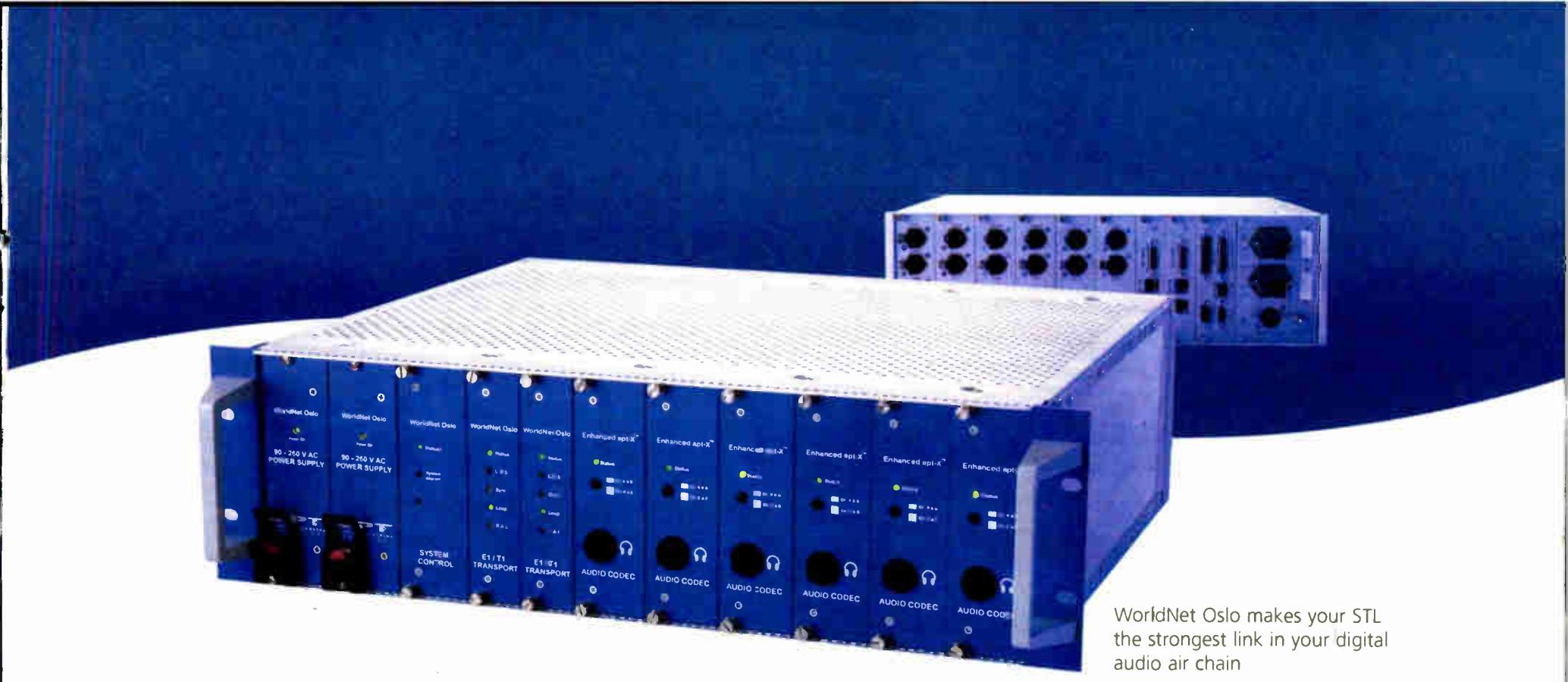
"This was the largest project to date for SAS," said Howard Mullinack, director of strategic development for the supplier. "It utilizes six SAS 32KD digital audio mixer/router frames providing a total of 3,072 inputs and outputs, with 37 Rubicon consoles.

"All-news and talk formats are by far the most demanding in terms of features, intercommunication requirements and custom control features," he said. "For the all-news studios, SAS integrated the main 40-slot consoles with five smaller consoles that each have the ability to take themselves directly to air, reducing the workload of the main host at the console. Every console has a fully integrated intercom to all other consoles and editor stations.

"The architecture of the system provides extensive back-up and distribution of resources to eliminate single-point-of-failure concerns."

As befits longtime competitors now under common ownership, each station has its own side of the studio floor. On the north side, facing Wilshire Boulevard, KNX's studios ring the outer portion of the floor, though with corridors buffering the traffic noise from outside; while KFWB's studios form a near mirror image on the south side.

See INFINITY, page 24 ▶



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Infinity

▶ Continued from page 22

At the core of the facility are the two stations' newsrooms, with a zig-zag wall separating them. Each newsroom features a raised area for the editors, overlooking a line of desks for writers, anchors and reporters and the main studios beyond them. A pass-through window connects the editors' desks of both stations, allowing them to share information when needed.

Sakrison says sightlines were of key importance in the design.

"The anchors can see everyone they work with, from the editors to the traffic reporters to the talk show hosts," he said. "The writers are between the main anchor studios and the editors' area. Seven LCD TVs are mounted above the window to the main studio, including a 37-inch HDTV, which most of the newsroom faces.

"The feed desks are right next to the editors' raised area so live feeds can be coordinated face-to-face, which is needed when things are hectic during breaking news and election nights," he said.

Workflow was another consideration. Sakrison says while each studio is slightly different, similar rooms have the same basic equipment laid out in the same order, minimizing confusion in the fast-paced all-news environment at each station.

Each station's newsroom and studios also feature a color-coded decorating scheme: KFWB, as the flagship station of the Los Angeles Dodgers, gets walls and furniture painted light blue, while KNX's walls and furniture are painted a soft green.

Photo by Scott Fybush

KNX's old studio in Hollywood's Columbia Square building

Photo by Paul Sakrison

The SAS routers in place

Photo by Paul Sakrison

KNX's new studio uses NewsBoss, which Sakrison says enables tasks like multitrack audio editing and sharing audio between stations.

A distinctive feature of each studio is the colored countertop, which Sakrison says serves an acoustic purpose as well. "The countertops are covered with Marmoleum, normally a floor covering, which has a little bit of give to it, which dampens sounds from contact with the countertop. While the floors are carpeted, in the areas where the chairs roll, we also applied a lighter shade of Marmoleum," he said.

The stations now share a common newsroom computer system, the NewsBoss system, running on more than 100 new Dell desktop computers. Sakrison says the move from reel-to-reel tape and carts to the digital audio editor integrated into NewsBoss brought about big changes, especially at KNX.

"There's a learning curve, but we're able to do stuff we could never do before," he said, such as multi-track audio editing, an integral feature of NewsBoss, and the ability to easily share audio between the stations. Audio highlights of KFWB's Dodger games now reach KNX's audience directly through the NewsBoss system, instead of being recorded to cart from an off-air pickup of the KFWB signal, as they were at the old Columbia Square studios.

The new studios also make heavy use of JK Audio's Innkeeper PBX hybrids, for small phone-interview rooms. Behind the scenes, a new AudioVault automation system handles non-news audio.

KFWB was the first of the two AMs to move into the facility, arriving June 24 to join the FMs that began moving in this past spring. KNX was the last of the five stations to make the move to the Miracle Mile, closing out 66 years in Columbia Square with a special hour-long broadcast Aug. 12, followed by the sign-on of the new Wilshire studios.

Unlike the typical move, in which engineers hope listeners won't notice anything different, Sakrison says this one was meant to be obvious to the audience: "When we moved, the quality of the station's sound changed. It became considerably better."

For historic KNX/Columbia Square pictures, visit *www.knx1070.com* and click on "Inside KNX," then "History."

Scott Fybush is a frequent contributor to Radio World.

Gear Choices

A sampling of equipment used by Infinity Los Angeles AM.

360 Systems Instant Replay
3Com 2226 24-Port 10/100/1000 LAN Switch
Alesis Power Amps
Audioarts SDA8400 Dist. Amplifier-Quad
Baird PXL2 Satellite Dish
Behringer HA4700 Headphone Amp
Belar AMMA-2 Analog Mod Monitor
Belar CSA-1 Spectrum BW Monitor
Broadcast Electronics Vault2 AudioVault
Burk GSC-3000 Remote Control

CircuitWerkes AC-12/AC-1B Dialup Coupler
Comrex Matrix, Rack and Portable w/GSM
Corning Fiber Optic Cable & Connectors
Day Sequerra M2 IBOC tuner
Dell FP1703 15-inch LCD SVGA Display
Dell GX280 PC for NewsBoss, AudioVault, Internet and SAS
Delta SNG-1 Stereo Noise Generator
Denon TU-1500RDP AM/FM Tuner
Digidesign ProTools Digi002 Surface & IO

Digigram VX222v2 Sound Card for AudioVault/Newsboss/Production
Dixon NM-250 MKII Newsroom Mixer
DK Audio MSD200C PhaseScope
Dorrough Test Set 1200
Drake TV Modulators & Combiners
Electro-Voice RE27N/D Microphones
Enberg BA-12 Alert Monitors
Ergotron 28-171-200 VESA Monitor Arm
ESE Master Clock System
Eventide BD-500 Profanity Delay

Fostex 6301BEAV Cue & NF Speaker
Furman Power Distribution Strips
Goldline TS1RMX 1kHz Tone Generator
Harris SmoothLine Custom Studio Furniture
Harris Equipment Racks
Henry Matchbox HD
HHB CDR830 BurnIT Plus CD Recorder/Player
Intraplex STL-HD w/4140 & VF-75, T-1 STL w/Additional 7 kHz Channels
JBL 4408 & 4410 Studio Monitors
JK Audio Innkeeper PBX Digital Hybrid

Kenwood KTC-HR100/KDC-MP425 Air IBOC Receivers
Krone 6652-1-880-10 Punch Block 50-pair
LG DU37L230 37-inch TV LCD
Logitek 2VUB, 4VUB, BV6A Analog Stereo Meter Panel
Maglite RX3019 Flashlight w/ Charger
Marti SR-30 RPU Receivers
Middle Atlantic Rackmount Horiz Cable Mgr
Moseley SL9003Q-2S Primary STL
Moseley PCL 6060 Backup STL
Moseley MRC-1620CT Backup Rem Ctrl
Motorola MTR2000 RPU Transmitters
NewsBoss/BE Newsroom Operations Software
O.C. White Mike Booms
Patriot PRT-380AZ 3.5 Meter Fixed and PRT-380PLR 3.5 Meter Polar Mount Dish Antennas
PreSonus ACP88 Eight-Channel Compressor/Limiter/Gate
PreSonus Eureka Microphone Processor
Prolite On Air Lites
QSC Multichannel 70V Power Amps for Ceiling Spkrs 8-Channel
Raritan P2CIM-PS2/UPCED KVM Extender
Raritan UMT1664M KVM Switch 64-port

Sage Beta Brite 1036 EAS Reader Board
Samsung LT-P2045 20-inch LCD TV
Samsung LT-P266W 26-inch LCD TV
SAS 32KD (3 Frames) Audio Routing System
SAS Rubicon 8, 16, 24, 32 Audio Consoles
Sharp LC-13E1US 13-inch LCD TV VESA Mount
Sony PCM-R500 DAT Recorder
Symetrix Air Tools Backup Profanity Delay
Tascam MD350 MiniDisc Recorder
Telos Ass't Producer Talkshow Software
Telos One Digital Hybrid
Telos/Mitel Superset Screener Phones
Telos Zephyr Xstream Codec
Telos/SAS In-console Custom Line Selector

Orban's Latest Challenge To Cleveland

Orban Optimod 9400 AM Processor

SHIPPING JANUARY!! NEW!!

Orban has forever changed the sound of radio with its rich lineage of Optimod processors. The new Optimod-AM Model 9400 is no exception. This next generation combines processors for both AM Analog and AM HD into one inexpensive 2 RU box. The AM analog section is stereo and can be used to replace the 9100B (the 9400 fully protects CQUAM transmissions). Both the AM analog and HD processors can be set up independently – the only common processing elements are the AGC and stereo enhancement. The 9400 uses Orban's new PC remote control GUI and features a built-in Ethernet connection, analog and AES3 digital inputs and includes two sets of analog stereo outputs and two AES3 outputs to accommodate as many as four transmitters. Outputs can be switched independently to emit the analog-channel signal, the digital-channel signal, or a low-delay monitor signal suitable for talent headphones. This is IT!

9400 List $7,990.00 LowestPrice@bswusa.com OR CALL : 1-800-426-8434

orban

Omnia's Latest Dare To San Leandro

Omnia Multicast

NEW!!

HD Radio not only ups the ante in the sound department. It provides additional revenue streams by permitting you to broadcast more than one signal, and to send that signal down different simultaneous pipes. Omnia's Multicast is just the box to provide multi-stream processing! Exclusive Omnia SENSUS DSP technology conditions audio for HD Radio multicast, preserving clarity and dynamic range and dramatically reducing encoding artifacts. This cool box features proven 48 kHz, 24-bit audio processing platform with up to 384 kHz internal sampling rate, three band dynamic peak limiter with unique feed-forward/feedback design and intermodulation distortion (IMD) reduction, plus wideband AGC, signature Omnia Bass Management EQ with up to 12dB of bass boost and a simple and flexible remote control via serial, optional Ethernet or optional dial-up connections. Plus it accepts digital inputs from 32 kHz to 96 kHz. If you are multicasting, you need Multicast!

OMNIAMULTICAST List $4,310.00 LowestPrice@bswusa.com OR CALL : 1-800-426-8434

Omnia A Telos Company

HHB CDP-88 Single Rack Space CD Player

NEW!!

The top single-rack space CD player we carry, the HHB CDP-88 has everything you need for on-air playback or studio production work. With crystal clear sound assured by its 24-bit Delta Sigma D/A converters, virtually every type of analog and digital connection, and the unique ability to sync to World Clock at any frequency from 32 to 96 kHz (even in varispeed!), no other CD player on the market is as well equipped as the CDP-88. It plays CD, MP3 CD, CD-R and CD-RW discs, as well as being able to play unfinalized CD-R and CD-RW discs, making it THE most versatile player on the market. Additional features including a fader start interface, track intro and outro display modes, frame accurate cueing with jog sound, +/– 12.5% varispeed and displays for elapsed time, track time remaining and disc time remaining, make the CDP-88 a professional's dream come true.

CDP88 List $799.00 LowestPrice only $699!

HHB FIRST WE LISTEN

Broadcast Tools Transmitter Site Control

The Broadcast Tools, TinyTools WRC-4 web-based remote control delivers a powerful built-in web-server, Ethernet port, and four channels of 10-bit analog inputs with a large monitoring range. Features: TTL compatible digital (contact closures) inputs, SPST relays, open collector outputs, status indicators and a temperature sensor, and 4-email notification.

tinyTOOLS

WRC4 List $439.00 LowestPrice only $369!

Broadcast Tools Silence Sensor Alarm

The VAD-2 is a programmable two-input, multi-number voice/pager auto dialer, designed for dial-out voice message notifaction. Two dry contact inputs.

tinyTOOLS

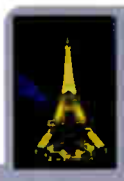
VAD-2 List $239.00 LowestPrice only $199!

Rugged, Powered Desktop Monitors

Fostex 6301BEAV are great personal powered monitors – small, rugged and affordable. Each speaker features a 4" speaker, built-in 10-watt amplifier, magnetic shielding, rotary level control, balanced XLR and phone jack inputs. Priced as each.

FOSTEX

6301BEAV List $249.00 LowestPrice only $169 ea!



New Product Alert #Trois

For those Franco American broadcasts where you don't actually have someone who speaks French, we present the "Eiffel" - an antenna tower that translates for you. Just speak! Bon!

Lexicon MX200 Multi-Effects Processor with USB

lexicon

The first to connect directly to your computer! The MX200 is a dual-processor, multi-effects processor designed for both live sound and studio recording. Featuring the famous Lexicon algorithms, the MX200 offers increased versatility with both dynamics processing (compressor/de-esser) and special effects such as reverb. The MX200 also adds a USB connection for direct use in computer-based recording applications. This allows it to function as a "hardware plug-in" – recognized within a VST-compatible DAW as a plug-in effect, but still operating as a dedicated hardware unit. The MX200 features independent controls for each processor. You get 99 presets including chorus, flanger, phaser, tremolo/pan, pitch shift, reverbs, halls and more. Plus you can choose two effects at once in one of four routing schemes: mono parallel, mono sum to stereo, stereo serial, or stereo parallel.

MX-200 List $299.95 LowestPrice only $199!

Industry's Most Trusted Leveling Interface

Henry Engineering Interface Amp

HENRY ENGINEERING

Matchbox HD is a high-definition level and impedance interface between unbalanced consumer RCA I/O and balanced pro XLR I/O. The Matchbox HD features bi-directional stereo interface between -10 dBv unbalanced and +4 dBu balanced, true signal-to-noise ratio of 100 dB, with 22 dB of headroom, total dynamic range of 122 dB, four independent amplifiers and a built-in AC power supply. It's ideal for 24-bit sound cards and other digital audio sources. 1/3 rack width x 1RU.

MATCHBOXHD List $225.00 LowestPrice only $179!

ACCESSORIES:
RMA Rackmount kit for 1-3 units $50.00

Single Or Dual CD Your Choice $199!

Gemini Studio CD Players

gemini

These affordable Gemini CD players are perfect for both on-air playback with Instant Start and Frame Accurate Search, or DJ operation with jog wheels and pitch controls. The CDX01 is a single CD player and adds a 3.5mm line input on the front side. The CD-200 is a dual CD player with separate 2RU controller and player rackmount units. It offers seamless looping and continuous playback functions. Common features include cue with preview, three mode time selection, coaxial RCA digital output, +10 song searching and pitch control.

CDX-01 List $309.95
CD-200 List $319.95 LowestPrice only $199 ea!

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PRODUCT EVALUATION

DC Software Adds Restoration Tools

Tracer Technologies' DC Live and DC Six Real-Time, Linear Restoration Expands Noise Reduction

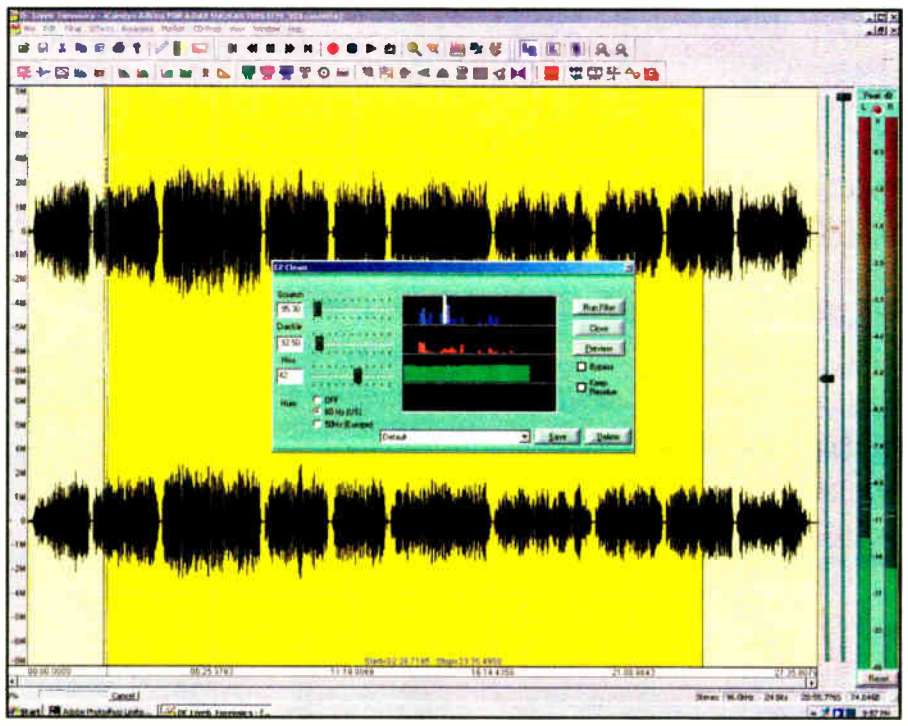
by Read G. Burgan

Digital audio restoration divides into two categories: real-time and non-linear. In the first category are products like CEDAR, whose hardware is legendary in its ability to restore audio in real time. Sonic Foundry's Sound Forge is a good example of the second category, where sound must first be transferred to computer, after which various restoration tools can be applied.

Each of these approaches has its advantages and disadvantages. With real-time processing, you can hear the digitally restored sound immediately, but you may not completely remove all offending noise from badly degraded sources.

Non-linear restoration requires that you first transfer the sound from its original source to a computer file. Once saved to hard drive, any number of tools and filters can be applied to clean up the sound including the manual removal of noise that eludes automatic processing tools. What you lose in time you gain in a potentially cleaner sound.

Tracer Technologies, creator of Diamond Cut, has developed a software product that provides real-time and non-linear restoration. Its latest entries, DC Six and DC Live, continue to provide restoration tools while facilitating new approaches to digital restoration.



The EZ-Clean Filter removes pops, clicks, crackle and broadband noise in one operation, while visually showing what it is removing.

Scratch, crackle and hiss

For those of us in radio, the real-time capability provides a means of airing live any source that can benefit from restoration technology. The most obvious applications are playing long-play records and reel-to-reel tapes.

By adding the appropriate filters to DC's Multi-Filter and then clicking on the Live mode, any audio coming into your computer's duplex sound card will come out of the output with the various digital tools applied.

Previous versions had several impulse filters along with a robust continuous noise filter. The current version adds more ways to remove noise.

The EZ Clean filter is designed to provide a "hands off" approach to removing pops, clicks and broadband noise. It contains three adjustable sliders for removing scratch (large impulse noise), crackles (small impulse noise) and hiss (broadband noise), along with a hum filter that can be toggled between off, 60 Hz or 50 Hz. What sets this tool apart from others is that aside from adjusting the degree of attenuation, the continuous noise filter (hiss) needs no other adjustment.

Traditionally broadband noise reduction has required the user to create a noise sample that is then used by the filter as a pattern in removing the noise. DC's EZ Clean filter actually identifies the pattern of noise and adjusts itself accordingly as it is applied.

Since it takes the filter some time to identify the noise and begin to eliminate it, one needs to add some typical noise content at the front of the sound to give the filter time to reach its maximum effectiveness. There is little doubt in my mind that this is the direction in which noise reduction will be moving towards in the future.

Similarly, DC has added a mode to its existing Continuous Noise Filter that also automatically evaluates the sound and applies its own noise reduction based on the noise content. Unlike the EZ Clean Filter, the Auto Spectrum CNF mode has additional controls that allow the user to fine-tune the degree of noise reduction, including Attack, Release, Attenuation and FFT size.

For the casual user, the EZ Clean filter or the Auto Spectrum CNF mode will almost certainly provide satisfactory results. But for the professional user, the Normal CNF mode of the Continuous Noise Filter is still probably the best means of ensuring the maximum removal of noise with minimal artifacts.

New modes, utilities

The Live version has an additional mode: Forensic AFDF. This mode applies an even more aggressive noise reduction that is able to extract sound from a higher noise environment but with a lesser fidelity and the possibility of some artifacts.

Increasingly the emphasis is on higher sampling and bit rates. If your sound card will support it, DC Six and DC Live support a sampling rate as high as 192 kHz and at 32-bit resolution.

Under its CD Prep menu, DC has added a "Find And Mark Silent Passages" utility, making it fast and easy to mark individual tracks for burning CDs.

Buried in the Batch File Editor is a new utility called "Auto Leveling." While similar to the usual Normalize function found in most digital audio editors, Auto Leveling examines the loudness of all of the sound files in the batch and then normalizes them to sound equal in volume.

Most normalizing tools simply increase the gain of the sound file based on the highest peaks. This utility evaluates all the files in the group to be batch processed and attempts to average out their RMS levels. For radio stations, this could help to provide a more consistent listening level when using disparate sound sources.

If you already use another digital audio editor, you should now be able to use your favorite DirectX Plug-Ins in DC Six/Live. Because the designers of DirectX Plug-Ins don't always follow the same conventions, it's possible that some DirectX Plug-Ins may not function under DC's DirectX interface. I found that most of mine worked. A small minority did not.

DC Six and DC Live let you log the output of the Live function directly to hard drive so the file can be saved and further processed if desired. DC Live also lets you log the original, unprocessed sound to a separate file. For those who need to archive the original unprocessed sound, this is a valuable feature. Essentially you can restore the sound in real time and still have permanent files of both the original and processed files.

DC Six and DC Live have been tweaked to reduce the demand on your computer's CPU. This means that when you do real-time restoration you will be able to chain more plug-ins before experiencing glitching, without having to upgrade your computer. It also means that in many cases the time for non-linear processing will be even faster than before.

As with past versions, DC Six/Live contains presets that make it easy to use tools and filters with little or no previous experience. The 400-plus page user's manual is a great source of information for questions related to audio and digital audio including record equalization curves, and even mundane information such as resistor color codes.

Generally, one expects to pay a fair amount of money for digital audio plug-ins dedicated to noise removal. Diamond Cut Productions provides noise reduction tools and a digital editing suite with audio tools like equalization, compression and reverb for less than a set of noise removal plug-ins.

DC Six and DC Live share a core of impressively effective restoration tools. DC-Live adds high-powered tools aimed at forensic applications and comes at a higher price tag: $1,399 for DC Live vs. $199 for DC Six.

Read Burgan is a freelance writer and former public radio station manager specializing in digital audio restoration. Reach him at (906) 296-0652 or via e-mail at rgb@chartermi.net.

Product Capsule: Tracer Technologies DC Six And DC Live Digital Audio Restoration Software

Thumbs Up

- ✓ Real-time processing
- ✓ Non-linear processing
- ✓ DirectX support
- ✓ Supports up to 192 kHz/32 bit processing
- ✓ Great presets and user's manual

Thumbs Down

- ✓ Some DirectX Plug-Ins may not be supported
- ✓ Chaining several Direct-X filters that perform complex operations may result in latency of several seconds even on a fast computer.

Price: $1,399 for DC Live; $199 for DC Six

CONTACT: *Tracer Technologies in Pennsylvania at (866) 260-6376 or visit* www.tracertek.com.

Brauner Releases Phantom Anniversary Edition

TransAudio Group, U.S. distributor for Brauner Microphones, is offering the Brauner Phantom AE anniversary edition mic to commemorate the company's 10th anniversary.

The Phantom AE is a limited edition of the Brauner Phantom C but with a black and gold finish. Features include a fixed cardioid pattern suitable for lead vocals, voiceover or spot instrument application with 8 dBa self noise, 28 mV/Pa cardioid sensitivity and 142 dB maximum SPL at 0.5 percent THD.

Like the Phantom C, the Brauner AE ships with a matching shockmount, aluminum case and certificate of authenticity.

For more information, visit LasVegasProAudio.com *or call (702) 307-2700.*

Royer Labs Debuts R-122V Ribbon Mic

Royer Labs added the R-122V vacuum tube ribbon microphone to its R-Series line. The company says it is a limited production mic.

The R-122V is compact, monaural and bi-directional, and uses the large-ribbon transducer assembly found in the R-121 and R-122 active ribbon mics. It exhibits a flat frequency response, and provides an output of –29 dB, which the company says is approximately 25 dB hotter than an R-121.

The R-122V's offset-ribbon design positions the ribbon element toward the front of the microphone body, enabling high SPL handling on the front side of the instrument, with the option of a slightly brighter response when recording via the mic's back side (three feet and closer; phase reversed in this position).

The R-122V uses a NOS (new old stock) U.S.-built military 6AU6 vacuum tube and the company's toroidal ribbon matching transformer. A Jensen 8:1 ratio output transformer provides an electrically isolated, fully balanced output signal. The active circuitry provides impedance to the ribbon element, which prevents over-damping of the ribbon element. The company says the R-122V receives an extensive burning in procedure to assure proper settling of the vacuum tube.

The mic uses a low-mass, 2.5-micron aluminum ribbon. Its offset-ribbon transducer assembly incorporates Neodymium magnets in a flux frame, which forms a magnetic field while reducing magnetic radiation.

Additional features include a gold finish, dedicated power supply and XLR connectors as part of the included cable set.

For more information, contact Royer Labs in California at (818) 847-0121 or visit www.royerlabs.com.

Orban 9400: Processing for Digital, Netcast

Orban debuted its DSP-based AM audio processor Optimod-AM 9400, which contains two processing chains for AM analog broadcasting and netcasting/digital radio broadcasting.

The only processing common to the two channels is the AGC and stereo enhancer. Beyond this front-end processing, each processing chain has its own equalizer, five-band compressor/limiter and peak limiter, which the company says are optimized for their own intended transmission channel.

The analog chain peak limiter uses Orban's multiband distortion-canceled clipper and overshoot compensator, while the digital chain uses a low-IM look-ahead limiter to cooperate with low bitrate codecs like the HDC codec used in the Ibiquity HD AM system. Both processing chains are stereo, making the 9400 suitable for C-QUAM AM stereo installations.

"We realized early in the 9400's design process that AM stations need more than just AGC and peak limiting on their digital channels," said Bob Orban, vice president and chief engineer in the announcement.

"Particularly because of the preponderance of talk on AM, these stations also need five-band compression and limiting to ensure spectral consistency and smooth source-to-source continuity on the digital channel. However, the analog an digital five-band compressor/limiters require different thresholds and time constants. Appropriate equalization settings and peak limiting technologies are different as well. That's why the 9400 is essentially two processors in one," he said.

Orban expects deliveries to start in January.

For more information, contact Orban at (510) 351-3500 or visit www.orban.com.

PRODUCT EVALUATION

DR-100 Transports in Shirt Pocket

AEQ's Mini Recorder/FM Tuner Includes File Transfer, iPod-Style Control Menu

by Ty Ford

The DR-100 from AEQ is an MP2/MP3/G.723 solid-state recorder and editor. It also is capable of time-scheduled recordings and modem transfers to a PC running the supplied client software.

This is one of the most accessorized mini recorders I've seen. There's a USB cable and software for file transfer from the DR-100 to PCs, but not Macs; a modem cable; a power supply/charger; an external mic; and earbuds.

The DR-100 runs for up to three hours on a rechargeable Lithium ion battery. The small size of the lightweight DR-100 allows it to be kept in a shirt pocket. Although not tiny, it's small enough to get lost in desk clutter. In addition to its 128 MB internal storage, the DR-100 also uses insert-able Smart Media cards. Audio can be recorded to either location and can also be transferred or copied in either direction.

The tiny recorder offers eight operating modes.

'Gameboy' audio

Some controls are surface mounted, while others are accessible by thumbing around on the front of the unit "Gameboy"-style. Along the left side is a switch for Record Lock; an LED-lit button for Record Ready and switching in the AGC; volume up and down buttons; and a key lock/On/Off switch.

On the other side are mini TRS jacks for line out and line in, and a mini USB jack for interfacing with PCs. Along the top edge are a built-in mono mic, mini TS mic input, a headphone jack and a memory stick slot for Smart Media cards. The bottom sports a modem port and DC/charger jack.

The face of the DR-100 has a central iPod-like control — a central menu button with four peripheral buttons — and five additional buttons. The controls let you navigate the small LCD display.

The OK button, mounted up under the LCD display, is the equivalent of an Enter button. The "C" button, next to it, cancels. The remaining three buttons are AB/Sel for selecting editing points, Pause/Cut for those operations and Play/Stop.

There are eight modes of operation: Record, Edit, Play, FM Tuner (with presets), Timer Record, USB file transfer, File Transfer by Modem and Setup. Within any mode there are a series of options that are accessed by navigating the iPod-like controls.

The DR-100 records in three formats; MPEG 1 Layer II (MP2), MPEG 1 Layer III (MP3) and G.723. Encoding format and other data are visible on the LCD display. MP2 records in mono or stereo, with sample rates from 32 kbps to 192 kbps in mono and 112 kbps to 384 kbps in stereo.

The DR-100 only records MP3 at 128 kbps stereo. The audio wasn't really broadcast quality because there were too many artifacts. Offering 256 kbps or higher MP3 stereo encoding would be useful. The G.723 mode indicates a mono 6 Kbps rate.

The DR-100 has two mics: a built-in mono mic and an external mono mic that plugs into a 1/8-inch mini mono external mic input. The external mic sounds much better than the onboard mic. To record in stereo, you need to use the line input via the TRS Line Input jack on the right side of the DR-100.

Gain adjustments

I decided on a bold experiment and reached for my beyerdynamic M160 ribbon mic and a special XLR-F to 1/8-inch TRS plug. To my surprise, the DR-100 preamp had enough gain for a good recording level, even for the low-sensitivity ribbon mic. The DR-100 input has both analog and digital gain adjustments. I found that using the +34 dB analog gain setting and adding another 10 dB of digital gain sounded a lot quieter than using the lower analog sensitivity and more digital gain.

I found the DR-100 manual to be semi-helpful. In trying to adjust the mic sensitivity, I thought the Up/Down buttons were the ones on the side. They changed the volume level in my headphones, but not the input sensitivity of the input.

Eventually I figured out that the manual was referring to the Menu Option buttons (Up/Down/Left/Right). With those, you also can adjust the analog sensitivity to provide either +12 dB or +34.5 dB of preamp gain. In addition, you also can digitally increase sensitivity up to 24 dB in 1.5 dB increments by increasing the digital stage. The manual is a bit vague as to where these gain stages are.

The Record Ready button on the left side of the DR-100 also functions as the On/Off for the AGC circuit. In relatively quiet environments, it works sort of like an expander. When you stop speaking, the background noise is suppressed. With the ribbon mic, however, the level kept fluctuating while I spoke. I swapped out to a Sennheiser 421 dynamic, but the fluctuations remained. Even the very hot Rode VideoMic caused the same fluctuations.

My advice? Steer clear of the AGC.

Editing

Only the MP2 files can be edited within the DR-100. You'll have to transfer the MP3 or G.723 audio elsewhere for editing.

DR-100 editing is a bit finicky. If you try to chop off the rear end of a file, a window pops up that reads "cannot select all the sound." If you squink up to just shy of the end of the file, it works. Otherwise, the two point cuts-only editing is quick and easy, but don't expect to cut syllables out of words. The editing is non-destructive, but you can edit and then "Wipe," which removes all of the unwanted sections and gives you a complete edited file.

I took the DR-100 out to a singer/songwriters' song circle and. with the permission of the performers, recorded 192 kbps, mono, MP2 using the external mono mic. Afterwards, I met up with fellow engineer Brian Glock to test the DR-100's export to PC capabilities. After installing the AEQ program on Brian's P3, 1.3 GHz Toshiba, running Windows XP, we transferred files to a 128 MB Smart Media card inserted in the DR-100.

Brian's older version of WaveLab 3.0 would not recognize the .S48 file extensions, even when we changed them to MP2. We had better luck with Sound Forge XP 4.5. We copied tracks, even changed them from MP2 to MP3, and had no problems playing tracks.

Within Sound Forge we saved one of the files as a WAV file and WaveLab was able to read and play it. Neither the PC or my Mac would read the raw files from the Smart Media card directly from the USB card reader. The only way we could access the files was after they had been imported through the AEQ software.

The system version on the DR-100 I received, Version 1.4.2.d Built 2005.03.14, was quirky. Once, when I switched the unit on, it had apparently been left in Edit mode and when I hit the OK button the display came up showing, "Abnormal excited. Resume the last." My choices were "goon" and "exit." Hitting "goon," which I later surmised was AEQ-speak for "go on," took me to an audio edit.

The DR-100 jammed while listening to an MP3 file and I couldn't turn it off. All I saw was Track 001, :39. :28. I finally popped the battery out and put it back in, but then the unit wouldn't power up at all. I was sent another unit and took a chance in trying to start up the first DR-100 with the new battery. It came back to life. I swapped out the battery for the original one and charged it up in the first DR-100 and everything worked fine. No files were lost.

In speaking with the AEQ rep in Florida, I got the impression the DR-100 was a new venture for AEQ. He said they were graciously accepting input on this first version. The neat thing about this sort of technology is that AEQ could issue software or firmware updates that could be downloaded from their Web site and transferred by USB to the DR-100. I'd like to see a more universal interface that wouldn't require AEQ client software.

Ty Ford is a frequent contributor to Radio World. Visit www.tyford.com *for more information.*

Product Capsule:
AEQ DR-100 Flash RAM Recorder/Editor/FM Tuner

Thumbs Up

- ✓Small
- ✓ Feature-packed
- ✓ Comes with all required cables and external mic

Thumbs Down

- ✓ Only PC-compatible at present
- ✓ Requires AEQ software for transfers
- ✓ Some editing foibles
- ✓ 128 kbps stereo MP3 data rate too low

Price: $699

CONTACT: AEQ in Florida at (954) 581-7999 or visit www.aeqbroadcast.com.

PRODUCT GUIDE

Studer Offers 'Gold' A827 Promotion

Studer USA is offering its A827 Gold Edition two-inch 24-track analog tape recorder at a promotional price of $29,995. The unit typically lists for $58,000.

The A827 Gold Edition comes with a stand-mounted remote control and autolocator, 24-channel meter bridge, RS-232 interface and tone generator. The company touts features such as optimized tape transport, which facilitates tape handling, and a Willi Studer namplate designating it as a Gold Edition model.

Under the terms of the promotion, A827 Gold Editions must be purchased by no later than Dec. 15, with delivery taken by Dec. 31. *Product sales must be handled directly through Studer USA and may be initiated by contacting the company at studer-usa@harman.com, or by calling (866) 406-2349.*

DaletPlus Integrates with Newsroom Systems

DaletPlus Radio Suite from Dalet Digital Media Systems is a broadcast and asset management system for digital radio operations. The company says it facilitates audio and newswire acquisition, search and retrieval and production and script editing with embedded audio, in addition to scheduling, broadcast and archiving.

The DaletPlus system features automatic capture via scheduled ingest or manual recording tools, and plays and edits audio material while recording. There is support for multiple audio formats and bit rates. The system is compatible with Soundblaster and Digigram audio cards.

Highlights include simultaneous broadcast over media outlets such as DAB and the Internet; and integration with newsroom computer systems other than DaletPlus, like Dalet OpenMedia or ENPS.

The AudioRecorder feature records up to eight simultaneous channels per workstation, and has tape deck-style controls to record, pause and fast-forward. Auto-Trim erases beginning and end silences. Cue points and markers are user-determined, as are default mix parameters for autosegues.

The DaletPlus NewsDepot plug-in is suitable for collecting field contributions by phone or ISDN, and MediaWall is suitable for live desktop monitoring of incoming audio and video feeds.

For more information, contact Dalet Digital Media Systems USA at (212) 825-3322 or visit www.dalet.com.

Call Screener Supports Telos, Gentner Systems

The Call Screener from Condron Broadcast Engineering is talk show software that enables a host to screen calls graphically on the computer, and control and interact with radio station phone systems.

Features available with the software line, such as remote control of phone lines, and now are enabled for the Telos Systems 2101 system and other versions of the Telos Talk Show System lines, as well as the Gentner TS-612. Mulit-user connections are a feature of the Telos phone systems.

For more information, go to www.thecallscreener.com.

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USER REPORT

Clear Channel Monitors HD With M4

by Josh Hadden
Director of Engineering and IT
Clear Channel Radio —
New York City/Long Island

NEW YORK It feels like just last year that most people were speaking hypothetically of HD Radio, and doing some long-range planning for it. A few rogue elements — NPR — were even installing the stuff!

Then suddenly a lot of us were rushing to implement IBOC; remember that quaint name?

The transmitter manufacturers were essentially ready for the onslaught, with fairly quick turnarounds. But when it came time for us to monitor what was going on, that was another story. A car radio with a tie-wrapped "black box" strapped to it, and an old 12 V laptop power supply was the only way to listen to your HD until recently.

When I went to NAB2005, I saw the **Day Sequerra** M series of HD Radio monitors and had to have one. When I was caught unscrewing one from a rack at the Harris booth, I was promptly ejected from the hall — but I was promised an M4 by the end of the show.

Then Ibiquity started to change the specs required for receiver licensing. And my long wait began.

It finally arrived three weeks ago, and I couldn't be happier with my choice.

Push to open

The M4 is not only slick-looking, with blue LEDs; it comes with rack ears so it can live in a single rack space.

The one-button press to toggle between analog and HD is great for allowing people to hear the HD signal "open up" on demand. Another one-button push splits your left/right output to analog/digital, which is awesome for setting up your diversity delay.

The monitor outputs come in traditional discrete left/right, and a balanced flavor of S/PDIF suitable for connection directly into any AES input you might have on your router or console.

Compared with earlier versions of HD radios, the HD signal acquisition time is great — typically about four seconds less than other receivers I've used. Its front panel also better indicates what's going on. There are three blue LEDs to indicate HD status: one for presence of multicasting, another for HD audio lock and a third to indicate the analog diversity delay is active in the Main Program Signal, which is affectionately referred to as baseball mode and is one reason for the delay in getting receivers out there.

Then there are other displays to indicate if you've selected a multicast channel, whether or not you've got the audio in some non-normal mode (mono or A/D split) or if you've changed from the default data display, for instance to album, artist, time or the other ID3 tags. Finally you've got LEDs for presence of audio for left and right channels, as well as a peak indicator.

The two-line display seems pretty familiar and has the info you want. The top line indicates preset channel (if set), frequency and service (AM, FM and HD or multicast). The second line displays call letters, and depending on what you've selected it will also show the ID3 tags (title, artist, album, comments etc).

Hadden receives the Day Sequerra M4. Day Sequerra President David Day stands at right.

DaySequerra also has apparently spent some time around DJs, as there is a front-panel headphone output with a recessed level control to keep away fiddling fingers, and you can lock the front panel so the selected station and service cannot be changed by said fiddling fingers.

There are some things I'd like to see added or changed, although I should point out I've already asked for a few changes, and I understand that they are being incorporated into the next release.

A great addition to the M4 would be some alarm outputs; perhaps loss of HD carrier, loss of SPS (Secondary Program Service) audio and things along those lines.

I see the M4 as more of a monitoring tool, as opposed to a receiver for the PD's office, and because of this I think some of the functions on the selection buttons need to be smoothed out. For example pressing the mode button when on the MPS channel puts you to the SPS channel, which is what you'd expect. But push it again and you're in regular FM analog only mode as opposed to HD. I'd like to be able to toggle between MPS and SPS quickly, especially given that this receiver is primarily for HD anyway.

I'd also like to have a display mode so that the ID3 tags would get scrolled constantly instead of having to manually step through each one.

Tripped

A few weeks ago we had a power sag here in the city, and several of our transmitters tripped momentarily. So as I tuned around, I wasn't surprised that my HD carriers were off — except it seemed like *all* the HD carriers in NYC were off. I went back to MCR and the HD receiver there, made by another manufacturer, seemed to confirm that there were suddenly no HD carriers in New York, a bit hard to believe. As a guess, I unplugged the receiver, and suddenly HD was back.

Ultimately it turns out Ibiquity didn't put in a reset line or brownout protection on its decode chipset, so you have to power-cycle any HD receiver if you take a power hit. This needs to be corrected by Ibiquity with a reset line incorporated into all receivers.

Given that everything is firmware-driven, I'd like to see some HD signal diagnostics built in so I can use it like a mod monitor — BER, ID3 tags, RSSI, Ethernet port for remote monitoring, etc. I'd also like to see the ability to Flash stuff because we all know there will be more changes coming, driven both by consumer suggestions and Ibiquity tweaks.

For more information, including pricing, contact Day Sequerra at (856) 719-9900 or visit www.daysequerra.com.

USER REPORT

Goldeneagle HD Relays Signal Info

Greater Media Uses 'Smart Mod Monitor' For Taking, Recording Off-Air Measurements

by Paul Shulins
Director of Technical Operations
Greater Media Boston

BOSTON The box from **Audemat-Aztec** in Florida arrived just a couple of days ago, but I had downloaded the user manual weeks ago, in hopes of shortening the learning curve on this rather sophisticated piece of monitoring gear.

As it turns out, it was painless to get going, and Tony (the guy who literally wrote the book on it) was happy to take my call and answer a few questions. In less than an hour I was able to look at some parameters on my five FM stations in Boston I had never been able to see.

The Goldeneagle HD comes in a few flavors: AM, FM, AM HD, FM HD or all of the above. It is one of the first devices to hit the market that can actually make precise off-air measurements of many parameters of the station's performance and record them, allowing detailed analysis of both analog and digital RF and audio signals. Think of it as a "smart modulation monitor" that has capabilities far beyond most rack-mounted mod monitors you may be used to.

Physically it is a 2 RU device, and requires an RF sample or connection to an antenna for direct off-air monitoring. I am a big fan of measuring signals right from transmission line samples at the transmitter, but I am told that off-air monitoring can also be meaningful if you have a clean multipath free signal at the receive antenna.

Having said that, the physical location of the device is somewhat irrelevant, due to the many ways available to access the information remotely, the most useful being the network interface. By running a small utility on your PC, you can access the Goldeneagle's real-time, high-resolution graphics via the Internet, and connect to your unit from almost anywhere.

My unit came equipped with an FM analog tuner and an FM HD tuner, the optional LCD touchscreen on the front panel and a relay card to provide dry contact closures for alarms. (This will be supported in the future with the next software revision.) I found the LCD touchscreen a little difficult to operate, but in reality, it is not used much after the initial setup.

Goldeneagle HD monitors and graphs FM analog signal strength, pilot and RDS injection and HD Radio signal-to-noise ratio.

Continuous measurements

Now for the good stuff. Log in through the network and initiate an FM scan. The entire FM radio market comes back depicted as a spectrum with each station showing up with signal strength, call letters and color-coded graphics indicating whether the station is analog, digital or both, along with RDS information.

This scan alone can tell you a lot about the market, but the real value of this product is that it can make precise measurements on many stations automatically and continuously, and also alert you via e-mail, telephone or text messaging if the parameters you select fall out of tolerance.

The ability to set the thresholds for any of these alarms is impressive. The alarms also have built-in timers and definable upper and lower thresholds and hysteresis settings, so alarms will not continue to generate if the parameter you are looking at is on the "hairy edge" and would otherwise trigger multiple annoying alarms.

A few of the useful parameters the device will monitor and graph include FM analog signal strength, pilot injection, RDS injection, HD Radio signal-to-noise ratio, total analog modulation and analog audio. In addition to the audio output connections on the rear, the Goldeneagle will generate a real-time audio stream of any station you select (analog in one channel and digital in the other), so you can hear the station on your PC wherever you are.

During audio streaming the device stops scanning and recording data from your list of stations; but the program gives you fair warning.

If you are running HD Radio, a useful feature is the monitor's ability to analyze the analog and HD Radio audio as received off-air, and display analog vs. digital time alignment information. It takes a few seconds, but you are able to set your time diversity accurately, right to the exact frame. It also provides information as to the relative amplitude of the analog audio with respect to the HD Radio audio.

Soon a real-time spectrum analysis plug-in will be available, adding to the utility of this powerful tool.

I miss not having the ability to print out hard copies of the data, and it would be nice to be able to pull up archived information older than a day. I am told these items may be addressed in a software revision.

Careful thought has gone into this product, and if nothing else it provides critical real-time information about our HD signals that up until now has not been available to us.

For more information, contact Audemat-Aztec in Miami at (305) 692-7555 or visit www.audemat-aztec.com.

TECH UPDATE

Logitek Adds 96 kHz Support To Audio Meters

Logitek Electronic Systems updated its audio meter line with support for 96 kHz sampling rates in its Super-VU and Ultra-VU meter displays.

The company says this compatibility is important for professional audio facilities mastering audio at 96 kHz, and for broadcast production rooms using equipment such as audio editors, PC cards and CD recorders that sample at this speed. By matching the higher sampling rate in its meters, Logitek says users will not have to downconvert signals and risk loss in quality to obtain accurate metering.

Logitek Ultra-VU

Logitek models include analog (mechanical) meters such as the Bright-VU series, used for confidence monitoring; the Tru-VU series, which offers VU plus peak in a curved display; the Super-VU series, which offers higher resolution and various operating modes; and the Ultra-VU series, shown, which offers the highest resolution and operating modes.

Logitek says its meters use digital signal processing for precision metering that conforms to international ballistics standards. All meters except the mechanical versions are available with a choice of analog or digital input; digital inputs can be AES or S/PDIF. Some meters offer both analog and digital inputs.

The 96 kHz sample rate support is available in Super-VU and Ultra-VU models, including units packaged for surround monitoring. Other meters with digital inputs, such as Bright-VU and Tru-VU, do not currently support 96 kHz sampling rates but are available with sampling rates up to 48 kHz.

For more information, including pricing, contact Logitek in Houston at (713) 664-4470 or visit www.logitekaudio.com.

USER REPORT

WIT easi-8 Interfaces to Generator

by Mario Hieb, P.E.
Broadcast Consulting Engineer

SALT LAKE CITY Bill Gillman was teaching college level electronics at age 21. At 24, he became director of engineering at Gentner Communications and while there designed telephone hybrids, remote control systems and the world's first digital audio processor.

Bill has since partnered with fellow Gentner alumni Chris Clark and Kevin Davis at **WIT Inc.**, and they've just released the easi-8 remote control.

The easi-8 is a versatile Ethernet-based remote monitoring/control system. Its package is different than your typical remote control's. At a half-rack wide, it has eight relay contacts and eight input channels and is self-contained. There are no external interfaces or relay panels. More units can be ganged together in multiples of eight channels.

Two units can be mounted side-by-side in a 2 RU rackmount, and a special rackmount allows you to mount the unit in the back of your rack, with the connectors clearly accessible. It can also be wall-mounted, perhaps next to your generator or inside your transmitter, with included brackets. Fat, multi-pair cables are not required; just one 10/100Base-T cable. You can even go wireless via a Wi-Fi network.

The easi-8 is IP-based and has a single RJ-45 connector on the back. It has two 12 V power ports on the back. Use a wall-wart on one port and a gel-cell battery on the other; either can power the unit. Metering, status and relay connectors are handy, screw-type Phoenix connectors, my personal favorite. Easi-8 comes with a temperature probe that plugs into, and is powered by, one of the metering inputs.

Inside the box

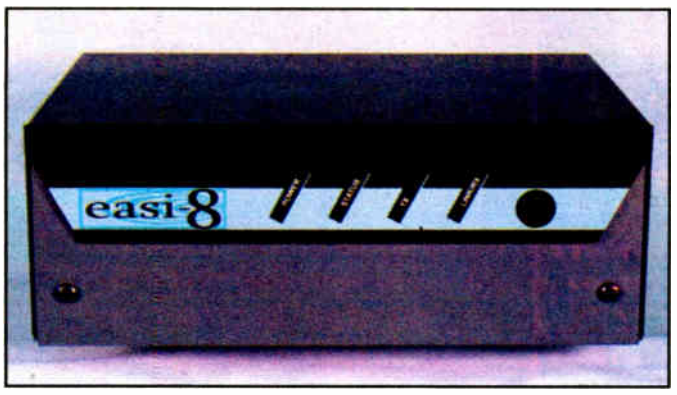
The heart of the unit is a Linux-based Web server. The unit is programmed, controlled and monitored via any Internet browser. Included is a crossover cable if you want to connect directly to your computer. NTP allows multiple easi-8 units to be synchronized. A simple yet powerful macro language lets you program custom control sequences that are beyond standard product offering.

The eight inputs can be configured for either analog metering, or a binary status based on a voltage level. In the analog metering mode, the input voltage can range from 50 mV to 160 V, AC or DC; no need for those pesky outboard voltage divider networks. A temperature probe can measure temperatures from -25 to +125 degrees Celsius. Run audio into the easi-8 and it will work as a silence sensor.

The eight relay contacts are Form C. They are either normally closed or normally open, and are contained within the unit. Sixty-four user-defined time-of-day events are triggered from within the easi-8 and can be synchronized to other units via NTP.

The user interface consists of a display screen via any computer with an Internet browser. The metering and status limit setting is sophisticated and can trigger relay closures, set alarms and even send you an e-mail. One of my favorite features is something the easi-8 does *not* have: the troublesome local/remote switch. You know, the one you forget to set to "remote" before you leave the transmitter site?

One example of a possible application is interfacing the easi-8 to your generator. The easi-8 could be located directly at the generator and connected via to your network via a Cat-5 cable or a Wi-Fi link. The easi-8 could directly monitor three phases of utility power. If any of the phases were to drop below a pre-programmed voltage limit, the easi-8 could start the generator. The easi-8 would then monitor the 3-phase output voltage of the generator. Once up to voltage, the easi-8 would switch the generator on-line.



While running, the easi-8 could monitor generator fuel level, engine temperature and oil pressure. When utility power returns for a pre-determined length of time, the easi-8 could switch the load to utility and shut off the generator after a cool-down period. After shutoff, the easi-8 could monitor the charge level of the battery and send out an e-mail with a summary of the events.

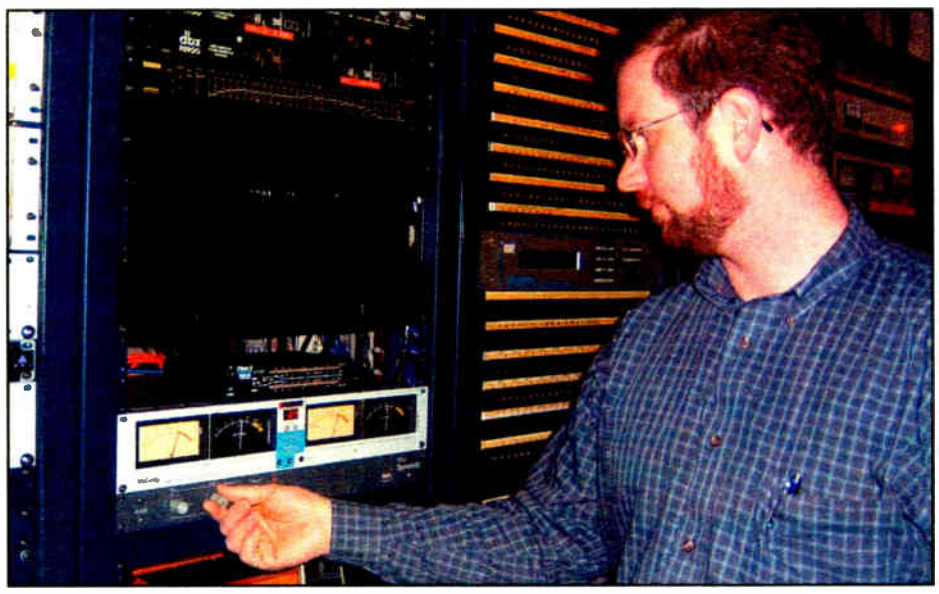
WIT Inc. says it plans to develop several accessories for the unit including a POTS line voice adapter.

For more information, contact the company in Utah at (801) 326-1300 or www.easi-8.com.

USER REPORT

CHIN Radio Likes Videoquip AVU-24

by Mike Evans
Chief Engineer
CHIN Radio
CHIN (AM-FM); CJLL Ottawa



Evans likes the variable brightness adjustmen on th AVU-24's dual LED bargraph array. The unit sits above the McCurdy test set and the Symetrix amp that Evans is adjusting.

TORONTO I'm a pretty lucky guy. I work just a few miles from the folks at **Videoquip Research Ltd.**, and I can attest that they are willing to work hard to help you out in a pinch or just chat about the daily grind. I have a long history of using Videoquip products and I cannot remember having a problem with any of them. So when I needed a new VU/PPM Meter I turned to Videoquip, and the AVU-24.

Most of my experience is with Videoquip's Phase 3 line. The AVU-24 can be sold alone as a rack-mount unit, or you can fit it with another Phase 3 product like a switcher or audio amp to enhance the operation of the AVU-24. It features three modes of operation: two-channel, two-channel plus Phase and Balance or four-channel.

Connect it

My AVU-24 was the first or second made by Videoquip, so it is a pre-production unit; as such an operating manual was not supplied. I really didn't need one, because the operation is intuitive. No matter how much my electronics school instructor tried to instill in me an appreciation for the manual, I still like to play first and read later.

The front has an input select switch and a mode switch. There are five LEDs labeled D1, D2, ANLG, 2 CH and +PB so you can surmise the operation by the front panel.

The most distinctive front-panel feature is the dual horizontally mounted LED Bargraph Array. It is over four inches long with a total of 106 segments and it has a variable brightness adjustment, which I like. The silk-screening on the front panel is top quality, clear and easy to read.

The rear has punch-outs for four connectors. The type of connectors is determined by your need. If you want a four-channel analog meter, you'll get four female XLR connectors. If you want a four-channel digital input meter, you can have XLR for balanced AES or BNC for unbalanced AES.

It's unlikely you'll want it, but you could get both: two balanced digital (XLR) and two unbalanced digital (BNC).

My unit being the pre-production model has two analog XLRs, one XLR and one BNC for digital. Videoquip is flexible; they will deliver what you need.

The analog input is normally calibrated for +4 dBu to equal 0 VU but an internal jumper can set the calibration for 0 dBu to equal 0 VU. Digital inputs require no changes because they are set for digital standards.

Now to the part I like best, playing with the unit. Hook up your inputs, turn the unit on and you are almost done. With my unit, I just connected up my AVU-24 in parallel with a McCurdy ATS-100, a trustworthy old workhorse I use on a daily basis.

The source for both meters was a Videoquip RS6400 64 x 32 analog audio switcher that serves as the heart of our facilities at CHIN Radio Toronto. From the rack room I can monitor most signals in the station, or rather anything I think worthy of routing to our production or on-air rooms.

I used the input switch to toggle to the ANLG input, and the ANLG LED lights show what I have selected. The first thing I noticed was the calibration was dead-on, but then I saw that with the AVU-24 and its precise scale, there were a couple mono signals that weren't balanced enough to my satisfaction.

Trying to balance signals with a tone with the ATS-100 was bad enough; the meters are eight inches apart so you have to move your head side-to-side to line up the levels. With the AVU-24 it is a breeze. The meters are on top of each other and it is simple to line them up vertically.

Better yet it is possible to discern balance with a dynamic signal. Try that with a moving needle VU. Hitting about 0 VU you have almost 3 inches of LED! With a spec of .5 dB per segment at levels over –38 you have a precision instrument. VU and PPM are displayed at the same time and there is a peak hold feature activated by holding the Input switch down.

While I did not connect the digital inputs, the mode switch allows you to display four channels at the same time. I have seen many demonstrations of this and I prefer running dual-channel to get the extended display. In four-channel, they split LED in half to show four separate meters with reduced resolution.

The Mode switch also has a +P/B position, and when activated it uses the 2 cm of the display to show phase and balance information. The top LED bargraph displays the phase difference in degrees from 0 to 180 and the bottom bargraph has a swing LED that moves from 0 in the middle to either the left or right. The further from the center you go, the greater the audio strength on that side.

I used the unit in this mode most of the time because it gave me the large scale and the increase of balance and phase.

As a result of my testing, we purchased the AVU-24, though I returned my unit to get it retro-fitted for four analog inputs.

I recommend this unit for anyone needing a precision meter.

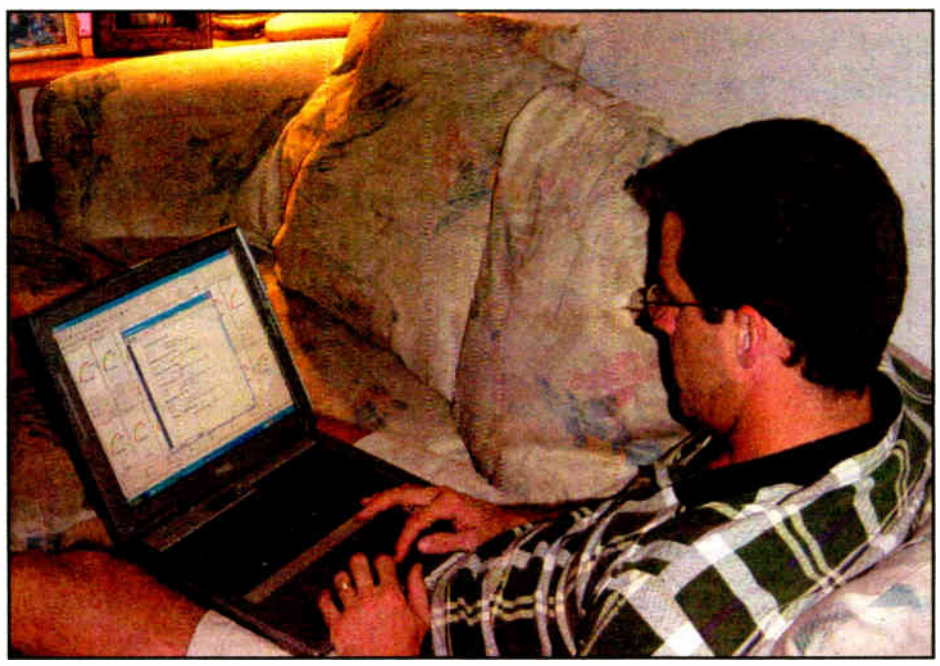
For more information, including pricing, contact Videoquip Research Ltd. in Toronto at (416) 293-1042 or visit www.videoquip.com.

USER REPORT

Burk Takes the Wheel for ESPN Radio

Gray Finds ARC-16's AutoPilot Software Has 'Come a Long Way From the Barber Pole Graph'

by Bobby Gray
Chief Engineer
WHOO(AM)/WAMT(AM)
ESPN Radio



The ARC-16 enables Bobby Gray to check on station readings from home.

ORLANDO, Fla. I was first exposed to the available software for **Burk**'s line of remote control products when I had a hardwired TC-8 system. I wanted to eliminate the missed log entries and operator errors while taking the readings they did actually log.

The TC-8 software was simple; it ran in DOS and logs were printed to an old dot matrix printer I scrounged from the traffic department. It was 1993 and I thought it was coolest thing in the world. But I had only been a chief engineer for four years and I needed all the help I could get.

Fast-forward about four years. I had been blessed or cursed — depending on how you look at it — with our acquisition of two local stations won in bankruptcy court. The excited owners wanted everything moved into my existing facility before they got back to the station after leaving the courthouse.

We all know that routine. I was given a moderate budget to build a pair of new studios and gather the necessary equipment needed to get it all up and running. I needed a remote control that would handle the operation of three transmitters and a complicated AM phasing system.

The ARC-16 had replaced the TC-8 by this time and seemed the right choice. I installed it and went to work figuring out how to use the DOS-based AutoPilot software that came with it.

Welcome display

The new ARC-16 system was robust and built well. Most important to me, it had a display on the front. At the time, the other contenders in the remote control market either didn't put displays on their product and they had to be programmed with a local telephone, or they had a tiny LED alphanumeric display that was hard to read.

Along with my new remote control system came software I had never seen. I remember thinking that naming a piece of software AutoPilot took a lot of guts because I couldn't imagine it would actually think for me instead of simply reporting a condition and waiting until I issued a command.

The simple "if-this, then-that" style of programming made it a joy for a non-software guy to set up. It appeared as though much thought had been put into what I may want to monitor, what I may want to turn on or off and its ability to execute actions I may want to perform while somewhere else.

The more I played with it the more I thought about doing with it. I was like a crazy man. I had Marti receivers hooked to it. The remote crew not only loved being able to call the Burk at the transmitter site to get a signal strength reading from the CR-10

See BURK, page 35 ▶

Burk

▶ Continued from page 34

meter output, but also hearing the quality of the audio being received, as I had connected the receiver audio to the Audio Monitor function on the Enhanced Speech Interface card inside the ARC-16.

I had STL receivers hooked to it, as well as backup transmitters, generators, tower lights, even a motion detector mounted on the outside of the building would cause an alarm when anyone got close to our door.

My first wife accused me of having an affair with the ESI card female voice because I was on the phone with it more than I was ever on the phone with her. I had to explain to my wife that "she" was always calling asking how she could help me out and telling me what "she" had already done to do so.

Selling a pattern change

When I finally ran out of things for the software to do for me at the transmitter site, I went about getting an ARC-16 for my studios.

We were using a pretty sophisticated automation system, but like any machine, it would stop once in a while. The silence sensors would cause an alarm and my bag phone would ring. I could raise the channel and send a Play Next command to the automation system, and it would. Occasionally, I would secretly issue a Play Next from the car on the way home from a nightclub at about 2 a.m. when I had heard a song that was on too many times that day.

At one point, I had two ARC-16s hooked to each other via modems on a permanent basis. I was able to use the automation system to issue a "closure" pulse at a certain time by playing a scheduled cut. This closure was wired to a status input on the studio ARC-16. I used the AutoPilot software to acknowledge the change in status and issue a command to the ARC-16 at the transmitter site executing our pattern change. No more dumping the carrier during paid spots.

When our GSM realized we had this capacity, he actually sold the pattern change to a local electrical contractor. We were getting $25 every time we swung the pattern around and the system did it in about two seconds right on cue at the end of the 10-second sponsored read. Being able to glance at one screen and see everything going on has always appealed to me. Meter parameters, meter colors, raise command text, lower command text, status text — all configured by the user.

Over the years, AutoPilot software has only gotten better. We've come a long way from the "barber pole" horizontal bar graph in the original DOS version.

AutoPilot 2 had many user options I never got the chance to try. AutoPilot 3 is soon due, from what I understand, and I am anxious to get my hands on it; though these days, I am being careful about how much I let it do. The AutoPilot versions keep improving. As soon as they teach it to fix mic cables, I'm out of a job.

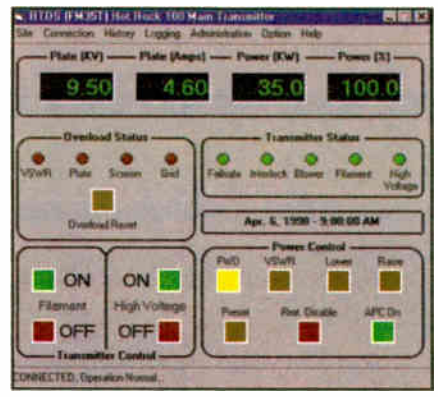
For more information, including pricing, contact Burk Technology in Massachusetts at (978) 486-0086 or visit www.burk.com.

TECH UPDATE

BE Has RTDS Software Option for T-Series

Broadcast Electronics' Remote Transmitter Diagnostic System software enables dial-up access from the studio PC or a laptop to data points necessary to track transmitter settings and performance. RTDS is an add-on option for the company's T-Series of transmitters; it can be installed at the factory or in the field for T-Series transmitters ranging in power from 5 kW to 35 kW.

The remote diagnostic software emulates the front panel of the transmitter, so station personnel can determine transmitter operating power, status and efficiency. RTDS also offers readings at the IPA and exciter level, checks voltages and overloads and sets calibrations.



If the transmitter site has only one phone line, an optional switch will recognize those calls made to the transmitter and connect the call for monitoring. Additionally, RTDS monitors multiple transmitters from one connection.

For troubleshooting problems, RTDS can be set up to take "snapshots" of readings before, during or after an event. Data captured in the RTDS system can be exported as files in various delimited formats read by database and spreadsheet programs such as Excel or Access. Diagnostic data from RTDS loaded onto a computer program with graphing functions offers analysis for troubleshooting a problem or providing a baseline reference of readings for identifying problems in the future.

RTDS runs on a power supply separate from the transmitter, and operates despite power failures to the transmitter.

For more information, including pricing, contact Broadcast Electronics in Illinois at (217) 224-9600 or visit www.bdcast.com.

USER REPORT

Plan B Has Emergency Access Dial-In

Deluxe Models Add Password-Protected Call-In Feature, Enabling Live Announcements Direct to Air

by Daniel Slentz
Chief Engineer
WHIZ(AM-FM-TV)

ZANESVILLE, Ohio I became familiar with **Danagger**'s Plan B dead air prevention device for a high school LPFM build I did in Ohio. While the air staff and automation were reliable, I knew there would be times when there would be interruptions. I had read about this cool little rack-mount box and decided it would be a great investment.

In almost three years the Plan B has only been called into service three times. Each time it has worked flawlessly and listeners can't even tell it was online.

The latest offerings from Danagger are the Plan B Deluxe, loaded with all the bells and whistles; and the Plan B Basic unit, which is upgradeable to the Deluxe. Though I think Danagger could be more creative with its product naming, the company's products continue to be inventive.

The Plan B Basic is entry-level and built to be an auto-switcher for program audio loss with notification (dial-out) upon program audio loss. It also allows program audio interruption via voice coupler on "dial-in." This box is for stations already in possession of an alternate program feed, such as satellite, back-up STL, etc., in case of primary program audio failure.

The Plan B Deluxe is a 2 RU box that senses audio loss prior to processing and can replace regular program audio with a backup source — basically a radio station in a box. In its loaded configuration, you have a ton of options on how you want to use it.

Sound of silence

Plan B Deluxe operation is relatively simple. Program audio, analog or digital, passes through this box. When silence is detected — you determine the length on a setting — the box kicks into operation. It can switch to an active alternative feed, make a connection to an alternate feed or begin playing audio internally from a CD/DVD tray, Flash card or internal hard drive. It even recognizes dayparts to insert the appropriate replacement audio for the time of day.

When an audio program loss occurs and it takes over, it features the courtesy of making phone calls or sending e-mails to station staff members to inform them there's a problem and it has taken over, for you might never know from listening if it didn't call you. Because audio is processed passively, this box will continue to pass audio even if unplugged.

The Plan B Deluxe is a network-addressable appliance. It can now be updated remotely (over a net) to update audio files and make configuration changes. It can accept virtually any audio format you wish to drop into it.

I'd be remiss in not mentioning something important about the company. I met President Rob Robson at NAB in Las Vegas two years ago; Danagger usually has a small space with Crown Broadcasting in the radio hall.

I thanked Rob for a wonderful product and mentioned how I thought using the dial-out portion of the original Plan B could be improved by offering a voice-coupler for a password-protected "dial-in" to deliver emergency voice announcements via telephone.

By last year's NAB convention, this was a new feature on the Plan B Deluxe. I was impressed by his willingness to listen to, and incorporate, ideas. The "dayparting" feature was a suggestion from Mike Callaghan of Clear Channel's L.A. cluster. How many equipment manufacturers actually make what *you* want?

Currently standard on new Plan B Deluxe and Deluxe Plus models, the password-protected feature can be added to existing Plan B and Plan B Plus units with an $85 field-installable upgrade. The company urges Plan B owners to use the factory's toll-free number to determine whether their systems can be upgraded by this method.

With the recent natural disasters, the Danagger Plan B would have kept audio on remote transmitter sites after studios went down, assuming AC was still present and they were UPS- or generator-operational. In disaster situations, audio could have been delivered to the Plan B via disc, Flash card or download. Incorporating a small stereo mixer in-line with the Plan B and adding a portable laptop with a USB audio mixer could work in a pinch as a fully functioning air *and* production studio at a transmitter site.

The price on this unit, especially when considering the peace-of-mind factor, is fair. The five-year warranty demonstrates Danagger feels it has a solid product and will stand behind it. The Danagger Web site does a great job in detailing options and operation.

I've just taken the position of chief engineer for an AM/FM/TV combo and have just installed a Plan B Deluxe on our 50,000-watt FM. Installing a Plan B on our AM isn't far behind.

The Danagger Plan B Deluxe lists for $4,395.

For more information, contact Dannager Audio Works at (888) 892-8346 or visit www.danagger.com.

"Showcase studios take time, right? Not this time."

"'Challenging' didn't begin to cover it. Our showcase studios were to be located in the high-visibility West Edmonton Mall. With only six

weeks 'til our on-air date, our challenge was finding a manufacturer we could trust to deliver on our timeline.

"We'd almost decided on one of the traditional console/router companies; working 25/7, we could *barely* make our deadline.

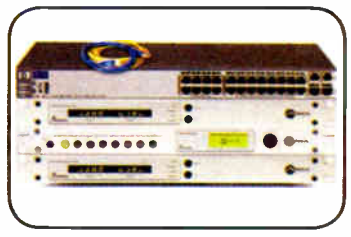
Then we found out about Axia IP-Audio networks.

"Axia gear goes together with RJ-45 connectors, so adding sources to the network takes almost no time. A few clicks and you're done! That produces a substantial cost reduction in terms of wiring

from room to room.

"And because the Axia system routes audio using ordinary Ethernet instead of expensive mainframes, the ease of adding to the network allows it to grow and change dynamically with our operations.

"When we decided to go with Axia, the router guys had a fit. They actually tried to tell us that the IP-Audio network would catch viruses! We laughed for days about that one.



"Our studios were finished with time to spare. The installation came together really well, and since going on the air we've been trouble-free.

"We've had several announcers tell us how much they love working with the Axia surfaces and how easy they are to operate. It's great to be able to setup and save multiple configurations that can be recalled at a moment's notice.

"Our experience with Axia has been all positive; we've had no audio glitches or dropouts whatsoever. I don't know why we hadn't gone this route earlier. Where we're installing new equipment, we're onboard with Axia."

— Owen Martin, Director of Engineering, Newcap Radio, Alberta, Canada

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USER REPORT

Cox Reconsiders Remote Control

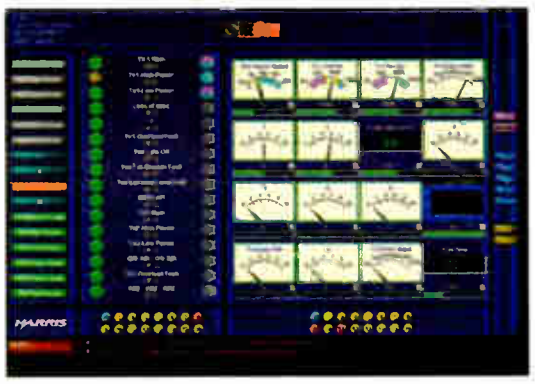
Tampa Cluster Goes With Harris ReCon System After Designing HD Radio Installation

by Roswell Clark
Director of Technical Operations
Systems Administrator
Cox Radio — Tampa

ST. PETERSBURG, Fla. Today's control and monitoring needs have grown far beyond what used to be acceptable. Not too long ago, if you had 16 channels of control, status and metering from point A to point B, you were content. After all, making sure the transmitter, tower lights and perhaps a generator were working within spec from the control room of one of the stations you maintained was fairly straightforward.

Perhaps a person was available at the studio end to take readings manually, someone who actually understood what those readings meant and how to put the backup transmitter on the air. At the transmitter site, connecting the control, status and metering channels was a time-consuming task, but it was the only way to connect the devices that had to be controlled.

Today there are many more devices to monitor and control, fewer people to take corrective action and less time to connect the devices that demand attention.



Consolidation has brought on the need to manage many more sites, sometimes with less technically savvy operators. Environmental conditions such as temperature or power quality increasingly are critical to maintain in a more silicon/computer-based operation. And the time available to connect the pieces of the increasingly complicated puzzle is becoming ever more scarce.

Flexible approach

The ReCon remote control and facility management system from **Harris** offers a solution for these concerns.

At the Cox Radio stations in Tampa, we met a crossroads when we began designing the installation of the HD Radio equipment. Our 16-channel control system was already overtaxed with items to which we wanted to connect. There simply wasn't available expansion room

See HARRIS, page 39 ▶

Harris

▶ Continued from page 38

in the system.

At the same time, we became aware of ReCon. What set this control system apart was that it was not just a point-to-point control system; it also was designed to interface with a variety of devices through different methods.

A simple serial cable connected to our Harris Z series transmitter brought out the control, metering and status indications. This cable took the place of the old multi-pair breakouts and the associated time it took to make the individual connections. Other devices with serial connections, such as Sage EAS boxes, also can be connected.

In fact, one of the new questions we ask potential equipment suppliers is whether or not they have serial control and if their protocol is available for our needs. So far there have not been any modern devices that do not have this capability.

SNMP (Simple Network Management Protocol) connectivity is supported, which expands the connectivity of the system to an array of IP-connected devices such as switches and routers, for instance. For legacy devices, a breakout panel that converts a serial connection to 32 channels of traditional control and metering is available.

Once the devices at a location are connected to the system, the view of the site can be custom-configured at the master control location. The ease of configuring the controls and metering through drop-down selections is a refreshing experience.

Ed Allen, transmitter supervisor for the Cox Tampa market of six FM stations, was able to install, configure and customize the control system at the first transmitter site location in a fraction of the time our traditional system took.

Because of the ability to custom-configure the views, he was able to have separate views for the operators and higher-level views for the technical staff. The ability to design corrective actions based on readings and status of the various devices promises to be an additional avenue of benefit.

On the studio end, Studio Chief Engineer Dylan Scott managed to create additional views of the Tampa market for the operators to use. Because Cox manages six stations from the facility, there is often the need to have a studio become a master control point for the other stations. In the past, this was unwieldy. With ReCon, this is no longer an issue.

An intuitive map is available for the operator to see the site in question. If there is a problem at that site, the icon changes color and the error is noted in text. By clicking on the highlighted icon a page view is brought up displaying the information for that site. The device in trouble continues to be highlighted until the alarm conditions are cleared.

As of this writing, we have installed only one site out of three for this year. We expect to have the other sites up before the end of the year, along with our EAS systems and direct connections to our UPS systems. Alarm, HVAC and network devices will be tested, as well.

For more information, including pricing, contact Harris Corp. in Ohio at (513) 459-3400 or visit www.broadcast.harris.com.

TECH UPDATE

Belar FMHD-1 Monitors HD, FM Simultaneously

The **Belar** FMHD-1 is an HD Radio monitor that decodes the HD Radio signal and analog FM signal at the same time, and is based on the latest decoder from Ibiquity. It displays status, data, time alignment and configuration information, as well as audio metering and RF and audio spectrums. The company says the 2 RU unit with 640x240 color LCD display and rotary encoder provides a detailed interface.

The FMHD-1 supports monitoring multiple audio streams and simultaneous monitoring of two streams with an optional second plug-in HD decoder. The unit's eight user-assignable analog audio outputs, and three assignable optical AES/EBU outputs provide support for Tomorrow Radio and 5.1.

In addition to an antenna input for monitoring off the air, the FMHD-1 has two RF inputs for transmitter site operation. The dual RF inputs allow for monitoring at installations using two transmitters to generate the combined analog/HD signal.

Older wideband analog FM monitors in the field may require pre-filtering to remove HD radio sidebands. The FMHD-1 provides two filtered analog composite outputs for driving these monitors, which the company says eliminates the interference.

The FMHD-1 has RJ-45 10/100 Base T Ethernet and RS-232 computer interfaces. When used in conjunction with Wizard for Windows software, the FMHD-1 can be viewed remotely with PC graphing and logging functions available. The unit also provides four user-assignable relay closures to indicate alarm functions.

Belar says the AMHD-1 is under development.

For more information, including pricing, contact Belar in Pennsylvania at (610) 687-5550 or visit www.belar.com.

TECH UPDATES

Tieline PFA201 Has Front-Panel LED PPM

The PFA201 Program Fail Alarm from **Tieline Technology** is suitable for detecting low or absent program signal levels, and will activate front-panel LEDs, a sonic piezo alarm and several onboard relays when certain preset alarm conditions are detected.

The PFA has an LED Peak Program Meter (PPM) on the front for visual recognition of program levels, and there are two Trip LEDs and a Fail LED that show PFA alarm status.

Features of the PFA201 include dual 10-LED PPMs for dual mono or left and right level display; two LEDs to a indicate left and right program-level Trip conditions; a Fail LED to indicate when a program fail condition has occurred; and a Reset button to enable the PFA relays and alarms to be reset.

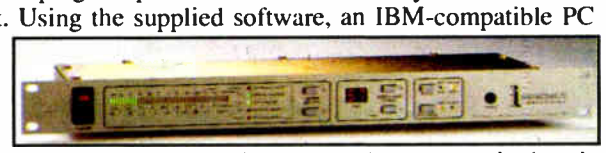
Additional highlights include an eight-way dip switch for setting the mode of operation; front-panel trim pots for trip level control and alarm delay control; and a DB-25 connector on the rear for relay contact connections.

For more information, including pricing, contact Tieline Technology in Indianapolis at (317) 845-8000 or visit www.tieline.com.

Inovonics 540 Measures Subcarrier Injection Level

Inovonics' 540 is a tunable monitor/demodulator for analog and digital FM broadcast subcarriers. It connects to the composite/MPX output of an FM modulation monitor to measure the injection level of subcarrier transmissions, and the subcarrier deviation of analog SCA program services. The subcarrier tuning range is 54 kHz to 99 kHz in 1 kHz increments.

RDS decoding is available as a plug-in option. The circuit assembly reformats RDS data to a serial RS-232 output. Using the supplied software, an IBM-compatible PC can decode and display the common RDS data groups.



Total, main-channel carrier deviation is monitored in the Calibrate mode, and the Input Gain control is adjusted to reflect the station's primary mod monitor readings.

The 38-segment bargraph display is peak-responding and features a peak-hold function.

For more information, including pricing, contact Inovonics in California at (831) 458-0552 or visit www.inovon.com.

2wcom A20 Offers Loggable Measurements

The A20 FM RDS/RBDS monitoring system from **2wcom** contains a measurement-grade tuner that measures FM signals such as total/peak modulation and pilot injection. The measurements are loggable and most can be set up with alarm thresholds to send an alarm e-mail if there is a problem using the integrated TCP/IP interface.

In scan mode, the A20 can listen to eight stations; the user can program different alarms on any station being monitored, and e-mail or use SNMP on these, as well.

Additionally, the A20 streams the received audio back to the user with an optional MP3 server module. The company notes that this feature enables engineers to hear what the A20 is listening to.

The A20 with integrated tuner can pick up signals off the air or via one of its MPX baseband ports. The user can hook them up and switch remotely among sources. There also are ports for Left and Right Audio; these can be used as MP3 sources too.

The company says an upcoming software release will enable the A20 to be used as a remote control.

For more information, including pricing, contact ViaRadio Corp. in Florida at (321) 242-0001 or visit www.viaradio.com.

ANT Offers RDF, Seeks U.S. Distributor

Italian remote control and telemetry company **Antenna Nord Telecomunicazioni** is seeking a U.S. distributor.

The company makes the RDF, a front end that is installed at the transmitter site and offers real-time signal monitoring. It can be connected to equipment in various ways, including parallel, in which signals are connected to the unit using cables, or via RS-232 or RS-485 where the RDF reads and writes I/Os through a serial port.

The company says it has developed a communication protocol bridge, the ANT130, that converts a known protocol to the ANT LAN protocol and vice versa. The ANT130 is field programmable. A driver is downloaded by a portable PC, and users can program which I/Os can be read or written from the connected equipment by using drag-and-drop operations.

Features include the ability to manage two communications systems, main and backup. For example, users can connect two PSTN modems; one will serve as the main modem while the other will backup in case of failure; or users can have a main TCP/IP connection and a GSM backup.

FCC P-channels or free 2.4 or 5.8 GHz channels also are usable for data collection; each RDF acts as a repeater for the next one so a direct line of site is not necessary between the control room and the rest of the sites.

For more information, email Mario Duchi in Italy at m.duchi@antgroup.it *or visit* www.antgroup.it.

Rohde & Schwarz UPV Offers Dual-Channel Processing

The Audio Analyzer R&S UPV from **Rohde & Schwarz** records and replays audio signals and is suitable for analog, digital and combined interfaces. It offers dual-channel signal processing and generation and a sampling rate of up to 192 kHz.

The instrument performs frequency response measurements, distortion and spectral display and analysis of digital interfaces. Several measurement functions can be performed and displayed simultaneously. The company says measurements in the audio frequency range are performed as true dual-channel measurements, cutting the measurement time for stereo applications.

The generators of the R&S UPV create analog and also digital (option R&S UPV-B2) test signals, such as sinewave signals, intermodulation signals, burst signals, noise, DC voltage and dual-channel sine wave signals.

Measurement functions on analog and digital interfaces include level measurements, selective level measurement, SINAD or THD+N measurement, THD, waveform function and FFT analysis.

For more information, call Rohde & Schwarz in Maryland at (410) 910-7800 or visit www.rohde-schwarz.com/USA.

NTI AL1 Has Real-Time Analyzer

The AL1 Acoustilyzer from **NTI**, part of the company's Minstruments line, is an enhanced version of the Minilyzer that adds a real-time analyzer, high-resolution FFT audio spectrum analyzer, delay time measurements and reverberation time measurements, while retaining audio analyzer functions of the Minilyzer such as including measurements of level, frequency and distortion, and cable testing.

NTI Acoustilyzer

A Minilyzer may be "cross-graded" to an Acoustilyzer by adding the MiniLink USB interface and software kit and then the "AL1 crossgrade" firmware kit. AL1 acoustics functionality also requires the MiniSPL calibrated measurement microphone.

NTI's DL1 Digilyzer for monitoring and measuring digital audio also may be upgraded for computer control and internal storage of data by the addition of a MiniLink interface and software. The DL1 also serves as a portable digital audio monitor, as it includes an audio DA converter, amplifier/speaker and headphone jack.

For more information, including pricing, contact NTI-Americas in Oregon at (503) 684-7050 or visit www.nt-instruments.com.

Sicon-8 Expansion Module Provides 16 Channels

The **CircuitWerkes** Sicon-8 is a dial-up transmitter site controller with recordable voice response and computer access capability. Features include eight independent channels of telemetry, status and control. The Sicon-8 Expansion Module can be added to the system for a total of 16 channels each.

Each telemetry channel provides a self-calibrating, auto-ranging analog input capable of handling 0 to +12 Vdc to 0 to –12 Vdc. The eight control channels feature independent relays for the raise and lower functions. The first six control channels consist of two heavy-duty SPDT relays — one for raise/on and one or lower/off — that can handle up to 2.5 amps at 30 VDC or 125 VAC. The company says these relays operate in momentary mode, so they are suitable for controlling equipment.

The last two control channels make use of two latching or momentary DPDT relays each. These relays enable the Sicon-8 to be used as an audio switcher. They also can be used for standard equipment control as well.

Voice recordable technology allows the user to record words and phrases in any language, although it comes with the most commonly used English phrases pre-configured. Additionally, a cell phone interface is provided.

The Sicon-8 also communicates with X-10 transmitter modules, which communicate over a building's existing electrical wiring. They can be plugged in around your site and equipment plugged into them can then be turned on or off.

For more information, including pricing, contact CircuitWerkes in Florida at (352) 335-6555 or visit www.circuitwerkes.com.

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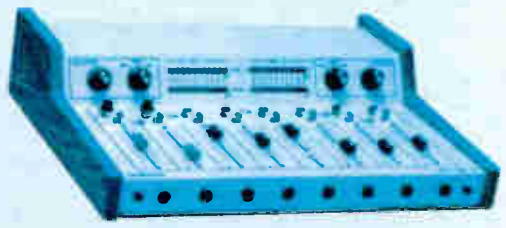

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Crown Air/Force/Starplus 96EX Air force automation system (?). The Starplus 96 Ex expansion KSU. Part SP4002-00 is some sort of audio processor...I think. Make offer. Call Jerry Evans 775-884-8000

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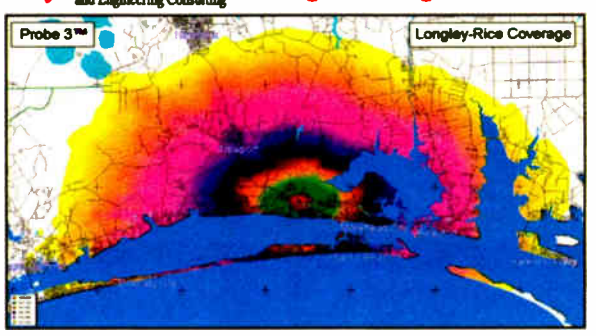

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◆READER'S FORUM◆

SAW Lives

Many of us were disappointed when SAW audio software was no longer being upgraded for standard PCs. SAW Studio was only available if you also purchased hardware.

For those production folks who liked SAW, you will be glad to hear that SAW Studio is now available in a basic version that runs on any newer PC.

The interface looks different but has many new features including a built-in audio mixer with automation. The basic concept of creating regions is the same.

There are free tutorials and a PDF manual. I had no trouble teaching myself the new program.

Production folks can download a demo at *www.sawstudio.com.*

Dr. David L. Barner
Chair
Communication Studies, Theatre and Art Department
Westminster College
New Wilmington, Pa.

CONELRAD Memories

Buc Fitch's article on CONELRAD (March 16), Jack Sellmeyer's reply and the picture of the Gonset Communicator two-meter transceiver in recent issues (*Reader's Forum*, May 13 and Sept. 28 respectively) brought back some old memories.

My first job in radio was at WKDN(AM) in Camden, N.J. Back in 1955 at the tender age of 15, I was sporting a brand new First Class Radio Telephone License. The station was a kilowatt day-timer on 800 kilocycles (at the time it was indeed kilocycles!). It was part of the Philadelphia area CONELRAD operation. The chief engineer was a guy by the name of Bob Houston.

As part of my indoctrination I was schooled in the retuning of the Raytheon RA1000 transmitter to 640 kc by changing the crystal and then manipulating the push buttons that activated the motor-driven plate tuning and link-coupled loading circuits. The ATU had taps that had to be changed for 640 operation. There were other stations that retuned to 1240 kc for CONELRAD operation. The red markings on the coils were for 640 operation; the black marked spots for 800 operation. There were three stations in each cluster.

The system used a voice-operated relay. When audio was fed via the telephone pair the carrier came on. It had about a five-second hold time so it (hopefully) stayed on for the intended 15 seconds, as long as there were no lengthy pauses between words and sentences. Audio was then fed via the telephone line to station B and then station C before it once again came around to us.

The system was tested once or twice a year after midnight. The several-hundred-foot walk to the ATU and the moving of taps by the light of the moon or the darkness of a storm and a six-battery flashlight were always interesting.

The Gonset Communicator was my introduction to two-meter ham operation. It was the first truly portable one-box ham station.

Thanks for providing the opportunity for a brief stroll down memory lane. It's hard for me to believe I've been moving taps on coils for 50 years.

Jack Layton, CPBE
McMurray, Pa.

Nothing New About Jack

I find the recent ravings about the "new" Jack format to be amusing, especially the part about how it originated in Canada around 2002.

I'm no old-timer, by any stretch of the imagination, but I was running Jack on a pair of local stations — KBRO(AM) 1490 and KNTB(AM)1480 — from March 1997 through April '99. I was GM/CE at the time. We didn't call it Jack, of course. I suppose that name was invented by the Canadians.

We were a block programmer just starting, and called it "filler music." The choice of music was entirely up to me. We ran the gamut from Abba to ZZ Top, and included rock, country, jazz, grunge, R&B, hip-hop, you name it. We even played classical. We had no DJs besides me, and I only opened the mic to read occasional spots I was too lazy to put on cart.

It didn't generate much revenue because we weren't selling spots; we were selling time. Besides, our footprint was too small for Jack to be effective, especially on AM. The listeners who loved us the most were local delivery and service drivers. They wanted music, but were stuck with AM-only radios in their trucks and vans, and were sick to death of talk.

Tim Mauch
Tacoma, Wash.

Lax FCC Enforcement

I fear I must disagree with David Solomon in his statement that FCC enforcement across the board is increasing ("How to Stay Out of FCC Trouble," Sept. 16).

While we all see an increase in enforcement of indecency and obscenity regulations, payola and shutting down pirate broadcasters, I have seen no improvement in the lax enforcement of technical regulations.

In my local area, I can tick off one station that is overmodulating, one station with an AM directional array that hasn't functioned in over a year, a station without a public inspection file and at least two stations that don't have adequate transmitter monitoring.

These stations need to be inspected by the FCC, and they need to be shut down. Stations that are unwilling or unable to follow the simple technical requirements in place today need to be taken off the air. The bands are already too crowded as it is.

Bring back proof of performance measurements, regular transmitter monitoring and public service requirements, and see how many of the stations currently on the air can stand up to them. Add on top of that some proper localization requirements to shut down stations that broadcast entirely satellite programming, and see how much available bandwidth we have freed up.

If anything, I am disturbed at the increasing emphasis on indecency charges at the FCC, because it distracts attention and limited enforcement capabilities from more important issues.

Scott Dorsey
Kludge Audio
Williamsburg, Va.

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◆READER'S FORUM◆

Engineer Appreciation

We appreciate Radio World's timely reminder about the lack of specific awards celebrating the contributions of engineers in our industry (*Reader's Forum*, Sept. 28). Indeed, if there were ever a time the industry needed smart, efficient engineering and technology to propel our industry forward, it is now.

Beasley engineers Bob Kees, assistant chief, and DOE Don Melnyk hard at work.

Beasley has taken a leadership role in deploying HD Radio technology, and we couldn't have done it without the help of our Chief Technology Officer Bob Demuth and his team of seven chief engineers, and assistants and consultants diligently working on the transition across our portfolio. Not a day goes by that we don't appreciate their hard work and what it means to the future of our company.

Nor are we shy about vocalizing that appreciation to fellow employees, advertisers and investors. We have even nominated several of our employees for engineering awards issued by other industry publications.

Certainly, we always can do more to honor those contributions, and Radio World has given us added inspiration to pursue that goal.

George G. Beasley
Chairman and Chief Executive Officer
Beasley Broadcast Group Inc.
Naples, Fla.

Corrections

The Oct. 26 issue of Radio World was labeled with an incorrect issue number on the masthead on page 54. It should have read Vo. 29, No. 27.

Also, the headline on page 30 of that issue was missing a word. It should have read "At WGUC, Eager for Radio Surround."

WWL Could Have Done More

I read the piece on WWL Radio and Hurricane Katrina ("Radio Was a Lifesaving Service," Oct. 12) and was wondering if you listened to any of the coverage the station broadcast in its aftermath.

I did and I listened for hundreds of hours and did not reach the same conclusions you did in your article. I would like to point out a few of the observations I noted and forwarded to my staff.

While WWL has provided some good service, some of their overnight talk show hosts might have cost lives. The overnight period of Sept. 4 illustrates my point.

The two on-airs were talking calls, and a man in either uptown or Mid-cities called in and said he was stranded with a bum ankle and floodwaters were rising. He wanted to know what to do. Our two intrepid Cajun on-airs came to the rescue and told the man to go sit on his porch and wave something white if he saw a boat come by. Didn't take his cell number, didn't get an address or name. There were two other similar call-ins within that same hour with the same result.

Then their discussion turned to more important things, like "if people who stole rod and reels should be prosecuted or were they just trying to get food for their families."

The next morning I wrote a blistering e-mail to the governor, state OEP director and the PD at WWL and told them they needed to clean their act up or I would make a formal complaint to the FCC next. Surprise, surprise, I never heard from any of them. This is just one of many instances I heard during many days of listening.

I am a fifth-generation New Orleanian. I have family and friends who lived in the metro area. I retired from the Navy at NAS New Orleans in 1993. I know New Orleans, and the media in that area mirrors the community's lifestyle and attitudes.

What I heard did not surprise me, as I expected it. Great to see they stayed on the air, but when the message isn't right, why waste the electrons?

Let me further illustrate.

My general impression of this operation was typical New Orleans — "let the good times roll." For instance, during the worst of it all I heard a hot debate with on-airs and callers from outside the city on if they should have Mardi Gras. People were being rescued on roofs while they spent their time on mindless trivia such as this?

Instead of constant reminders to the citizens that the water was toxic and they need to get out, we got politician interviews about how much they were doing to clear up the situation. And let there be no doubt, these anchors were leading the charge on the blame game, blaming only the feds — no locals, no state. There was a lot of time spent talking about the feds, money and levees, with no concrete basis for their charges being made over the air.

They also were running commercials telling local residents insurance people would be coming soon to take their claims, and how to keep themselves safe in their homes. And in the next breath running a news item at the top of the hour with a sound bite from the mayor telling them he wanted them to evacuate. Talk about mixed messages.

Yes, WWL did some neat service and stayed on the air. But I definitely would not give them the high marks and praise I have seen. I spent hundreds of hours (especially overnight) listening to WWL and I think your article missed the mark a bit.

Larry Van Horn, N5FPW
Assistant Editor/Milcom Columnist
Monitoring Times Magazine
Murphy, N.C.

Pipelines

As digital radio grows, U.S. broadcasters have begun to explore the programming opportunities created by multicasting. Expect to read more about how they're doing so in these pages.

But while the promise of additional channels is compelling, it is important not to overlook the opportunities of other pipelines created by the growth of new broadband devices such as MP3-capable mobile phones.

This is a market broadcasters cannot afford to ignore. According to Gartner Research, sales of cell phones are predicted to reach 1 billion annually by 2009, when nearly 40 percent of the world's population will own a mobile handset.

The movement has begun. MSpot Radio, on which we've reported in RW, is offering a subscription service that delivers "satellite-quality streaming radio" to mobile devices. Currently there are 13 premium audio channels, including The Associated Press, MarketWatch and NPR. Through MSpot Music Radio, a new interactive service with 17 commercial-free channels, consumers can purchase CDs, MP3s, music tones and screensavers using their mobile phones. The service boasts of no expensive receivers, no downloads and no synching.

Broadcasters need to gear up now for this new medium. Sales and promotions staffs can devise winning scenarios in which both the radio station and the mobile provider benefit from revenue-generating activities. Production staff members may find creative uses for the small screen on mobile devices, which can display more than text.

To do this, they may wish to become proficient in programs like Macromedia's Studio 8, which facilitates the development of content for mobile devices. Engineers can learn mobile environments/languages such as J2ME, Symbian, Windows Mobile, BREW and Palm OS.

Broadcasters are great at developing the type of content that mobile providers and others need for the pipelines created by broadband. As we move forward, radio will need to deliver content to a range of devices, some of which haven't yet been invented. It will need to find new ways to create content once, and publish it many times in different formats. The pace of development is breathtaking. For broadcasters, the opportunities are virtually unlimited.

Are mobile devices in your pipeline?

— RW

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