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**SBE Fellows**

Freinwald and Butler join only 64 others. What does the honor mean?

**From Here to There**

Buyer's Guide surveys the newest in consoles and routers.

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# Radio World



\$2.50

The Newspaper for Radio Managers and Engineers

July 6, 2005

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**NEWS**

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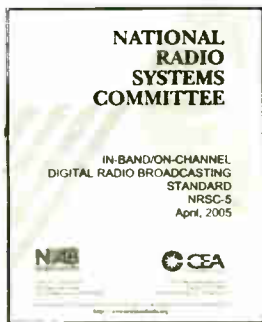
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**OPINION**

▼ Holland Cooke learns what listeners like and hate about radio.

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## Florida Pirate Law Has Mixed Results

by Randy J. Stine

**WEST PALM BEACH, Fla.** Nearly a year after the Florida legislature approved measures to crack down on unlicensed broadcast stations, the laws appear to have helped in some locations. However, those close to the situation say interference to licensed stations by "pirates" remains a major concern.

Pirate stations operate with no federal broadcasting licenses and typically are hard to catch because of their "broadcast-on-the-move" habits.

The Florida Association of Broadcasters, which represents about 550 radio stations, estimates that South Florida has more illegal broadcasters than any other region of the country. It says the problem is exacerbated by flat terrain that allows signals to travel farther and cause interference with licensed broadcasters.

State lawmakers passed a provision, signed into law by Gov. Jeb Bush last July, that calls for pirate broadcasters to face third-degree felony charges and stiff penalties if convicted. A conviction is punishable by five years in prison and a \$5,000 fine. The law can be enforced

See PIRATES, page 7 ►

FIRST PERSON

## Sirius Crosses Borders

Satellite Signals Can Be Heard in Much of Mexico

by Gabriel Sosa Plata

experiences with Sirius south of the border.

Satellite broadcasters Sirius and XM are only authorized to sell their service to U.S. citizens — "We stick to those rules," Sirius spokesman Jim Collins said — but a "grey market" exists nonetheless along both the Mexican and Canadian borders with the United States.

Here, Gabriel Sosa Plata recounts his

**MEXICO CITY** Sirius Satellite Radio provides excellent sound quality to listeners in a large part of the Mexican Republic in addition to its main market, the United States.

I had the opportunity to take a road trip from the city of Monterrey to the capital of

See SIRIUS, page 7 ►



The Sanyo Sirius CRSR-10 Plug-n-Play receiver on the road in Mexico.



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## NEWS WATCH

# FCC Seeks to End FM Allotment 'Abuse'

Commission Considers First Major FM Allotment Rule Changes Since 1963

**WASHINGTON** Noting that its FM allocation rules haven't changed much since their 1963 inception, the FCC in June proposed significant changes to streamline the allotment rulemaking process and weed out arcane rules.

At the same time, commissioners announced a freeze on new FM allocations, saying the agency would not accept applications for new FMs until this procedure is completed.

For the nearly 300 pending commercial

FM allotment applications, there will be a one-time settlement window, with no limit on monetary settlement amounts.

FCC Commissioner Kathleen Abernathy said during the commission meeting in June the changes would help avoid long processing delays and solve "what appears to be a manipulation of our rules."

### 'Disproportionate'

Commissioners unanimously voted to begin a rulemaking process on the propos-

als and sought public comment again in June. The proposed changes stemmed from a petition filed by First Broadcasting Investment Partners LLC this spring (RM-10960).

Thomas Nessinger, an attorney advisor for the Audio Division, said the agency has noticed that "a disproportionate number of new FM allotments are sought by a few petitioners who rarely follow through with the auction process."

By requiring applicants to file a completed technical application (Form 301) and pay a filing fee at the same time as the new FM allotment is sought, the agency hopes to ensure those who would actually partici-

pate in the auction process would be the same parties that seek new FM allotments.

Currently the payment and technical application are made after the initial petition for a new FM allotment is filed.

Under the proposal, the FCC would limit the number of modifications to the FM allotment table to five by any one party, "absent compelling public interest reasons," the agency stated.

Although traditionally the commission has been reluctant to allow the move of a community's sole local FM service to a new community lacking a first local service, the agency seeks public comment on what circumstances would be appropriate to allow such a move.

Fisher Broadcasting opposed the entire petition and singled out this portion. It told the FCC the petition "is but a thinly disguised request for yet more tools to permit companies such as First to strip much needed local AM and FM channels from deserving communities in smaller, independent advertising markets and moving them dozens or hundreds of miles into the core of major rated advertising markets."

The agency also seeks comment on whether to allow both AM and FM licensees to change their community of license by first-come, first-serve minor modification applications, streamlining the current two-step process.

First and other broadcasters commenting characterized FM allotment rules as cumbersome.

Susquehanna Radio Corp., for example, supports the changes. It told the agency that currently, such changes take an inordinate amount of time to process — up to six years in one case for Susquehanna.

The text of the changes had not been released in early June; however the commission also was expected to address

See FM, page 3 ▶

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# Is Digital Shortwave U.S.-Bound?

by Daniel Mansergh

As broadcasters around the world contemplate their digital future, an established player in digital radio development has made things just a little bit more interesting.

Digital Radio Mondiale, an international consortium founded in 1998 to develop a digital broadcasting system for frequencies up to 30 MHz, plans to test its system in Mexico and Brazil. Success there could lead to success in the United States.

That's what Dr. Donald Messer, chairman of DRM's Technical Committee and director of the Spectrum Management Division at the International Broadcasting Bureau, told attendees of a DRM meeting in Washington in June.

In addition to possible adoption by existing U.S.-based shortwave operators serving foreign listeners, he spoke hypothetically of using 26 MHz frequencies in the United States in DRM mode for local broadcasting with low power, 10 watts to 1 kilowatt to cover small areas, possibly offering possibilities for new radio services where there are no available frequencies in the AM or FM bands.

## DRM interest here?

While Radio Canada and Radio Netherlands have been broadcasting in DRM mode using shortwave frequencies to North America, DRM proponents would like to encourage more such broadcasts, both to this country and from shortwave broadcasters in the United States, according to Jeff White, chairman of a group trying to develop interest in DRM in this country.

The FCC recently changed its rules to allow DRM modulation by shortwave stations located in the United States that transmit their signal abroad. As of June, no U.S.-based shortwave broadcaster was using DRM despite the rule change, according to the DRM group.

The DRM Consortium announced in March that its system would be extended to cover frequencies up to 120 MHz. The move was the product of collabora-

tion with the World DAB Forum, proponents of the Eureka-147 system for digital broadcasting on frequencies above 30 MHz. In practice, the Eureka system is typically used on frequencies above 174 MHz.

Messer also spoke at the NAB's Broadcast Engineering Conference shortly after the announcement to discuss the

supports transmission with a variety of bandwidths for different applications and frequency allocation standards.

"Tests are going on in Europe" and other parts of the world, Messer said, "with power levels from 100 watts to 700 kilowatts." As an example, he described a single-frequency network of three 100-watt transmitters serving 5 million people in Berlin.

## DRM proponents believe success in Mexico and Brazil could lead DRM to the United States.

ongoing development and testing of the DRM system.

"First, the breaking news," Messer began in his NAB presentation, briefly discussing DRM's new initiative. The expansion will reportedly build on the existing non-proprietary DRM system architecture and include the aacPlus audio coder, by Coding Technologies, developer of the HDC codec for HD Radio. Development and testing of the expanded service of DRM is expected to continue through 2008-2010.

Messer did not say if a hybrid analog/digital version of DRM for the FM band would be developed.

Messer also discussed the DRM consortium's plans to conduct "controlled, independent testing" in Mexico and Brazil to determine the suitability of local and nationwide coverage in those countries on medium-wave (AM) and shortwave bands.

The tests will assess the performance and flexibility of the DRM system in a variety of operating modes, including mono and stereo programming, use of single-frequency networks, consisting of multiple transmitters operating on the same frequency in different locations, and delivery of up to three simultaneous multicast speech programs, according to Messer.

The transmissions will be conducted using bandwidths of both 10 and 20 kilohertz, Messer said. The DRM system

share frequencies. That's the case, for example, with a Gainesville, Fla. frequency to be shared by Calvary Chapel of Gainesville, Civic Media Center and Library and Faith Presbyterian Church of Gainesville.

In several cases, several parties sought the same frequencies.

Other markets to get LPFMs include Bloomington, Ill.; Johnstown, Pa.; Rochester, Minn.; Wilson, N.C.; Baton Rouge, La.; Corpus Christi, Texas; Nanticoke, Pa.; Billings, Mont.; Florida City, Fla.; La Crosse, Wis.; Greenfield, Mass.; Woodburn, Ore.; Feeding Hills, Mass.; Des Moines, Iowa and East Tampa, Fla. and The Villages, Fla.

"We hope the commission would also move forward on its recent proceeding on low-power FM radio and consider opening a new filing window for the many noncommercial entities that want to offer new low power FM radio services wherever possible," said FCC Commissioners Michael Copps and Jonathan Adelstein.

As of June, the FCC had granted 568 CPs for LPFMs.

—Leslie Stimson

a 15 dB advantage in field strength."

Messer concluded that these tests prove that the DRM system provides "equivalent or better coverage as analog with lower power levels required." The ITU recommends a 7 dB power reduction, meaning the digital power would be reduced to one-fifth of the analog power level for equivalent coverage.

Along with this significant operating cost benefit, Messer cited FM-quality audio and ease of regulatory authorization as key factors encouraging broadcasters to adopt the system.

The biggest remaining challenge to the DRM rollout, Messer said, is the availability of inexpensive, accessible receivers. Most DRM listening to date has been logged by amateur radio operators and shortwave hobbyists with specialized receivers and computer-based decoding software.

Messer said the consortium is expecting to see this change soon, with the release of a consumer-level multiband receiver later this year capable of receiving analog, DRM and Eureka-147 (DAB) signals, with a target price of about \$120.

Texas Instruments and RadioScape said in June they are offering receiver chips and modules, respectively, for the DRM standard and for a combined DRM/Eureka-147 receiver. The radios would also support FM, RDS and AM.

"The fact that we can do both on the same chip is significant from a cost perspective," John Gardner, product manager for digital radio, Texas Instruments, told Radio World. TI expects to see DRM radios in stores by the end of the year.

## Reported 10 dB advantage

The results of these measurements were analyzed graphically, comparing field strength, signal-to-noise ratio and presence of audio. This analysis, Messer said, indicates that the DRM system "provides a 10 dB advantage over analog (performance) in signal-to-noise ratio and

Auction Seminar  
July 27, 2005

(( ( FCC NEWS ) ) )  
UPCOMING AUCTION

FM BROADCAST  
AUCTION NO. 62  
November 1, 2005

The FCC is preparing to auction 172 construction permits in the FM Broadcast service for stations throughout the United States and the U.S. Virgin Islands. These construction permits include 142 new FM allotments and 30 unsold permits from Auction No. 37. For more information, please contact the Auctions & Spectrum Access Division at 202-418-0660 or choose from the options listed below.



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E-mail: [auction62@fcc.gov](mailto:auction62@fcc.gov)  
445 12th Street, S.W.  
Washington, DC 20554

## FM

► Continued from page 2

two other First proposals: streamlining the process for downgrading a Class C station to a Class C0 and simplifying the procedure for removing non-viable FM frequencies from the official list of FM allotments.

The Station Resource Group, representing 47 noncom licensees that operate 168 stations, said in comments filed with the FCC that it supports First's efforts to simplify the commission's FM allocation process, reduce its backlog and make additional frequencies available. SRG cautioned, however, against throwing all vacant FM allotments into the next auction, saying, "By appearing to clean out the pantry, the FCC could inadvertently create panic based on an artificial 'last chance' for spectrum."

## FCC Grants 17 LPFMs

WASHINGTON The FCC has granted CPs for 17 more low-power FM stations.

Some of the 26 licensees will time-



# Should We 'Stick to the News'?

"I am offended by the publication of a letter to the shareholders of Clear Channel by executives in the company, which consumed an entire page," writes a broadcast engineer.

"Radio World should not be a publication that publishes such letters. I think that the majority of the readers of your publication have the intelligence to find such an article if they were looking for Clear Channel's view on what they've done the past year. It disgusts me that you would publish excerpts of this letter without publishing excerpts of the words of Clear Channel's competitors."

The writer of this e-mail asked at first that his letter not be published here. But because of the importance of the topic, and because I believe in open discussion about our editorial policies, I asked him to allow me to quote him without attribution so you could read his comments as well as mine.

The article to which he refers was headlined "Clear Channel: 'Leading Change'" in our May 13 opinion section.

"I would hope Radio World would omit such letters from their publications in the future," he continued. "Stick to the news. Publish letters directly sent to Radio World, like the ones the well-respected Jeff Littlejohn has done in the past. Don't publish generic letters meant to make shareholders 'feel good' about their investments. All that was missing was a little colorful sidebar with their stock ticker and earnings information, and how to invest in their company."

This engineer works for another commercial broadcaster, although clearly he was writing for himself and not his employer. He has done IT work as well as broadcast engineering; he holds several SBE and other certifications. In short, he knows our industry.

"This is not an attack against Clear Channel," he went on. "They are free to release as many letters to the public as they want. I agree with their ideals such as aggressive IBOC support, reducing clutter on the airwaves, and, although controversial, their stance on reducing AM interference with reduced audio bandwidth to match the majority of receivers in the field.

"However, there are things Clear Channel has done or supports that I do not agree with, and I think are not good for our industry.



"If you feel the need to publish such letters, perhaps have a separate 'special publication' full of public letters and excerpts from annual reports and earning conference call information disseminated by other companies in the industry. Or maybe a new section that features small excerpts of statements from all companies that release them, and information on how to obtain the entire statement (via a published URL link or a special location on RW Online).

"Of course, you'll need to dedicate some of your research staff to find other company's statements," he noted. "It is very unlikely you'll get all the major players in this industry forwarding every public statement to you. And then there are plenty of smaller companies that wouldn't even have the resources to do this, and their viewpoints should be published too if you're going to publish the viewpoints of major companies.

"Clear Channel might be the largest company in our industry, but Radio World needs to remember that plenty of other companies have good ideas," he concluded. "You need to consider being fair when publishing such information. Failure to do so will reduce the credibility and value your

publication offers to our industry."

Although surprised by the vigor of his wording, I appreciated his letter. As you know, one of the great attributes of RW is how engaged our readers are. I wrote back:

"Thanks for sharing your thoughts. Like you, I care a great deal about what's in the pages of RW. I disagree with your conclusion, obviously, and here's why.

### Fair to all

"What Clear Channel is telling its investors is news. Whether we agree, or you agree, with what that company is saying, the content of its message is news. As the largest industry company, its decisions, good or bad, affect you, and me, and our readers.

"Publication of its views does not constitute an endorsement by us, though; rather it is a service to our readers to let them know what's up in the industry. Publishing Clear Channel's statements in no way precludes me from covering those of other companies.

"In short, the fact that Clear Channel has substantial 'reach' does not mean it does not deserve coverage in RW. I have done the same in the past in publishing the contents of speeches by President Bush to the NRB, of Eddie Fritts about his retirement from NAB and the words of other newsmakers who presumably have means to reach our readers elsewhere as well. And by putting that info in our opinion section, I think we have fairly indicated to readers that this is just one company's viewpoint.

"However," I continued, "I concur that it is our responsibility to make sure that all industry participants have access to our communication channel; while I think we've done a very good job at this, better than any other publication, your point about publishing contents of public statements from other, smaller companies is well taken; and I intend to do that as well."

I would add that the primary reason we published that particular excerpt was because it offered, in a concise fashion, Clear Channel's views on the success to date of several important industry initiatives

## From the Editor



Paul J. McLane

that have been reported in the pages of RW, including "Less Is More."

Some readers might not agree with how Clear Channel describes that success; some might feel that certain of Clear Channel's initiatives are not healthy for the industry. But the company's viewpoints deserve ink in RW as surely as those of its critics do. I feel our readers are smart enough to consume this information wisely if we are fair in how we present it.

### Balance?

Writing back to me in reply, the engineer said, "I thought an entire page dedicated to Clear Channel's letter was excessive without balance. While I've seen the excerpts from President Bush and Eddie Fritts, I thought these were more general to the industry or nation.

"For example, Eddie Fritts was often speaking on behalf of all broadcasters (well, I suppose some people, particularly the smaller broadcasters, would take issue with that too).

"I don't ever recall seeing a full-page public statement excerpt from any other company, many of which your readers see as a major competitor. Yes, Clear Channel has valid points, yes they deserve to be published. But I feel it needs to be presented in balance with the viewpoints of other companies, in smaller doses. Or, if you want to avoid this issue all together, just staying away from these types of statements and sticking to news, or news reports of the statements."

Many of his points are well taken. What do you think? I welcome your thoughts to [radioworld@imaspub.com](mailto:radioworld@imaspub.com).

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# Adelstein: Stop the Blame Game

*Commissioner Says Celebrity Chefs, Celebrity Fashion And Even News Shows Increasingly Are Up for Bid*

The following are excerpts from a May speech before The Media Institute by FCC Commissioner Jonathan Adelstein on the commercialization of American media.

Bit by bit, confidence in the press is eroding. Here is a little example of why.

As reported in the Wall Street Journal, one celebrity TV gourmet recently waxed eloquently about his favorite shrimp: the frozen kind. Here is how he put it: "Fresh is not as fresh as frozen, I think."

What could possibly motivate someone to say such a thing? You guessed it, and I sure hope his unsuspecting viewers did, too. Money. Lots of it. Five hundred and fifty thousand dollars a year, to be exact, from, you guessed it again, a frozen shrimp company.

The Wall Street Journal detailed an increasing trend by TV chefs that undercut their impartiality and will undercut public trust in their media shows.

The article also mentions how Julia Child refused scores of companies seeking her paid endorsement. Sadly, that era of integrity seems like a quaint throwback.

What explains the change? From the outset, American broadcasting has been based on a commercial model, unlike some of its European counterparts. That model has fueled the unprecedented success of the American media — the most dynamic and creative in the world.

## Lax enforcement?

But careful regulations to ensure that American broadcasters also serve the public interest have been wiped off the books over the last couple of decades. And media consolidation has worsened the problem.

Fortunately, one aspect of federal regulation designed to counter the excesses of commercialism still remains in place. Since 1927, before the FCC was even created, Congress has maintained an unwavering requirement that broadcasters must announce who gave them valuable consideration to air anything.

The FCC has, perhaps, become lax in enforcing those rules. But (in April) we issued a bipartisan, unanimous Public Notice on video news releases signaling that we are planning to enforce the rules vigorously. ...

People out there are frustrated by what they see as fake news and relentless marketing. They are angry when they do not get real news and accurate information that empowers them to make informed decisions. ...

And, like media concentration, lack of disclosure alarms Republicans and Democrats alike. That is why Congress just approved an appropriations bill that requires disclosure by the government when it is the source of VNRs. When I testified before the Senate Commerce Committee on this issue (in May), there was a bipartisan commitment to make that requirement permanent.

Together, we can shut down any deceptive or evasive practices being perpetrated on the American people. We can all agree that the failure to disclose who is behind sponsored programming violates the law and FCC rules, and must

stop immediately. As a unanimous FCC reaffirmed in its April 13th Public Notice, "listeners and viewers are entitled to know who seeks to persuade them with the programming over broadcast stations and cable systems."

My interest in this issue dates back to when I first joined the commission and heard concerns about how underground payola in radio was corrupting the music industry. Local artists complained they could not be heard unless they had a major label backing them with a willingness to pay, directly or indirectly, for radio airplay. Our culture suffers when new, vibrant artists cannot break through not because they lack talent, but because they lack big money backing them. This so concerned me that I focused on the payola issue in a major speech over a year and a half ago.

## 'Bottomless pit'

Since then, I have looked further into the issue, and I have discovered a bottomless pit of commercialism in today's media into which even icons we hold sacred are sinking and becoming sullied.

Not only are celebrity chefs and celebrity fashion up for sale but, most ominously, news shows are increasingly up for bid.

Some will tell you that if broadcasters and cable companies insist on further commercializing news and other shows alike, that is their business. But if they do so without disclosing it to the viewing public, that is payola, and that is the FCC's business.

The FCC's Public Notice was intended to serve as a reminder to the media and communications industries. Broadcast licensees, cable operators and any entity or individual involved in the production and provision of VNRs have disclosure responsibilities under the commission's sponsorship ID rules. The same requirements apply to any paid programming and promotions, including product placements.

Section 317 of the Communications Act requires broadcast stations to make an announcement whenever they air material for which they have received payment or other consideration. The only exception is when the consideration involves a product or service the station received free or at a nominal charge, like a record — so long as the product or service was not provided for identification in the broadcast.

Significantly, the disclosure requirement also applies, whether or not something of value has changed hands, when a broadcaster airs controversial issue or political programming that has been furnished to them by an outsider. In those cases, they also must identify the sponsor.

Section 507 of the Act also imposes disclosure obligations on those involved in producing, preparing or supplying material intended for broadcast. If any such person receives or provides consideration for the inclusion of program matter, the law requires disclosure up the chain of production and distribution. That includes the originating government agency or private business, media consul-

tants, reporters, satellite services, network news feed operators, local news producers and broadcast licensees where the exchange of valuable consideration is involved.

A broadcast licensee that receives such a disclosure must announce the sponsor even if the licensee itself did not receive payment.

## Corporate propaganda

Violations of these laws and rules can bring a number of different penalties. A station's or operator's failure to make a sponsorship disclosure required by Section 317 subjects it to fines — and perhaps license revocation. An individual's failure to disclose as required by Section 507 is a crime, and carries a penalty of a fine of up to \$10,000, and as much as one year imprisonment. ...

The problem with many video news releases is that they lead viewers to believe they are watching an investigative news report when they could be getting a subtle dose of government or corporate propaganda. ...

Another source of great annoyance to many listeners, potentially in violation of the law, is when radio disk jockeys casually mention their enthusiasm for some product or another in the course of their banter. Listeners are left wondering if the on-air personalities really liked the product, or whether the station was paid to promote it. If there was payment of any



Jonathan Adelstein

kind, they better disclose it or they should face the scrutiny of the FCC.

Our recent Public Notice was a good first step toward cleaning up these problems, but the commission must do more. In fall 2003, a group called Commercial Alert asked us to take a number of different actions regarding product placement, and its filing, and the recent press reports I mentioned, clearly indicate that the time has come for us to step up our enforcement in this area. ...

On-air "experts" and PR agents sometimes say it is the broadcasters' responsibility to disclose. Broadcasters sometimes say they are not aware of money changing hands. But the law does not allow this blame game. On-air "experts" must disclose to stations that they have been paid for promoting a product on the air, and broadcasters must then disclose to their audience that someone was paid for it. ☺

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# Traffic Group Gains Stature

*Some State Broadcast Associations Align With Traffic Directors' Group*

by Randy J. Stine

**FRANKFORT, Ky.** A new alliance between two state broadcaster associations and the Traffic Directors Guild of America gives free membership in TDGA to traffic directors in several states and could spur similar agreements elsewhere.

The Kentucky Broadcasters Association and the Maryland-D.C.-Delaware Broadcasters Association have signed agreements to underwrite mem-

bership dues for their member stations in TDGA. The programs were announced after successful yearlong pilot programs in those states.

The agreements will give traffic and continuity directors access to services via TDGA's Web site. The pact also opens membership to radio and television office managers and business managers in those states.

TDGA, founded in 2000, is a non-union member association that is supported from dues and provides service

seminars and workshops for members.

Larry Keane, chief executive officer of the Traffic Directors Guild of America, said, "I think this agreement is an indication of how important the traffic director's position has become."

## Precedent-setting

"The responsibility of a traffic director is sure to increase with the diversity of programming and revenue streams made available to broadcasters thanks to HD Radio. Multiple inventories and multiple billing possibilities will greatly affect traffic and continuity directors," Keane said.

TDGA, an informational organization with about 5,000 members, charges

\$37.50 yearly membership dues. Members have access to TDGA's Web site, which offers informational items and interactive features beneficial to traffic directors, Keane said.



"We've concluded there is a benefit and usefulness to this alliance," said Gary White, president and chief executive officer of the Kentucky Broadcasters Association.

More than 50 member stations participated in KBA's pilot program. "There's no question, our members that were actively involved liked the one-year test run," he said.

Chip Weinman, Maryland-D.C.-Delaware Broadcasters Association executive director, said, "We think this is a very valuable service to our members. It's something we can do to help recognize the important contribution of traffic and continuity departments."

Both broadcaster groups are in the process of registering members in TDGA. Weinman said he expects to have approximately 50 participants from member stations.

**I think this agreement is an indication of how important the traffic director's position has become.**


— Larry Keane,  
Traffic Directors  
Guild of America

The Society of Broadcast Engineers is watching the recent developments. SBE President John Poray said the unique agreements between state broadcaster associations and a professional organization set an interesting precedent.

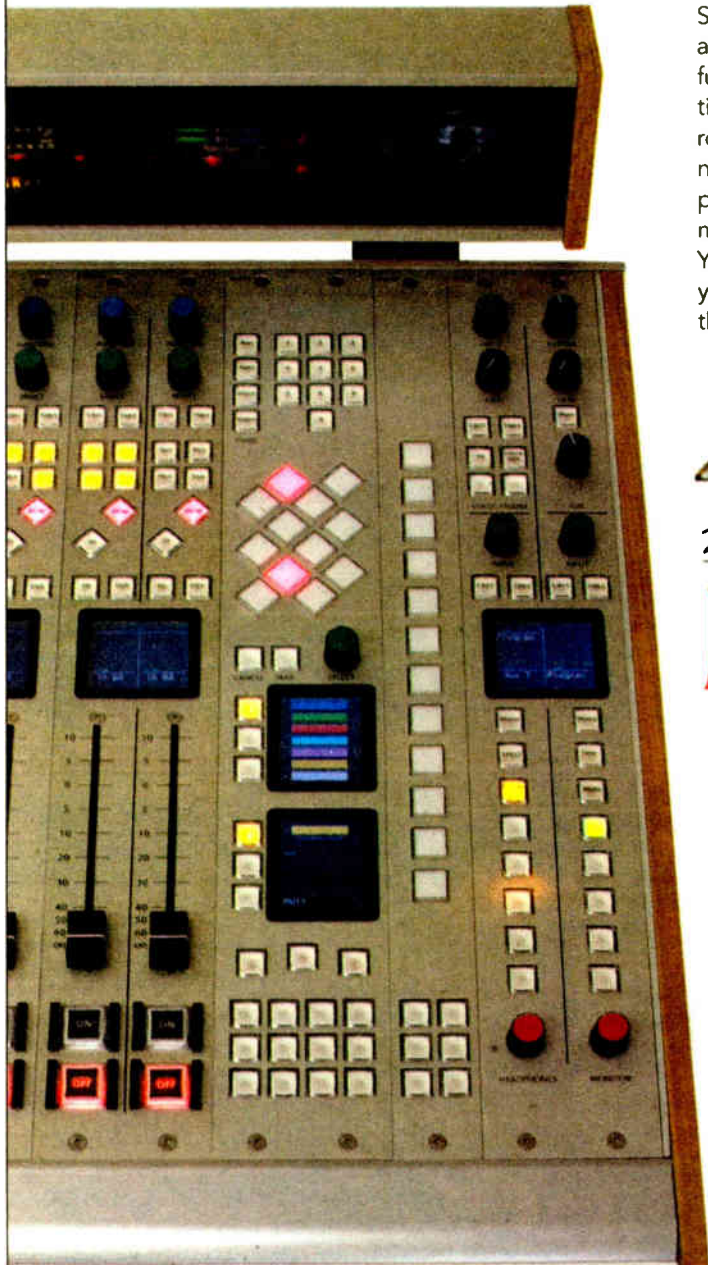
## Engineer-inclusive

"I would think that any group associated with broadcasting would be interested," Poray said. "It would make it very inclusive for everyone and show that these professions are highly regarded. We would be interested in any program that would include a large group of engineers in a particular state."

SBE, which has 5,800 members, has not approached any broadcaster association about striking such an agreement. "We already work closely with a large number of associations on education programs. We have good relationships with many," Poray said. "But we haven't even discussed it internally at this point."

Poray said the SBE differs from TDGA in that it has certain minimum requirements for membership, which could restrict the number of eligible participants in a statewide program. 

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# Pirates

► Continued from page 1  
by any law enforcement agency in the state.

Prior to the law being passed last year, only the FCC had the authority in Florida to fine violators and charge them with a federal misdemeanor.

C. Patrick Roberts, executive director of the Florida Association of Broadcasters, said, "The FCC staff has done all they can to cut down the problem. However, they are not law enforcement. The state law gives local law enforcement the incentive to chase the problem, too. There is now a level of coordination between law enforcement and the FCC."

## Gathering evidence

Unlicensed broadcasters break state law by broadcasting without a license and not paying state taxes, Roberts said, and cause interference with emergency messages from broadcasters, such as hurricane warnings and Amber Alerts for kidnapped children.

"That endangers the lives of Floridians," he said.

Roberts said that in South Florida, the FCC has approximately 20 investigations underway in what he characterized as a game of cat and mouse between commission agents and pirates.

"These guys typically stay on for short periods of time. It's usually a case of compiling enough data on them to make an arrest."

Roberts said the most brazen pirates conduct remotes and even sell local advertising time in some cases, with Miami-Dade, Broward and Palm Beach counties the hardest hit.

"Typically, the pirates we find are frustrated that they can't break into mainstream broadcasting," Roberts said.

Non-commercial stations are particularly susceptible to pirate interference because of the tendency for unlicensed broadcasters to gather near the bottom of the FM dial, Roberts said.

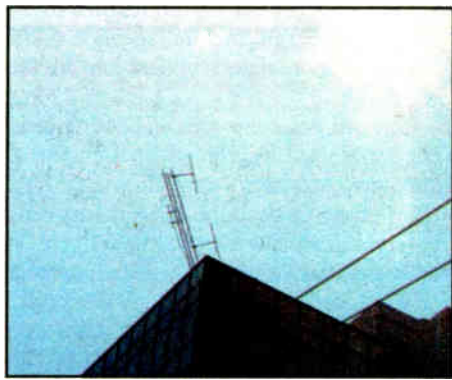
According to Jerry Carr, president of WEXL(FM), pirates have jammed the Barry University station occasionally, on and off, for years. The station is in Boynton Beach, just south of West Palm Beach on the Atlantic Coast.

"The pirate problem is not as egregious as it was prior to the state law being passed," he said. "I know firsthand the Broward County Sheriff's Department has shut down several illegal operations. It's making a difference. However, we just reported another pirate to local police in early June."

WEXL broadcasts on 90.7 MHz and suffers periodically from pirates on 90.9 MHz in Fort Lauderdale, interfering with the southern part of WEXL's signal into Broward County.

"We still go out occasionally with our own triangulation equipment to look for (pirates) ourselves, but that can be dangerous. I've been very supportive of the sheriff's department's efforts," Carr said.

An FCC spokesman said field agents have shut down about a dozen illegal broadcasters in South Florida since the first of this year. The commission has praised the new Florida anti-pirate laws in several published reports.



This illegal tower built on top of the Wachovia Bank in Hollywood, Fla., tipped over.

## 'Bolder'

While the FCC continues efforts to pursue illegal broadcast signals across the

Sunshine State, business partners in a company founded more than a year ago to hunt down rogue broadcast signals say they have lots of interest from broadcasters (RW, June 16, 2004.) However, few have actually purchased the company's signal finding services. They declined to identify specific customers.

Signal Finder Inc. President Lu Vencl and Vice President Steven Grey say the South Florida area is a "jungle of FM signals" with illegal broadcasters popping up sometimes on the first- and second-adjacent channels of legitimate broadcasters.

"These (pirates) are getting bolder and bolder. Yet broadcasters have been unwilling to pay for our services," said Grey. "I think the lack of clients has been the result of broadcasters not having discretionary money to spend rather than a

reduction in the number of unlicensed stations."

An average Signal Finder job to track down an illegal signal and provide spectrum maps can run from about \$500 to \$700.

"As a result, broadcasters are more inclined to let their chief engineers try and handle interference from a pirate offender," Grey said. "Engineers are typically not equipped to handle these things, nor do they have the time."

Signal Finder works with communications companies, including cellular phone companies, to eliminate interference. It provides clients with a detailed report with the location of the offending signal, which can be used to pursue damages in civil court.

Grey and Vencl also work as consulting broadcast engineers.



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## IN THE MIDDLE OF THE ACTION... LIVE, FROM IRAQ.

Armed with little more than two microphones and a Matrix, Ted Leitner of XPRS, The Mighty 1090, broadcast his radio talk show LIVE during morning drive from the Al Asad-Marine Base in Iraq. Leitner is facilitating on-air live communication between troops and their families back home in San Diego, as well as bringing along special guests from the San Diego sports world, including several of the San Diego Charger Girls. "Keeping the spirits of our armed forces up is what it's all about," said Ted, "Nothing beats bringing a little piece of home to our troops stationed abroad. Thanks, Comrex!"

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# Sirius

► Continued from page 1

the country — roughly 560 miles. I passed through the cities of Nuevo León, Coahuila, San Luis Potosí, Guanajuato, Querétaro, Hidalgo and through the State of Mexico. Except in a few places where I passed under bridges, the reception was very good until I reached Mexico City.

My friend, Jorge Saucedo, like thousands of other Mexicans, learned about the new satellite radio services and bought the equipment in an electronics store in Laredo, Texas. He took it across the border without any trouble and, from his home in Monterrey, he registered online to receive the service using a Mexican street address and a U.S. state.

## Easy to bring over

"It's the easiest thing to bring into the country and register," said Jorge, still emotional about the possibility of accessing a service that meets the needs of a music lover who enjoys country music and rock from the 1960s, '70s and '80s. "I got the receiver and took advantage of the offer to put off paying (for the service) until next year."

I stopped him in order to say that he should try out the equipment on the highway to make sure that, in effect, the two digital satellite radio services, which theoretically are offered only in the United States, are also available in Mexico. He was

already familiar with the Delphi equipment that I had bought in order to capture the XM Satellite Radio signal as well as with the success of my reception tests in Monterrey and Mexico City (Radio World, June 18, 2003).

Without really intending to, he agreed to lend me the equipment, which had cost him, he confessed, \$150; I would have to take good care of it. I promised him I would. It was a Sanyo Sirius CRSR-10 Plug-n-Play receiver with all the necessary accessories for use at home, at the office or in the car.

## Border agreements

My friend had already tried it at home and reception had been good, as expected. From the beginning, we've known that both systems could be heard in the north of Mexico, as satellites don't respect borders. For that reason, the United States and Mexico had signed an interference agreement concerning S-band use along the border. The agreement, signed in 2000, protects Mexico's allocation for satellite radio in case that country wants to launch a similar service. XM and Sirius have similar agreements with Canada, where both have applied for permission to operate a satellite radio service.

Since my article about XM reception in Mexico in 2003, I have proven once again that the XM and Sirius systems have much broader coverage than was originally foreseen. Having acknowledged that, I would add something that, to the best of my

knowledge, none of my colleagues in this country have said: mobile reception during a drive of more than 10 hours into Mexico is possible.

The Sirius system uses an FM frequency not being used locally, which I choose on the Sanyo encoder. Then I choose the same frequency to be decoded on my radio receiver. This way, each time I select a radio frequency that I have already selected on my encoder, I am able to get the service.

The external Sirius adapter is powered through my car's cigarette lighter. The adapter and Sirius antenna are all connected with each other and the in-dash radio in the docking station mounted to the dashboard. The portable display can be used in the car or elsewhere.

A magnet allows the Sirius to be placed anywhere on the car, however the optimal placement is on top of the car.

The antenna is very small: only 10 centimeters squared. The only problem is that, in order not to damage the cable that connects the antenna to the encoder, the window must be left slightly open; this is troublesome due to the wind inside the car, especially when driving on the highway.

During my trip, I came across fog in the city of Saltillo and some rain along the highway to the capital of San Luis Potosí without any reception trouble either during the day or at night. For 10 hours, I was able to listen to almost all of the available channels, either for a few minutes or a few hours. I particularly focused on stations playing Latin American music (Universo Latino, Mexicana and Tropical), world music (Island Vacation and Horizons) and classical music (Symphony Hall, Classical Voices and Sirius Pops). Also among my favorites was "Broadway's Best," where I could always hear beautiful songs from one of my favorite works, "The Phantom of the Opera."

For a country where there are still numerous areas without FM radio through which one must pass on a long trip like mine, the possibility of having a varied music and talk-radio programming, most of it live, is beneficial for a number of reasons: it keeps you awake; it makes the trip more fun; it informs you; it keeps you up-to-date on the latest news, not only from Mexico but from many other countries. A large

number of the international radio services (BBC, Deutsche Welle, Radio France Internationale, Radio Romania International) are available on the Sirius system.

## Problems in Mexico City

It was after passing the last small house on the way into the enormous capital city of the Mexican Republic that trouble with the service began. When driving under the leaves of a tree-lined boulevard or passing a trailer in the next lane, the signal was cut off. In the heart of Mexico City, there were places where reception was poor or unavailable despite changing frequencies.

However, the difficulties were not so numerous that service in the city can be called terrible; there were areas where the transmission was uninterrupted. As I understand it, these difficulties have been corrected in the United States by installing small translators at ground level in areas where the reception is poor; the same could be done in Mexico.

When I tried to use the receiver at my home in Mexico City, I got good quality transmission even though I live on the 14th floor of an apartment building in a large residential complex surrounded by many other buildings.

The return trip to the city of Monterrey allowed me to enjoy my friend Jorge's equipment one more time. Clearly, the farther north I went, the better the reception, as indicated on the liquid crystal display screen by three bars of increasing size.

On the 10-hour trip, there are a number of long, straight, boring stretches of highway where many accidents occur. Farther north, in Saltillo, the road passes through a mountainous region where, nonetheless, I listened to music without interruption. Clearly, one amazing aspect of satellite radio service was that it kept me alert at all times.

Upon reaching Monterrey, a bit tired, I made my last decision of the day: the next time I go to Laredo or McAllen, I will buy a car antenna for my Delphi XM Satellite Radio system because I am sure that Jorge will not be willing to lend me his new Sirius receiver again, even though he is one of my best friends. Oh, and of course, I did return it to him without a scratch. 🌐

## MSRC: Warn the Public Faster

The leaders of a quasi-federal group linking broadcasters, emergency services and the public say their "best practices" are ready to be implemented. Members of the Media Security and Reliability Council want to get those off the page and into stations.

MSRC was formed by former FCC Chairman Michael Powell after 9/11 to help stations plan ways to stay on the air or get back up quickly in the event of terrorist attacks or natural disasters.

One subgroup is working on local coordination activities and another on the so-called emergency "toolkit."

Andy Scott of NCTA, co-chairman of the latter group, said members are developing vulnerability checklists, disaster recovery plans and backup carriage plans. So far, radio, TV cable and the DBS industries are represented. The group would welcome participation by satellite radio companies, "an entity that we feel could play a significant role in emergencies in the future."

Fred Young, chair of the group working on local coordination, said members are working on a guideline for establishing communications and restorations committees. They hoped to soon test their plan in

Oklahoma.

In addition, some MSRC members are taking part in emergency initiatives simultaneously under the auspices of the Federal Emergency Management Agency.

Kevin Briggs, director of the Readiness Division of the Office of National Security Coordination, briefed attendees on the Integrated Public Alert and Warning System. The goal is to send digital message files to stations to be datacast and received on TVs, radios, cell phones and handheld devices.

Attendees spoke afterwards of using a sort of "instant on" feature on TV receivers to reach those not watching when an emergency message comes through; they want to explore a similar idea for HD Radios.

"We will work with various media networks to avoid a single point of failure," Briggs told Radio World, noting that with the daisy chain system for EAS, messages can reach the wrong people, or sometimes not be received at all. But he said the group is working to enhance EAS, not abandon it.

A FEMA spokesman said testing would continue through January.

—Leslie Stimson

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

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### Put your preamps where your mics are.

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### Put your snake on a diet.

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



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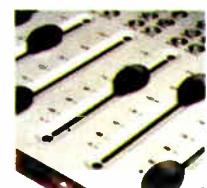
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## New IBOC Standard Unscrambled

by David Maxson

This article will give the reader the nickel tour of the new "In-Band, On-Channel Digital Radio Broadcasting Standard" recently passed by members of the National Radio Systems Committee.

As a participant on the NRSC Digital Audio Broadcasting Subcommittee, I have my own opinions

The role of a standard is to create a degree of market certainty for competitors to commit their resources to enter a market. A well-crafted standard may contain enough information that a person "skilled in the art" could use it as a recipe for producing a compatible product.

Even though the standard may outline the details necessary to understand and build on the technology on

available on reasonable and non-discriminatory, or so-called "RAND" terms.

The NRSC-5 standard was assembled under these precepts. It is significant that it is an IBOC standard rather than an HD Radio standard.

### IBOC firmware/software

The term "IBOC" refers generically to the process of making the radio transmission, which also gives us the ability to receive and recover intelligence from the radio transmission. While, today, the only way to "do IBOC" is with devices that contain Ibiqity software/firmware that have earned the right to wear the HD Radio name, the standard provides enough information for a developer to implement the standard with his own firmware.

NRSC-5 is the fifth standard from the NRSC. It follows three AM broadcasting standards and the RDS standard.

Standards are voluntary, but they provide a roadmap for industry players to maintain compatibility among their products. They can also provide regulators with the much-needed industry consensus upon which to cast things in regulatory stone.

In the broadcasting arena, receiver compatibility with IBOC signals is critical to the success of the medium, and NRSC-5 describes for transmitter and receiver manufacturers how the IBOC signal is properly constructed.

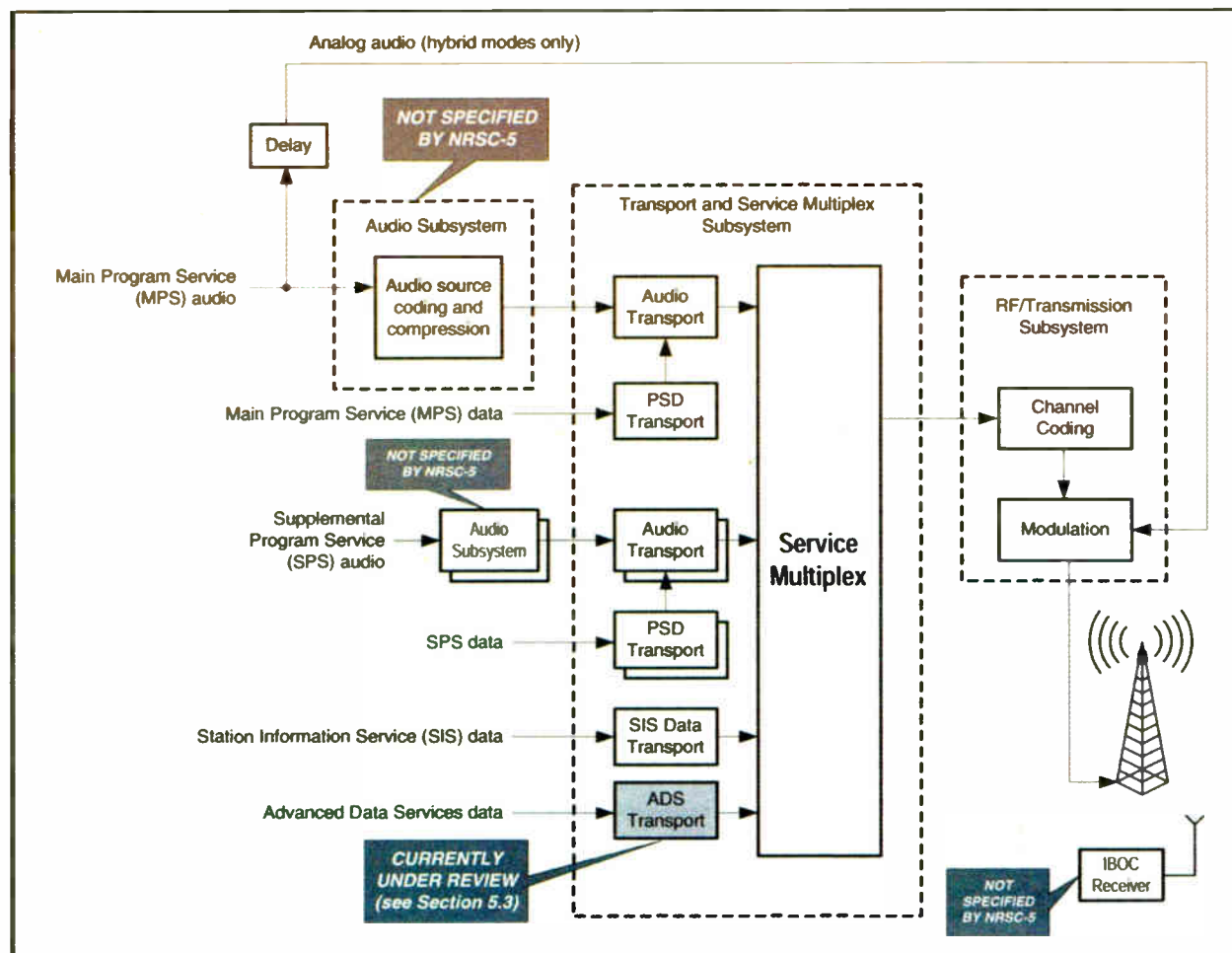
NRSC-5 itself is a short 46-page document that contains an overview of the structure of IBOC transmission. As most standards do, NRSC-5 makes reference to more detailed documents called "normative references."

These documents are frozen in time and contain the details of each portion of the AM and FM IBOC systems. So far, all normative references are versions of Ibiqity documents. Because the standard is subject to additions and revisions, there is always the possibility that future normative references could come not only from Ibiqity, but also from other sources.

The NRSC-5 standard organizes the system description into three functional groups, starting at the "bottom" with the group closest to the radio signal and ending with the group closest to the audio coder — the RF/transmission System, the Transport and Service Multiplex Subsystem, and the Audio and Data Input Subsystems. These systems form a protocol stack, a concept that may be familiar if you work with computer networking protocols.

The Open Systems Interconnection model is a generic model of the layering of protocols and serves as a good

See STANDARD, page 12 ▶



Overview of IBOC Digital Radio System

and business objectives. While this article is intended to be factual, please note that it contains my own interpretation, and is not the official word of the NRSC.

your own, it still may be necessary to license patents to build and sell your products. Standards bodies request that participants disclose their patents and make them

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## 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 June 6, 2005. This page is sponsored by Broadcast Electronics. HD Radio is a trademark of iBiquity Digital Corp.

### HD RADIO IN DETROIT

Station	Freq.	Format	Licensee	On Air?
WWJ(AM)	950	News	Infinity	Yes
WCHB(AM)	1200	Gospel	Radio One	Yes
WXYZ(AM)	1270	Talk	Infinity	Yes
WMXD(FM)	92.3	Urban AC	Clear Channel	Yes
WDRQ(FM)	93.1	Top 40	ABC Radio	Yes
WCSX(FM)	94.7	Clsc Rock	Greater Media	Yes
WKQI(FM)	95.5	Top 40	Clear Channel	Yes
WDVD(FM)	96.3	Hot AC	ABC Radio	No
WJLB(FM)	97.9	Urban	Clear Channel	Yes
WJMV(FM)	98.7	SmJaz/NAC	Infinity	Yes
WNIC(FM)	100.3	AC	Clear Channel	Yes
WRIF(FM)	101.1	AOR	Greater Media	Yes
WDET(FM)	101.9	NPR/Prgvs	Wayne State Univ.	Yes
WDMK(FM)	102.7	Oldies	Radio One	Yes
WMUZ(FM)	103.5	ChrsContemp	Crawford	Yes
WOMC(FM)	104.3	Oldies	Infinity	Yes
WMGC(FM)	105.1	AC	Greater Media	Yes
WDTJ(FM)	105.9	Urban	Radio One	Yes
WDTW(FM)	106.7	Clsc Hits	Clear Channel	Yes

### HD RADIO AT CRAWFORD BROADCASTING

Station	Freq.	Format	Market	On Air?
KLZ(AM)	560	Sports	Denver-Boulder	No
KLTT(AM)	670	Christian	Denver-Boulder	No
KLDC(AM)	810	Clsc/Rlg/Gsp	Denver-Boulder	No
WPWX(FM)	92.3	Urban	Chicago	Yes
WXJC(FM)	92.5	Christian	Birmingham, AL	No
WDJC(FM)	93.7	Christian	Birmingham, AL	No
WPTR(FM)	96.7	ChrsContemp	Albany-Schenectady-Troy, NY	Yes
WDCX(FM)	99.5	Religion	Buffalo-Niagara Falls, NY	No
WYDE(FM)	101.1	News/Talk	Birmingham, AL	No
WYCA(FM)	102.3	Gospel	Chicago	No
WRCI(FM)	102.7	Christian	Rochester, NY	No
WMUZ(FM)	103.5	ChrsContemp	Detroit	Yes
WSRB(FM)	106.3	Urban AC	Chicago	Yes
WYRB(FM)	106.3	Urban AC	Genoa, IL	Yes

#### The Bottom Line

Total Licensed

On the Air



Last Month

Total Licensed

On the Air



Market Penetration United States

13,528 AM & FM Stations



Licensed by iBiquity and on the air

HD Radio at Radio One

89 Radio Stations



Licensed by iBiquity and not on the air



# Standard

► Continued from page 10  
example of how protocols can be layered. For more details, Web search "open systems interconnection."

The foundation of the protocol layers is the electrical signal running on its medium, whether it is, for instance, a radio signal propagating through space or an electrical signal on an Ethernet cable. This is the "physical layer" of the protocol stack.

NRSC-5 then shows the interleaving process that spreads the data stream over the time of one frame of data, about a second and a half. This is to improve the chances of the data stream being recovered by FEC if it should get corrupted.

Finally NRSC-5 shows that Layer 1 maps the resulting scrambled, coded and interleaved frames of information to OFDM carriers in the radio spectrum. NRSC-5 lets the reference documents go into the complicated details such as what the scrambling algorithm is, what channel encoding is done to what channels, how the interleaver puts exactly the right

about the station and its digital signal to help the radio do its job. These two services are the core services because they are necessary for a basic IBOC radio to receive main channel programming.

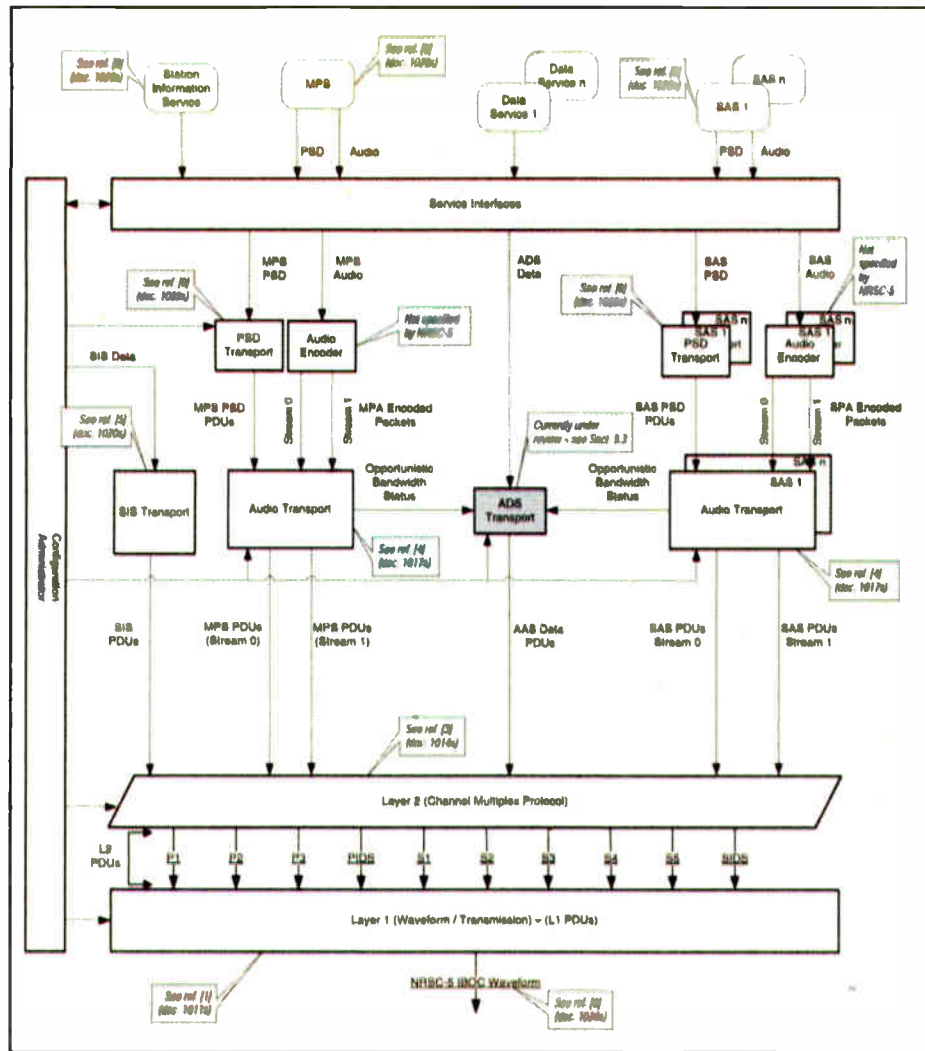
MPS is the marriage of the MPA audio stream and the Main Program Service Data stream. NRSC-5 references the Program Service Data protocol document.

This describes how program-related data is formatted for the receiver to understand. For instance, if you want to send the artist's name, this document explains how to format the information so the receiver will know it is the artist's name.

should give way to short-term decisions on bandwidth allocation for maximum return. Stations can adjust their audio bit rates to balance the demand for a number of audio channels, their coding quality and the types, speed and reliability of any data services. But I digress; NRSC-5 merely holds a place for this protocol.

### Audio codec

Having read this far, the reader may realize that the audio encoding and decoding algorithm is not mentioned in NRSC-5. Encoded audio is simply an input to the top of the IBOC stack and is not part of the



FM Band Implementation of NRSC-5 IBOC Digital Radio Standard

IBOC's physical layer consists of the Orthogonal Frequency Division Multiplexing radio frequency carriers that straddle the analog FM and AM signals. NRSC-5 gives an overview of the manner in which intelligence is impressed upon these carriers.

The RF/transmission System Characteristics section of NRSC-5 contains a subsection for AM and one for FM. These subsections give a general view of the processes that occur in this layer, which is called "Layer 1."

### Layer 1

Layer 1 takes information that has been organized for transport into "logical channels" and runs each logical channel through a scrambling process to randomize the ones and zeros of data bits to make the system more efficient. They are pseudo-randomized with a known procedure so they can be un-randomized at the receive end.

The logical channels are then run through a channel encoder, which should not be confused with an audio coder. The channel encoder adds data bits that are related to the incoming data stream in such a fashion that if some bits are lost or corrupted on the way to the receiver, there can be enough redundant information to recover them. This is the engine of the forward error correction system.

bits in the right places in the frame, what OFDM carriers carry reference and synchronization information and what carriers handle the information frames, what the frequencies, power levels, modulation characteristics, and symbol rates of the OFDM carriers are, and so on.

The RF/transmission System section of NRSC-5 also reproduces the Ibiqity-recommended spectrum masks.

### Transport and Service Multiplex

NRSC-5 briefly mentions the functions of Layer 2 described in the normative reference document "Channel Multiplex." This is a fairly thin layer that takes input from multiple sources and organizes it into the frames for each logical channel.

Layer 2 feeds its frames down to Layer 1. The multiple sources entering Layer 2 fall into several categories: the Main Program Service, Supplemental Program Service(s), Station Information Service and Advanced Data Services. These "services" are the protocols for presenting certain types of data streams to the IBOC system.

### Audio and Data Transport

MPS consists of the Main Program Audio and any text carried along with it such as artist, title, etc. SIS carries data

Encoded Main Program Audio (MPA)	Main Program Service Data (MPSD)	Encoded Supplemental Audio Services (SAS)	Supplemental Program Service Data (SPSD)		
	PSD Transport		PSD Transport		
Audio Transport (MPS)		Audio Transport (SAS) [FM only]		Station Information Service (SIS)	Advanced Data Service (ADS)
Layer 2 - Channel Multiplex					
Layer 1					
Physical layer					

Simplified IBOC Protocol Stack (core services are shaded)

Once formatted as MPSD, the data has to be joined with the audio stream by putting the data on a transport. NRSC-5 references a Program Service Data Transport document. This explains how to packetize and stream the MPSD to put it into the Audio Transport with the audio stream. Together, Audio Transport, the PSD protocol and the PSD Transport assemble the Main Program Service for handoff to Layer 2.

### Supplemental Audio

Thanks to the work of National Public Radio in conjunction with Harris and Kenwood, with the support of Ibiqity, the concept of multi-channel transmission has made it to IBOC. NPR's Tomorrow Radio project explored the potential for transmitting more than one channel of audio at once.

The idea is to make these Supplemental Audio Services as available to the public as main channel programming, giving listeners more variety on the radio. It should be relatively easy to add multiple channel capability to the design of even the least expensive IBOC receivers.

NRSC-5 makes an allowance for SAS on FM transmissions. Above Layer 2 supplemental audio is handled in the same fashion as main program audio. Supplemental audio and supplemental program service data use the same three protocols to be transported together: Audio Transport, PSD protocol and PSD Transport.

### Advanced Data Service

NRSC-5 marks the Advanced Data Service protocol as "currently under review." The standard was adopted only with the core elements intact. The ADS protocol will be the result of follow-on work by the NRSC.

ADS provides a way to transport data, whether or not related to a program audio stream, beyond the simple text format and low bit rate of PSD. Of course, an application using the Advanced Data Services protocol will be competing for bandwidth with program audio streams and other data services.

Stations will need to prioritize their use of their bandwidth to maximize its usefulness. Long-term lease agreements, common in the days of subcarrier services,

NRSC-5 standard.

HD Radio products use the HD Codec to encode the audio for transmission and decode it for reception. Surely anyone planning to build a transmitter or radio will license the HDC codec for MPS in order to be compatible with the installed base in the marketplace. Those taking advantage of the Advanced Data Services protocol for transmitting audio files or streaming applications could use any codec of their choosing to make their applications work.

The new NRSC-5 IBOC standard is a relatively short document that glues together the normative references necessary to describe how to transmit a compatible IBOC signal. This article has summarized NRSC-5. For further information, including copies of the standard and the reference documents, check out the NRSC Web site: nrscstandards.org.


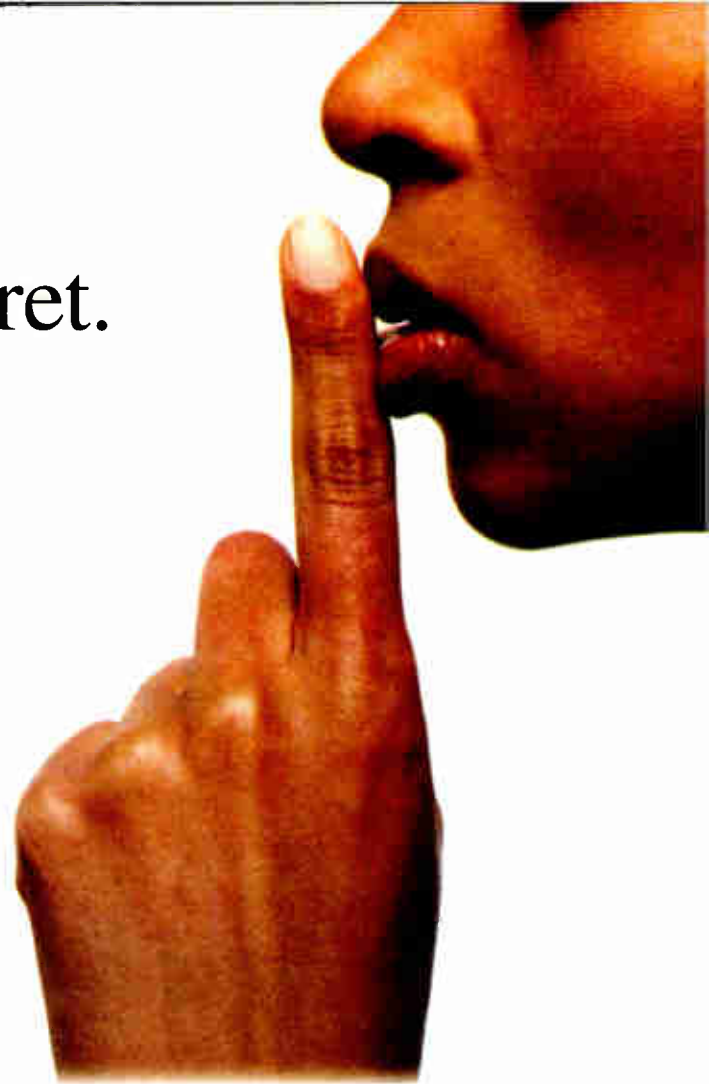
David Maxson is managing partner and co-founder, Broadcast Signal Lab in Medfield, Mass. He is also a member of the DAB Subcommittee of the NRSC.

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# Workbench

Radio World, July 6, 2005 Past columns are archived at [www.rwonline.com/reference-room](http://www.rwonline.com/reference-room)

## Digital Cameras Offer Protection

by John Bisset

We've shared thousands of tips in this column through the years. Perhaps the best, though, involves a recent technolog-

mitter sites through a series of digital pictures, snapped when they take responsibility for a station. Why? Missing equipment, missing tools — the list goes on.

What the owner or manager believes is

equipment, for insurance or in-house purposes. Pictures also help you point out problem areas requiring attention.

Most important, for our discussion, your photo essay can protect you and

threat from escalating.

Full-time engineers can benefit from this practice too. I remember a similar picture being used in an attempt to railroad an engineer's career.

In this case he was better off not working for the company anyway; but his reputation was called into question when pictures of an unkempt transmitter site



Fig. 1: Document past wiring disorders with a digital camera.

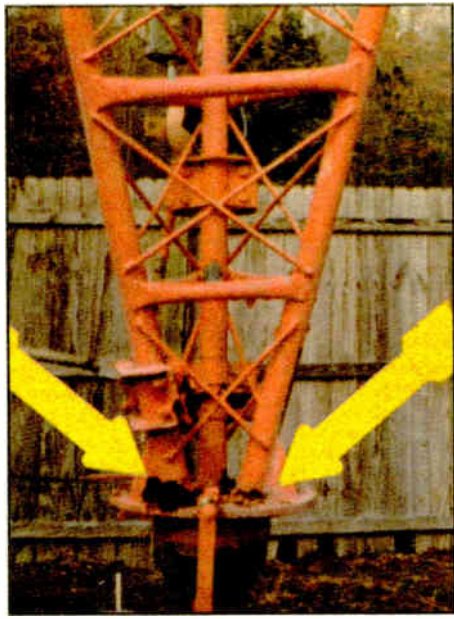


Fig. 2: Arrows indicate the rusted tower base.

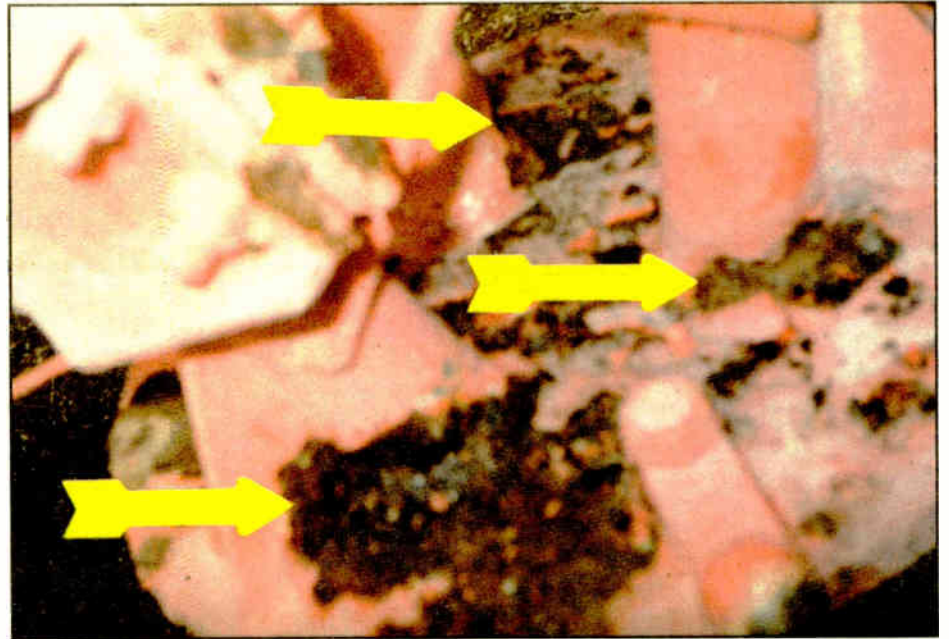


Fig. 3: Close-up of rust damage.

ical development: the digital camera.

Almost anybody can afford one. On a recent credit card envelope I saw a camera offered for under \$40. Many models cost in the low hundreds.

Last issue, we shared useful ways you can use a digital camera to diagnose transmitter problems — poking the lens in places your head won't or shouldn't go; documenting a component on which the circuit identification number has worn off.

In this day of litigation, several contract engineers I know document trans-

at the transmitter site may differ from reality; and you could be caught in the middle.

We've all heard of the engineer that takes his final "paycheck" in the form of a spare tube or audio processor. The digital camera will protect you from blame.

Make it your rule: "Before I take over engineering of a station, I do a thorough walk-through, documented with pictures, and preferably in the company of the manager or owner."

This can be a revenue generator. Use the session to prepare an inventory of

your reputation. Later complaints about missing equipment, poor wiring or unsafe engineering practices cannot be blamed on you.

I once was called in to arbitrate a billing dispute. In an attempt to reduce a contractor's bill, the owner blamed the mess of wiring in Fig. 1 on the contract engineer, citing poor practices.

Any engineer looking at this will tell you that the mess evolved over time; it wasn't from eight hours of contract work. By having a record of the transmitter site as you found it, you can keep this kind of

were blamed on his lack of maintenance. The mess in the photos had been created by previous engineers but was blamed on him. How much easier would his defense have been if he could have pulled out a few earlier, dated site pictures?

Fortunately, this kind of situation is rare; but it never hurts to be prepared. If nothing else, "before" pictures make for a neat photo résumé, coupled with "after" pictures.

Our editor Paul McLane points out another benefit to having a digital

See PHOTOS, page 16 ►

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World Radio History



# Upmix, Downmix — The Series

*Creating Compatible Content for Surround Radio May Be Challenging*

by Skip Pizzi

No, it's not a new PBS program; but the headline of our story may provide some drama in radio's future.

Much of the current discussion regarding surround sound radio broadcasting has ignored one of the most obvious questions: Where's the content coming from?

Unlike the television world, where plenty of cinematic, episodic and other (e.g., high-profile sports) content is already available in 5.1 discrete or matrixed surround sound, multichannel radio broadcasting today would face a dearth of material produced in any surround format.

Yes, a growing number of catalog hit albums have been remixed in 5.1 and released in DVD-A or SACD formats; but these few hundred titles represent a

tiny fraction of the archive of material likely to be broadcast by radio stations.

Meanwhile, relatively few new releases are forthcoming in multichannel formats. This is not likely to change much

**I**t's likely that broadcast audio processors will simply add multichannel upmix and processing to their feature sets.

or soon, given the tepid response that consumers have given to both the DVD-A and SACD formats, and the additional cost of producing a release in multichannel form — which typically requires a

complete second remix session. (Interestingly, some of the most experienced multichannel music producers mix the 5.1 version *first*, then do the stereo.)

So we should not expect a landslide of support for discrete multichannel music sources upcoming, but rather expect stereo releases to remain the norm for the foreseeable future.

## The Big Picture



Photo: Gary Hayes, BBC

by Skip Pizzi

PCM, none of which is proposed as the format in which they would be broadcast on radio. Therefore a transcoding step would be required, which might introduce some degradation or potential for erroneous channel mapping, image loss, etc.

### Upping the ante

More important, however, because most content broadcast in a radio surround format would originate as stereo for some time, creating a full-time surround audio service would require some *upmixing*, by which a multichannel signal would be derived automatically from a stereo audio source. This is just a nice way of saying "pseudo-surround," and there is questionable value of doing this at the radio station vs. allowing surround-capable consumer equipment to do it at the user's option.

Nevertheless, it is likely that if a radio station invests in and promotes surround-sound broadcasting, at least some (if not most) of its content will be upmixed, and the results will vary. Different upmixing devices will produce different surround effects on a given piece of audio content, so there will likely be some competition among manufacturers on the relative merits of their respective upmix algorithms, presets and variability options — much like stereo audio processing today.

Upmixing could be performed automatically or adaptively by a new processing box added to the station's air chain, or take place in a pre-broadcast production step for manual control optimized to the particular content. But it's most likely that broadcast audio processors will simply add multichannel upmix and process-

See CONTENT, page 17 ►

## Photos

► Continued from page 14

camera. You can use it to document your *Workbench* ideas, or to tell Radio World about your latest station improvement project, transmitter installation or unusual remote setup.

★ ★ ★

Figs. 2 and 3 on page 14 further demonstrate that a picture is worth a thousand words. Again, for contract engineers, such documentation can prevent you from a negligence claim.

Yes, that's the tower base rusting in Fig. 2. The weep holes were clogged. The result is compromised integrity of all three tapered base section leg members due to advanced internal rusting, seen in a close-up in Fig. 3.

This kind of damage is common at AM towers. At such sites, the manager often thinks, "If it's on the air, it's OK!"

It's just one more thing to check and to photograph.

Savvy corporate engineers tell me they keep a photo file of equipment for each station in the group. This aids the local



Fig. 4: The Fluke 62 Mini tracks heated components.

engineer in describing problems and gives the DOE a quick reference to each site.

★ ★ ★

Fluke has expanded its line of pistol-grip IR thermometers to include the Fluke 62 Mini. Rather than spend hundreds or even thousands of dollars for an infrared thermometer, you might consider this device, with a list price of less than \$100. The device is rugged enough for commercial applications and small enough for a toolbox.

The Fluke 62 Mini will measure from -20 to 932 degrees F, with a distance-to-spot ratio of 10:1. A single-dot laser sighting system indicates the center of the measurement spot.

IR thermometers are great for finding loose lugs in electrical boxes, helping you avoid a fire. They can be used to locate hot spots in rigid transmission line or hot spots on AM ATU or DA phasor components.

For more information, e-mail [fluke-info@fluke.com](mailto:fluke-info@fluke.com).

*John Bisset has worked as a chief and contract engineer for more than 30 years. He is northeast regional sales manager for Broadcast Electronics. Reach him at (571) 217-9386 or [jbisset@bdcast.com](mailto:jbisset@bdcast.com).*

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

**"Unless we could quickly build out new studios and antennas, our station would go silent."**

**After installing a new Kintronic diplexer with very short turnaround time, Jim Weitzman, President of New World Radio said:**

**"Throughout the process, we were treated as family. Kintronic's concern for the success of our STA operation was genuine and was abundantly reflected not only in the careful planning and fulfillment of our order, but in the final results, which speak for themselves."**

**During my many years representing countless AM stations in markets from Punxsutawney to New York, I'd worked with virtually every major manufacturer of RF broadcast equipment and most major consulting engineering firms. Almost unique among these is Kintronic, family-owned and operated for over 50 years whose steadfast devotion to uncompromising quality and truly responsive customer service have earned it a hallowed position in the industry—with equipment in all 50 states and many foreign countries, from tiny stations to megawatt, including US Armed Forces and VOA."**

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# Content

► Continued from page 16

ing capabilities — possibly along with some form of surround encoding for broadcast — to their feature sets.

To avoid double-encoding or other unintended artifacts, these automatic, real-time upmix processors will likely include detectors that determine whether incoming audio is already surround-encoded in some form. Elsewhere in the digital broadcast facility, there may be some form of signaling or file header that communicates whether and how a given audio file or stream is encoded, to simplify the world of mixed audio formats that many stations will encounter in the future.

(A new .WAV file format for surround audio was proposed at the Barcelona AES convention by Swedish Radio and D.A.V.I.D. GmbH, entitled "New File Format and Methods for Multichannel Sound in Broadcasting.")

## Downsizing

Meanwhile, the creation of a compatible surround/stereo/mono radio signal will also require the broadcaster to take discrete 5.1 audio source material and create a stereo signal from it — so-called *downmixing*. This is conceptually equivalent to summing a stereo signal to mono for the L+R/L-R signals used in the compatible stereo FM and TV-audio broadcasting today. Unlike that very simple 2x1 mix, however, the folding down of a center and two surround channels (plus a subwoofer feed) into a stereo mix is not straightforward, and open to much interpretation and variation.

For example, for many years, Dolby has kept its downmix algorithms for its Dolby Surround/ProLogic and Dolby Digital formats proprietary, and maintained strict control on the compliance of licensed products to these algorithms. Meanwhile, the ITU currently is attempting to develop an open-standard downmix algorithm that will handle all current multichannel formats.

The primary reason for understanding how these downmix algorithms work is so that mixing engineers will know in advance how any content they mix in multichannel form will sound on non-multichannel (i.e., stereo or mono) listening systems. This applies equally to the music industry and to broadcasters, as they each develop compatible surround content.

Some of those broadcasters will produce local concerts, sports or other remote broadcasts in multichannel, but the most prevalent type of surround content (at least initially) is likely to be liners, promos, local spots and other station-signature interstitials. This is where a station's production director can really have some fun and get listeners' attention will cool surround effects. But it will be critical to know how these techniques play to the majority of the audience, who will hear this heavily surround-processed material in stereo or mono. For this, a reliable downmixing monitor system will be required, so any production can be auditioned in surround (perhaps even on various decoder formats), stereo and mono.

More on the nuances of multichannel radio broadcasting next time.

Skip Pizzi is contributing editor of Radio World.

## NEWS WATCH

### L.A. Station Launches Mobile Traffic Alert Service

Listeners to an Infinity station in Los Angeles don't have to wait 10 minutes for the next traffic report if they don't want to; they can get personalized traffic reports sent as text messages to their cell phones.

Infinity announced the venture with Mobile Media, 3United Mobile Solutions and Westwood One.

The VP of AM programming for news

station KFWB, David Hall, said the "Traffic on Demand" service allows listeners to get traffic info whenever they need it.

The service is available to the majority of Los Angeles mobile phone subscribers. The listener sends a chosen route number via text message to telephone number 98011. The traffic status of that highway is sent via return text message, at a cost of 75 cents per message.

Content comes from KFWB's traffic reports and information supplied by Westwood One; 3United provides the application that enables the info to be used on mobile phones.

Mobile Media is providing the connectivity to the mobile network operators

and manages the mobile messaging platform. It said there are no subscription fees.

"Experience shows that sending a one-text message to an easy-to-remember short number and receiving an immediate response encourages people to use the service as part of their daily lives," says Ben Goodspeed, CEO of 3United.

He said drivers will come to rely more often on receiving the information they want, when they want it, to the palms of their hands.

The companies cited a recent report published by the Texas Transportation Institute saying North American traffic is growing worse, costing Americans \$63.1 billion a year.



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# 'Fellows' Are a Special Breed at SBE

by Tom Vernon

It is one of the most distinguished recognitions the Society of Broadcast Engineers can bestow on a member. The SBE Fellow designation recognizes conspicuous service, valuable



Andy Butler

contributions to the advancement of broadcast engineering or its allied professions, or dissemination of broadcast knowledge and promoting its application in practice.

At the society's spring meeting during the NAB convention, the board elected two members Fellow: James "Andy" Butler of PBS and Clay Freinwald of Entercom.

What does it mean to be named a "Fellow"? What kind of person deserves the title?

Andy Butler's reaction to the news gives some idea of the honor involved.

"It takes a lot to bring me to tears; but when Ralph Hogan told me I couldn't stop them. I never expected to be a Fellow. When I think about the tremendous contributions that other Fellows have made to the society and our industry, I have a hard time believing that I belong with that group."

John Poray, executive director of SBE, said candidates are proposed in writing by a voting member to the

Fellowship Committee.

"The nomination must include a complete history of the individual, along with the endorsement of at least five other voting members. Since the candidate should not be aware that he or she is being nominated, a bit of



Clay Freinwald

sleuthing for a complete biography may be required." Nominees are elected by the board of directors in a closed meeting.

## Giving back

The award was first presented in 1971 to Charles Hallinan, the first president of SBE. The honor has been bestowed on 65 others since. Poray said the process is driven strictly by nominations. Typically one or two engineers are recognized each year, although some years there are no recipients. In 1986, a record six became SBE Fellows.

The recipients receive a framed certificate with the SBE seal at an awards dinner, held in the fall.

Richard Rudman, a 1988 SBE Fellow, has made many contributions to broadcasting, including his efforts to establish a frequency coordination system. He said things changed in the mid-1970s when the FCC revised the Part 74 rules and split up the 450 MHz

band. In 1976 he founded and was the first chairman of the Southern California Frequency Coordination Committee. His work in California served as a template for other local frequency coordination committees and eventually for a national system.

"The SBE serves best when it steps into vacuums left by others," Rudman said, "and the alternative to not doing frequency coordination would have been chaos." He later wrote the first chapter on frequency coordination for the NAB Handbook.

"The broadcasting business has been very good to me," Rudman said, "and I've loved all the time that I've spent in it. My mission with SBE is to try and give something back."

## Liaison

In 1985, John Reiser became an SBE Fellow. Most of his career was spent with the FCC. From 1961 to 1972, he was assigned to the Detroit Field Office and performed inspections of area broadcast stations. It was then that he began to give presentations to state broadcast associations and SBE chapters on understanding changes to the FCC rules and how to avoid problems with the commission.

Later he became a liaison between the broadcast engineering community and the FCC, helping to find solutions to conflicts created by some of the changes in rules and regulations.

In 1976, he was appointed to the Broadcast Re-regulation Task Force, and for the next decade worked on modernizing the rules. Reiser worked on international radio for the commission from 1986 until his retirement in 2000, representing the United States at the ITU conferences held every four years.

"I was honored and surprised to be nominated as an SBE Fellow. It is a great privilege to receive this honor," he said.

Ed Miller became an SBE fellow in 2000. He was president of SBE in 1998-99 and vice president before that. He also served on the board and the executive committee, and was chair of the futures committee.

Miller began his broadcast career in 1960 as a board operator at WCLV in Cleveland, and later helped convert the station to stereo. In 1965 he developed a closed-circuit radio system for the Catholic Diocese of Cleveland. The signal served 186,000 students and was broadcast over an FM subcarrier.

He joined WEWS(TV) in Cleveland in 1970, and stayed for 27 years. There Miller worked his way up from audio tape engineer to engineering manager. One of his projects was the development and design of the first C-band uplink in the Cleveland market. At the same time, he was frequency coordinator for stations in the market.

In 1997 Miller became a consultant with Patlin Electronics, and was involved with many pioneering DTV projects, including installations in Conseco Field House in Indianapolis, Iowa State University and the broadcast facilities at Jacobs Field. He was appointed vice president of engineering for Toledo-based Pro Video Systems in 2000, where he continues to develop cutting-edge digital

television and multimedia systems.

Another Fellow, Richard Burden, received his award in 1999. He started in broadcasting in 1949, and has been self-employed with Burden Associates over most of his career. He was involved in developing standards in the FM Stereo group in the 1950s, and much later doing similar work for the TV Stereo group.

He received a Fellowship from the  
See FELLOWS, page 20 ▶

## SBE Fellows

Ronald L. Arendall, CPBE  
John H. Battison, P.E., CPBE  
Frederick M. Baumgartner, CPBE, CBNT  
Linda Baun  
Terrence M. Baun, CPBE, CBNT  
Edward B. Bench, CPBE \*  
James T. Bernier, Jr., CPBE, CBNT  
Glenn G. Boundy  
Richard W. Burden, CPBE  
James "Andy" Butler, CPBE  
David Carr, CPBE  
Al Chismark \*  
Gerry Dalton, CBRE  
Bradley L. Dick, CPBE  
Harold E. Ennes \*  
Dane E. Ericksen, P.E., CSRTE  
Richard A. Farquhar, CPBE  
Ellis Feinstein  
Howard M. Fine  
Robert W. Flanders, CPBE \*  
Clay Freinwald, CPBE  
Douglas W. Garlinger, CPBE, CBNT  
Robert I. Goza, CPBE  
Charles Hallinan, CPBE \*  
Albin R. Hillstrom, CPBE  
Nile M. Hunt \*  
James E. Hurley, CSBE  
Christopher D. Imlay, CBT  
Roger Johnson, CPBE \*  
Wallace E. Johnson \*  
Robert A. Jones, CSBE  
Edwin T. Karl, CPBE  
Harold Kassens  
William D. Kelly  
Glenn H. Lahman  
Paul E. Lentz, CPBE  
Vincent A. Lopez, CEV, CBNT  
John M. Lyons, CPBE  
Joseph J. Manning  
Jack E. McKain, CPBE  
James C. McKinney  
Edward J. Miller, CPBE  
Charles T. Morgan, CPBE  
Peter K. Onnigian, CSBE  
William Orr, CSBE \*  
John L. Poray, CAE  
Leo W. Reetz  
John W. Reiser, CSRTE  
Frederick M. Remley, CPBE  
Joseph A. Risse, P.E., CSBE  
Edward J. Roos, CPBE  
Richard A. Rudman, CPBE  
Charles Sakoski, CSBE  
Martin Sandberg, CPBE  
Orville Sather \*  
John W. Soergel, CPBE  
Donald J. Strauss, CPBE  
Doyle D. Thompson, Sr., CPBE  
Robert A. Van Buhler, CPBE  
Robert Wehrman \*  
Lewis D. Wetzel, CPBE  
Jerry C. Whitaker, CPBE  
Martin R. Williams \*  
Ira A. Wilner  
Benjamin Wolfe, CSBE \*  
James C. Wulliman, CPBE

\* deceased

## Control Solutions

### Model RFC-1/B Remote Facilities Controller

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



### Model RAK-1 Intelligent Rack Adapter

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## Henry Engineering Multi-User Headphone System

Multiphones is a multi-user distributed headphone system providing independent stereo headphone listening facilities for up to 12 users. The Multiphones system consists of the master unit and satellite GuestPods interconnected using Cat-5 cable. The Multiphones Master has inputs for stereo program audio and talk-back audio and talkback facilities. Three RJ45 jacks are provided to distribute audio to the GuestPods. Each GuestPod has a headphone amp, volume, jacks (both 1/8" and 1/4") and a cough button.



MULTIPHONES List \$295.00 **\$255.00**  
GUESTPOD List \$75.00 **\$65.00**

**LowestPrice from \$255!**

## EV Blue-Series Cardinal and Raven Mics

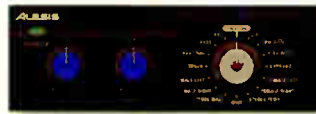
The lock is not the only unique thing about these birds. Just wait 'til you hear them sing! Co-designed by Blue and EV, the sound is pure and beautiful. The Cardinal is a high-performance cardioid condenser mic that features a high-quality, Class-A discrete low noise amp. The Raven is a rugged dynamic mic designed to capture the true character of live and studio vocals.



CARDINAL List \$199.00 **LowestPrice from \$149!**  
RAVEN List \$149.00

## Eliminate Vocals for any Reason You Can Think Of

The affordable Alesis Vocal Zapper makes it easy to eliminate vocals from any CD or stereo source. It offers 16 vocal settings for optimal removal, stereo 24-bit inputs/outputs and 48 kHz sample rate. Its super-compact size fits on any rack shelf. Great for karaoke.

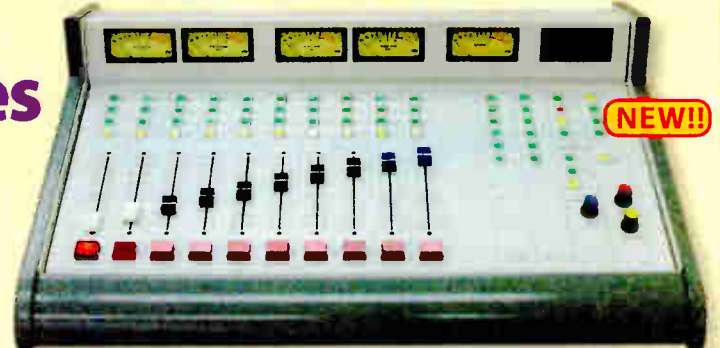


VOCALZAPPER List \$149.00 **LowestPrice only \$99!**

# New Arrakis Digital Consoles Exclusively at BSW!!

## Arrakis X-Mixer 10- and 14-Channel Consoles

The new Arrakis Xtreme mixers are powerful digital audio consoles that support BOTH analog and digital sources! Designed for long term reliability, each console features multimillion-operation switches, Penny & Giles slide faders, and LED illumination for all switches. Installation is quick and easy with a clamshell design that flips open, and with strain relieved connectors. Most ICs are socketed for easy replacement. The console features 3 mixing buses, stereo cue, monitoring for a control room and studio, and a powerful telephone interface for on-air talk shows and off-line recording. With both 10- and 14-channel models, the X-mixer is ideal for any size on-air or production application. Call us today for low introductory sale price!



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OR CALL: 1-800-426-8434



## Top-Selling MiniDisc Recorder!!

For critical MiniDisc recording and playback, Tascam's MD-350 rackmount deck is a proven performer. It offers all the features you need for your busy radio production studio, or on-air playback.

**FEATURES:** TASCAM  
- Auto-Ready, Auto-Cue, pitch control  
- Balanced XLR and unbalanced RCA I/O; digital S/PDIF I/O  
- Computer keyboard port  
- Headphone output and wireless remote

MD350 List \$585.00 **LowestPrice@bswusa.com**  
OR CALL: 1-800-426-8434

## EV RE20 & 27 Microphones

THE broadcast standard, & its shiny cousin! Nuff said. Well, almost...we've got em for the lowest price around!

RE20	List \$798.00	<b>\$399.00</b>
RE27ND	List \$840.00	<b>\$449.00</b>
309A	Shockmount	<b>\$99.00</b>
WS1BLACK	Windscreens	<b>\$29.00</b>
VACRE20	Pop filter/mount	<b>\$36.00</b>

**LowestPrice from \$399!**

## Broadcast Tools Auto-Dialer

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



VAD-2 List \$239.00 **LowestPrice only \$199!** **tinyTOOLS**

## 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.



WRC4 List \$439.00 **LowestPrice only \$389!**

**Broadcast Tech Tip # 827**  
Ever notice how people in black and white always sound more exciting? With BSW's BandW Technique, you can always sound your best. Just speak into the mic, and think less colorful thoughts! Repeat the process three times. Voila!

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# Fellows

► Continued from page 18

AES in 1975 for his contributions to audio in broadcasting, including his advocacy of Sum and Difference metering as an important analytical tool to provide proper listening levels. He is a member of the NRSC's DAB subcommittee.

Burden is also known as the father of the Traveller's Information Station, or TIS. He developed the original system at Los Angeles' LAX with RF through an induction cable in 1972. The system was later refined with a more conventional antenna, and the FCC began licensing TIS stations in 1977. Burden also has been honored recently with the SBE's Lifetime Achievement Award, only the seventh person so honored.

Martin Sandberg began his electronics career in 1943, serving with the Signal Corps in WWII. After the war he became a TV serviceman, where he learned the emerging technology of television, and later color TV. In 1957 he joined start-up WFGA(TV) in Jacksonville, Fla., where he helped put the station on the air. During that period he worked with pioneers such as Allen B. Dumont and Norman Bean of RCA.

"Looking back, it's amazing that we got it on the air," he remembers.

Sandberg spent much of his television career at ABC, where he worked as a technical producer. During his tenure he produced nine Olympics, four presiden-



John Reiser



Richard Rudman

**The first SBE Fellow was Charles Hallinan, elected in 1971. The honor has been bestowed on 65 others since.**

tial inaugurations, the Robert F. Kennedy funeral and the first live broadcast from the floor of the United Nations. He received an Emmy award for his work on the 1980 Olympics from Lake Placid.

Sandberg left ABC in 1985, built a TV station in Puerto Rico, and went into consulting, which he continues to the present. He founded the SBE and was a

charter member. Sandberg was awarded the SBE Fellowship in 1996.

The newest fellows are Butler and Freinwald.

Butler is a past president of the SBE, having served two terms, from 1999-2001. He served in other capacities on the SBE board and has been a member of chapters in St. Louis, New York,

Baltimore, Springfield, Ill., and Washington; he was instrumental in the society's first national conventions in the mid-1980s and has represented SBE with a number of industry groups.

Freinwald is in his sixth year as a member of the SBE board and chairs the national SBE EAS Committee. He serves on the FCC Liaison and Frequency Coordination committees and the Executive Committee. He has been a member of SBE since 1968 and is active in Chapter 16 in Seattle.

Freinwald has worked full-time in the industry since the Kennedy administration. Echoing comments of other Fellows, he says he was surprised and honored.

"It's clear that this category is reserved for those that have gone the extra mile for the society. I'm not sure that I have gone that far over the years; however I have certainly enjoyed my association with the organization. SBE can only become greater through active participation by its members. I urge everyone to join me in that belief."

Butler says that, for him, the SBE has been about opportunities, camaraderie and "just plain fun." He remembers his first chapter meeting, at which Ed Karl asked Butler what he wanted to do.

"I made the biggest stretch I could imagine and told him I wanted to be director of engineering for a broadcast group. ... He said, 'Why not a network?' I laughed; but he was serious, and he took me seriously.

"I've experienced that kind of generosity over and over again."

"Previous computer-controlled power switches that can turn power off or on typically bring all the equipment down with them should they lose their power."

## MARKET PLACE

### PowerBoss Is Protection For Remote Sites

Omnitronix is offering PowerBoss One, intended as the first in a line of power management products. It is targeted at broad-

cast, telecom and wireless providers who use remote sites.

The company says the product enables individual power-cycling control. This, it says, allows control of eight pieces of equipment, like routers, servers and air conditioners, even those at mixed voltage signals.

The system uses mechanical relays that the company says each handle AC or DC current up to 10 amps at 60VDC or 277VAC.

"Unlike other power switching

devices that use solid-state switches, the PBI relays can be used in a normally closed position, which ensures that power will still be provided to all



remote equipment even if the PBI were to experience a failure," it stated. "This helps avoid a single point of failure." It says this is the first product to accommodate the mixed voltages commonly found in remote site cabinets such as -48 and 24 VDC.

With the PBI, it said, the power connection is always on.

The unit operates as an attachment to other Omnitronix site monitoring equipment.

Info: (206) 624.4985 in Washington state, or visit [www.omnitronix.com](http://www.omnitronix.com).

## The Wizard™ has gone STEREO!

The new **DIGITAL FMSA-1** gives The Wizard System unmatched stereo monitoring capabilities...



Superlative stereo performance. Linear-phase filters that reveal the true performance of your audio processing. The stability of digital stereo demodulation. The sophisticated graphical presentation of The Wizard. And — with the RS-232 port — operation on site or off.

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Call, write or FAX for more information on Belar AM, FM, Stereo, SCA and TV monitors

## California Station Wins Burk ARC-16

Burk Technology noted its 20th anniversary by giving away an ARC-16 transmitter remote control system.

Sandra Wasson, general manager of KALX(FM) in Berkeley, Calif., was the winner. KALX is a mixed-format station at the University of California. The prize was valued at over \$4,000.

Pictured: Radio World's Kelly Brooks selects the winner. Burk Technology representatives Bonnie Christiansen, left, and Anita Russell, right, are joined by Radio World Associate Publisher John Casey, center, other RW staff and contributors as well as NAB show attendees.

Info: (978) 486-0086 in Massachusetts or [www.burk.com](http://www.burk.com).





MARKET PLACE

### Matrix at the Border

Steven Gregory recently put a Comrex Matrix to work to cover a big news remote from border country.

The photo is "from my recent assignment along the U.S./Mexico Border," said Gregory, at the time a field anchor/correspondent for Clear Channel in Phoenix. "I was covering the Minuteman Project for KFYZ(AM) Phoenix," referring to the organized volunteer effort that attempts to stem illegal immigration and which had made news headlines.



"I was 'embedded' with the volunteers for the first 12 days in April; then I returned for weekly updates, finally doing a two-hour special from the cab of one of our news vehicles for the final weekend — landlines were horrible."

Gregory told Comrex he successfully used the Matrix to do daily news updates from the hood of the truck — he points out the border fence in the background — then sat in the cab of the vehicle hosting a two-hour live talk show via the wireless GSM module, including taking phone calls.

*RW welcomes your photos of broadcast equipment and technology being used in unusual or newsworthy situations. Write to radioworld@imaspub.com.*

### SurgeX Updates Power Protection Line

SurgeX said it redesigned its IRU surge protectors and power conditioners, adding Advanced Series Mode surging suppression and new power-conditioning technologies.

It said these include impedance-tolerant EMI/RFI filtering, ICE inrush current elimination and COUVS catastrophic over/under-voltage shutdown.

The company says Series Mode circuitry uses an inductor as the first and primary surge-suppression component to contain destructive surge energy. It claims there has never been a failure of Series Mode-protected equipment. It says its ASM technology does not rely on MOV as a sacrificial component, creates no ground-wire contamination or common-mode surges and has zero let-through voltage.

Various configurations of surge protection are available.

For information call the company in Pennsylvania at (215) 766-1240 or visit [www.surgeX.com](http://www.surgeX.com).

### DC Studio Available Free; Ingraham Among Users

Laura Ingraham originated her program recently from radio studios of the Center for American Progress, a progressive think-tank founded by former White House Chief of Staff John Podesta.

"Laura was displaced from her home studio at The Heritage Foundation, CAP's conservative counterpart, due to renovations," CAP said in distributing a photo of the conservative host in an unlikely setting.

"CAP, true to its mission of non-partisanship, offered its state-of-the-art radio studio to Ingraham when she appeared on the CAP-sponsored panel, 'Wag the Debate: What's the Future of the Pundit' at HBO's US Comedy Festival in February."

"Who knew progressives could be so nice?" CAP quoted Ingraham as saying.

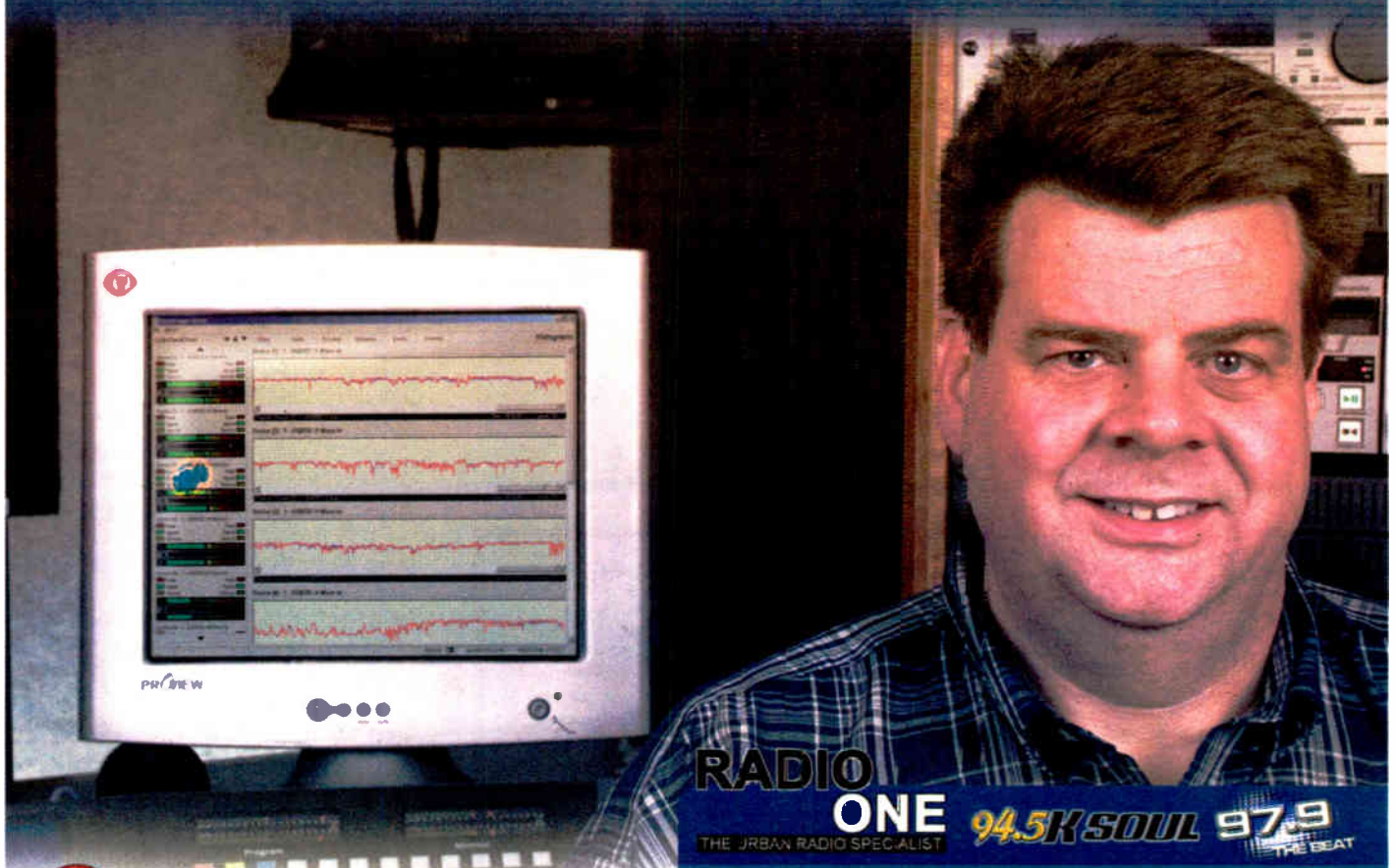
The center is a research and educational institute. It offers its new studios free to radio broadcasters who are traveling to Washington DC.

For information about space call Paul Woodhull or Debbie Berger at (202) 682-1611.



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"When we installed the iMediaLogger, we showed our PD what it could do for him. He responded by saying 'This is my newest favorite toy'. The ability to instantly listen to our stations or the competing stations 24 hours a day and preparing airchecks has greatly helped our Production and Sales Departments"

**Don Stevenson - Chief Engineer**  
Radio One Dallas- Dallas, TX

### iMediaLogger features:

- This multi purpose tool can simultaneously perform 24/7 logging, Mic Skimming, Competition Monitoring, Back Ground Recording and Podcasting
- On one record input, create four recordings (24/7 log, Mic Skim, Best of show and an internet stream). For example: The 8 Channel iMediaLogger = 8X4 for a total of 32 recordings!
- Station personnel can then access any of their recordings remotely via LAN/WAN with its built-in Web browser Interface.

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To find out more, call us Toll Free 888 665 0501 ext.208 or visit [www.imatediatouch.com](http://www.imatediatouch.com)



MANAGEMENT FOR ENGINEERS

# Get a Budget and Keep It

by Frank Grundstein

We hear the story told by many engineers that they are still viewed as a constant drain on station resources — that engineering is still looked on

you a budget.

How does this help change anything? We are still asking for money. Yes we are, but we are not coming as a beggar. We are managing our department.

Without a budget, every time a part is

With a budget, station management knows how and when you spend their resources. They can see on a month-to-month basis what they are going to require to keep the station's technical plant running.

front office to ask for money. A budget makes you proactive, not reactive.

We know there will be times when unexpected things happen, but they will be regarded as the exception, not the rule. In many cases, unexpected expenses can be accommodated by a rearranging of an expense line rather than asking for new money. Once again, you are managing station resources, not draining them.

Consider getting the fees paid for SCA

Engineering Budget													
	January	February	March	April	May	June	July	August	September	October	November	December	TOTALS
Office Computer Maintenance	\$200.00	\$200.00	\$200.00	\$500.00	\$200.00	\$200.00	\$200.00	\$500.00	\$500.00	\$200.00	\$200.00	\$200.00	\$3,300.00
Office Telephones Maintenance	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$2,400.00
Cell Phones and Beepers	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$1,200.00
Gas and Travel Expenses	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$2,400.00
NAB				\$1,200.00									\$1,200.00
Studio Maintenance	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$6,000.00
Utility: Electric	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$18,000.00
Tubes				\$4,000.00						\$4,000.00			\$8,000.00
Transmitter Telephone	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$600.00
Tower Rent	\$3,500.00	\$3,500.00	\$3,500.00	\$3,500.00	\$3,500.00	\$3,500.00	\$3,500.00	\$3,500.00	\$3,500.00	\$3,500.00	\$3,500.00	\$3,500.00	\$42,000.00
Generator Maintenance				\$400.00						\$400.00			\$800.00
Generator Fuel	\$250.00				\$250.00				\$250.00				\$750.00
Transmitter: Total	\$5,300.00	\$5,050.00	\$5,050.00	\$9,450.00	\$5,300.00	\$5,050.00	\$5,050.00	\$5,050.00	\$5,300.00	\$9,450.00	\$5,050.00	\$5,050.00	\$70,150.00
													\$0.00
<b>TOTALS</b>	<b>\$6,500.00</b>	<b>\$6,250.00</b>	<b>\$6,250.00</b>	<b>\$12,150.00</b>	<b>\$6,500.00</b>	<b>\$6,250.00</b>	<b>\$6,250.00</b>	<b>\$6,550.00</b>	<b>\$6,800.00</b>	<b>\$10,650.00</b>	<b>\$6,250.00</b>	<b>\$6,250.00</b>	<b>\$83,050.00</b>

A Sample Engineering Budget

as the "pickpocket" department. While this view is most prevalent in smaller station operations, it can be seen in a few stations in major markets as well.

Combating this perception has been an uphill battle for engineers for as long as I can remember. How can we change our GM's view that we exist only to drain the station of money?

Try this: Get your manager to give

needed, whether it is a \$2 XLR connector or \$4,000 final tube, we have to go to the GM and ask for money. This could put us in the position of going to our manager every week.

**Spend, spend, spend**

If nine of the 10 times your GM sees you you're asking for money, no wonder management thinks engineering is a drain.

I know my mortgage is due every month, so I budget for it. I have a budget plan for my own finances. Why should I not have one at work?

A well-prepared budget doesn't prevent you from doing your job; it helps. It tells you what you have to spend on a monthly basis. It helps your manager know what he

rentals included in your budget. You probably have to support your SCA provider; you should reap the benefit. At least have SCA maintenance as a separate line item so it can be charged against the revenue it generates. This will demonstrate to your manager that you are not only an expense but a revenue generator.

## STATION/STUDIO SERVICES

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1. Write down the names of three prospects who *might* buy a new or creative idea from you. (Three is a good number to start with.)
2. Visit [gracebroadcast.com](http://gracebroadcast.com), check out the current "Sales Boosters" and download any demos that *might* appeal to these prospects.
3. Put together a package and present it with the audio demo to your prospects. *They might just say... Yes!*

Questions? Call us at (888) 472-2388. The suggestion above is risk-free. And highly effective.



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## The idea is to eliminate the trips to the front office to ask for money.

has to spend. Your manager has a budget. He knows how much he will spend each month on promotions, on licenses, on rent, on salaries. Your budget helps him get a better grasp of his operating expenses. It will help him manage the station better. It will also show him that you are a manager and not just a repairman.

By staying within budget, or occasionally being under budget, you have helped him meet his projections. You demonstrate that you can manage your department and help the station prosper.

**Responsible manager**

The budgeting process also helps you and your management get a better idea of what needs to be done at the station on an annual basis.

Make your budget lines as general as possible. Have a line for general maintenance, not separate lines for XLR connectors and RCA connectors. Discuss with your manager whether items like tower rent and utilities should be part of his budget or yours. If you take care of the phone system and office computers, you need lines for them. Put everything in that you can think of.

The idea is to eliminate the trips to the

I know it may be hard to wrench a budget from your manager. It may be viewed as giving up control. But if you present it properly you can demonstrate that it provides a degree of control not previously exerted. If you present him with the whole plan, spreadsheet and all, you can get what you need.

If the GM still bristles about giving you a budget, develop your own based on actual spending during the year. At the end of the year, you will know what all your expenses and you can show him what engineering really cost during the year. With the new year about to begin, once again push for the budget.

You might be able to show where you could have saved money with a real budget rather than the hand-to-mouth operation you have. Show him you are an engineering manager ready to be a part of the station management team. Any good businessman should appreciate the initiative.

So stop being a beggar and become a manager. Get a budget, and stick to it.

The author has worked as a radio chief engineer, video facility manager and equipment sales executive. He is domestic sales manager for Logitek. The opinions are his own.



# Studio Sessions

Product Guide



Inside

Radio World

Resource for Radio On-Air, Production and Recording

July 6, 2005

PRODUCT EVALUATION

## Aphex 230 Has Easyrider Compressor

by Mark Greenhouse

Aphex Systems' new Model 230 Master Voice Channel Processor is an analog device that combines several of the company's proprietary voice processing effects and familiar audio tools into a single-rack-space component. It is designed to control one microphone. Initial examination of the front panel reveals an impressive collection of tools. Exploring them reveals it is capable of more than is apparent.



The 230 has a busy, matte silver faceplate dotted with soft-glowing status buttons and an attractively illuminated Aphex logo. The Reflective Plate Amplifier (RPA) tube microphone preamp is a Aphex patented circuit that claims to subtly impart sonic warmth and character while providing stable operation.

My announcer read into a Sennheiser MKH-40 condenser mic, and I monitored through JBL DMS-1 ambient-field control room speakers. I found the preamp responsive and quiet — the latter being essential for broadcast microphone applications that often have no background ambience to mask the potentially hissy and hashy noise floor of tube device.

The preamp can be routed through any of the processors on board, or quite directly to the analog and digital outputs by not engaging the "in" buttons that individually insert many of the components.

The Easyrider compressor, unlike brands that have multiple user-adjustable controls, offers only drive and release knobs. Aphex states the factory-set compression algorithm automatically adapts to voice waves and reduces any pumping effect while tightening the average level flatteringly. I found this to be accurate. By driving the Easyrider hard, I was able to magnify the size of my voice almost exponentially without a trace of the usual frequency-thinning harsh edge that heavy compression usually imparts.

I find the best way to adjust the unit is to simply listen while twisting the "drive" and "release" controls until you're happy with the results. You can then examine the amount of gain reduction and release time by changing the input meter to a GR meter with a button push.

### Present and rich

The inauspicious but rather magical Phase Rotator button engages a circuit that tunes a fourth order all-pass filter to reduce the amplitude of asymmetric peaks and displace the time relationship of even harmonics to their fundamentals. While this may sound a bit technobabble-ish, and Aphex points out it is psycho-acoustic, the result is a simulta-

neously present, rich and fuller product.

Any electronic fogging (high frequency "smearing") of the voice is time-corrected by the Rotator to present a coherent signal to the ensuing electronics, especially enhancing the performance of the Easyrider compressor. This processor makes all the decisions; there are no user controls other than for the purpose of engaging it. You, the engineer, use it selectively on a voice, comparing processed with unprocessed tracks and choosing the best sounding.

Trust me, this could not be accomplished by using equalization.

The single channel of parametric EQ is primarily a surgical tool with a potential of +/-12 from 240 kHz to 8 kHz. The volume knob has a unity detent, so you can bypass the equalizer if you don't need it. The familiar "Big Bottom" circuit accomplishes low frequency contouring from 50 Hz to 280 Hz, and the Aural Exciter manages 500 Hz to 5 kHz.

Moving along to the Logic Assisted noise gate, the Threshold control knob permits wide sensitivity, and once triggered stays open through the attack-hold-release sequences. Even with steep volume reduction, the Depth knob allows control of the release and permits even extreme gating to take place transparently.

It required some contrary settings to get the gate to "chatter," because it opens instantly and closes in a ramped, rather than clipped, fashion. Here, I discovered an unexpected capability of the 230 Master Voice Channel Processor.

When used in conjunction with accurate narrow frequency notching on the parametric EQ, the Logic Assisted gate becomes a remarkable feedback controller in SR applications. And with a judicious depth setting, this gate is quite capable of permitting an announcer to maintain a dominant presence while keeping the ambient surroundings as exciting or subdued as desired.

### S-s-s

Okay, we've got a clean signal that's dynamically controlled, phase corrected, background noise insulated and equalized — what more could you really need? A de-esser, that's what.

Unlike a conventional de-esser that simply ducks the whole voice signal above some turning point, Aphex has provided a standalone limiter that uses a "split-band" technique to attenuate only the sibilance, leaving the body of the voice untouched.

This prevents noticeable compression artifacts, especially if the Easyrider compressor also is engaged. Operation of the de-esser is a one-knob affair. Just set the threshold to the point where you want the sibilances to be softened, and the internally set

attack and release characteristics evaluate the incoming signal and limit the undesired sibilance.

Since it's called the Model 230 Master Voice Channel Processor, of course I ran a Shure SM-57 dynamic mic through it, placed in front of a Marshall JTM45 guitar amplifier, and as I suspected was presented with a wide selection of tones and sizes. I drove the compressor quite hard and set a slow release time at about 9 o'clock on the faceplate, used the gate to reduce amp buzz

between notes, notched out some mud at around 300 Hz and compensated for the volume loss at the output gain knob.

The guitarist's face split open in a huge grin when he heard his solo played back through the control room Genelec 1038s. I was impressed with the solid, huge power of the guitar sound and the easy time I had dialing it in. It's not unusual to spend an afternoon getting a happening guitar tone; but this took about 15 minutes.

This device reminds me of a Bruce Springsteen concert. After a three-and-a-half-hour show, he'll ask the audience, "Had enough?" and we holler back, "NO!" so he plays another hour. Aphex packs in a bundle of additional features such as a cough switch jack that allows easy insertion of a remotely operated mute button; low-frequency roll off; a line-level effects send

### Product Capsule:

Aphex 230 Master Voice Channel Processor

#### Thumbs Up

- ✓ Useful array of features in a slender package
- ✓ Multiple swept controls permit custom results
- ✓ Easy to use
- ✓ High value

#### Thumbs Down

- ✓ No line input

Price: \$799

CONTACT: Aphex Systems in California at (818) 767-2929 or visit [www.aphex.com](http://www.aphex.com).

and return between the dynamics processor and the equalizer section.

Add to all this AES/EBU, S/PDIF and Toslink digital outputs, +4 XLR and -10 RCA analog outputs, sample rate selectors from 44.1 kHz to 96 kHz, 24-bit resolution, internal/external word clock input and output connectors, dual-function input/GR metering and onboard phantom powering, and you've got a diminutive powerhouse of an audio processor.

Mark Greenhouse runs Tactical Productions and moonlights as a broadcast/recording technician with National Public Radio. He can be reached at (202) 488-8424.

## Announcer's Consoles for Live Events



Whether used in radio, television, or stadium announce applications, the

Model 200-series of announcer's consoles provide uniformly excellent performance. With four models to choose from and a host of options, everything on your "wish list" can easily be handled. And while each unit provides a unique mix of features, all share a common core: great audio quality, a simple user interface, and reliable operation.

To see which Model 200-series product is right for your application, visit the Studio Technologies website or give us a call.

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## PRODUCT EVALUATION

# AT897 Shotgun Works in Field, Studio

*The Mic's Light Weight, Longer-Than-Average Length Enable Newsmen to Capture Clear Sound*

by Paul Kaminski

Freelancers and other small broadcast/production operations need versatility in all of their equipment. So when one piece of equipment can perform multiple functions without a major compromise, owners and managers have to consider that when crafting a capital budget.

Audio-Technica's AT897 short shotgun microphone works well not just in the field, but also in the studio.

The AT897 is a condenser line and gradient "shotgun" super cardioid microphone, which means the usual mode of employment is to point the unit in the general direction of the sound source. In the field, where many reporters and producers stick handheld mics in the faces of newsmakers, it means those reporters and producers don't have to stand so close, and can even raise the unit over a crowd with a boom pole.

used it as an announce mic for the production of the Motor Sports Radio Network programs, "Race-Talk" and "Radio-Road-Test."

## Flat

Subjectively, the AT897 seems to have a flat accurate sound, which focuses almost completely on the source to which it is pointed when the bass roll-off switch is not switched on. This means there is little to no proximity effect when the microphone is used at a working distance of 6-18 inches.

If you are recording voice tracks on a laptop or other computer for future use, you can apply a Cool Edit/Adobe Audition or other similar quick filter in an audio editing program to boost bass and mid range and give the track a warm sound upon playback if desired.

In real time, one can use the AT897 as one might use a traditional phantom-



At 5.1 ounces including the battery, the AT897 won't tire arms without a boom pole.

In my field test, I used it as I would a handheld microphone, gathering sound for a series of reports heard on the CBS Radio Network newscasts over the New Year's weekend; and in mass interview situations as well as voice work at the 2005 Daytona 500. In my studio test, I

powered microphone, whether powered (11-52 volts DC) through a small mixer or microphone processor/preamp.

The bass roll-off switch will help to cut out low-frequency rumble with a 12 dB roll-off per octave at 80 Hz. This also helps when the room in which you might have to record voice tracks isn't sound-proofed as well as you might like. The standing wave reflections you might pick up with other microphones are significantly reduced, thanks to the inherent pickup characteristics of shotgun microphones.

Some reporters might not consider using a shotgun mic as a primary microphone because of their usual length. At 11 inches long, the AT897 is a slight bit longer than most long-barreled handheld interview mics. That extra length will capture clearer sound when held above a crowd or held steady when trying to record natural sound or sound from a PA speaker when there is no mic distribution amplifier (mult box).

If you do not have a boom pole, holding the AT897 won't cause your arm to get tired; it weighs 5.1 ounces including the installed AA battery. The AT897 can be battery-powered, which might concern some reporters who do not want to carry another piece of equipment that needs a battery, for fear the battery would go

**Product Capsule:**  
Audio-Technica 897 Line +  
Gradient Condenser Microphone

**Thumbs Up**

- ✓ Low weight
- ✓ Battery life (up to 1200 hours on one AA alkaline cell)
- ✓ Battery and phantom power (11-52 VDC)
- ✓ Nearly flat response
- ✓ 80 Hz bass roll-off switch

**Thumbs Down**

- ✓ Phantom power requires battery changes

Price: \$369

CONTACT: Audio-Technica USA in Ohio at (330) 686-2600 or visit [www.audio-technica.com](http://www.audio-technica.com).

dead at an inopportune time.

A-T specifications suggest a battery life of 1200 hours from a single alkaline AA cell. We used one Ray-O-Vac AA alkaline cell for almost six weeks. In the daily grind of newsgathering, users might not remember to change batteries every 1200 hours. Changing disposable alkaline AA batteries in the AT897 on the first day of every month will solve that problem. If you do get into a situation where the battery is dead and you have a mixer with phantom power, then you won't miss a thing.

The AT897 also will run on phantom power from 11-52 volts DC without a battery installed. Users will want to keep the unit out of hot news cars or other places where the temperature can get over 110 degrees Fahrenheit, since it has a condenser element.

The AT897 comes with its own adapter (clamp), windscreens protective case and adapter fitting to change a non-standard thread pitch on a mike stand or pole to the 5/8ths/27 standard. A small portable microphone stand can work for long-distance shotgun applications such as pointing the AT897 at a sound source and for positioning the unit to maximize voice pickup for voice work, like when you have to knock out a voice track in an office, broom closet or other location without soundproofing.

Using the AT897 does change the way you work in interview situations. No longer do you have to muscle your way through a crowd to get a clean, on-mic sound from a newsmaker; shotgun mode, whether in the hand or on a boom, will work just fine.

You also can hold the mic in your hand, in the same manner you would use for a traditional handheld mic interview. As long as you remember to change the single AA cell once a month, you will have clean uncolored sound from your newsmakers or sound source. You also will find that you might not have to carry as many microphones in your flyaway kit, thanks to the AT897's versatility.

Paul Kaminski is the news director for the Motor Sports Radio Network, and a contributor for CBS Radio Network News. His e-mail address is [motorsport-radio@compuserve.com](mailto:motorsport-radio@compuserve.com).



## How to Submit Letters

Radio World welcomes your point of view on any topic related to the U.S. radio broadcast industry.

Letters should be 100 to 300 words long; the shorter the letter, the better chance it will be published in full. We reserve the right to edit material for space. Longer commentaries are welcome but may not reach print as quickly.

Include your name, address and contact information, as well as your job title and company if appropriate.

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



PRODUCT EVALUATION

# Tascam Helps Studios Keep It Simple

*The CD-RW750 Features Digital I/O, Eases Analog Recording and Functions as a CD Player*

by John Martin

The Tascam CD-RW750 CD recorder/rewriter is a well-versed machine designed for the budget-minded consumer who needs both a CD-RW machine and a CD player, but does not want to pay \$1,000+ for that equipment.

Here's my perspective on the unit for use in a college radio environment. Your station may have different challenges, but perhaps it will fit nicely in your environment, as well.



Tascam designed the CD-RW750 to accept CD-R and CD-RW discs, so customers could record their own music.

The CD-RW works well for both recording and playback, with a fast TOC read time so you can start playing or recording quickly.

A downside to the machine is that it only offers unbalanced output and input via RCA jacks, though this is something expectable for a unit in this price range. The awesome part about the I/O is the digital portion. With S/PDIF digital I/O in both coax and optical formats, it makes it easy to record from almost any digital device.

Many CD-RW recorders today will not allow the user to record to a standard CD-R or CD-RW disc, but require the use of special CD-Music CDs, which do not allow copies to be made from them.

However, Tascam designed the CD-RW750 to accept CD-R and CD-RW discs so customers could record their own music and be able to copy it.

In my experience, most CD-RW machines have a tendency to not operate well as CD players because they take too much time to read the TOC off the CD. The CD-RW750 takes only about eight to 10 seconds to read a new CD. This makes the machine nice for a user who needs a fast-loading CD player and a nice CD-RW machine. It also offers four different

playback options: normal; programmed order; repeat play; and A-B repeat mode.

The CD-RW750 also offers an internal frequency converter, which converts any signal more than one percent away from 44.1 kHz to the standard. With this, the user does not ever have to worry about what frequency the recording was made with. The only hangup is it will only make these conversions on the digital inputs of the unit.

Analog recording on the CD-RW750 is easy compared to others in today's market. After placing a CD into the machine, the user can start recording in seconds. It is easy to adjust the input volume with a variable jog wheel that adjusts both left and right channels independently of each other,

or both at the same time. The unit also has considerably high headroom, as I was able to boost the signal way over the 0 dB mark and still get a decent recording.

**Sync it**

Digital recording on the CD-RW750 is another awesome feature for those of us who use digital editing machines. Some tend to use analog instead of digital, but it just makes sense to use the digital because there is no loss in quality. The one thing with digital, though, is that you have to make sure you don't go above 0 dB, as there is no headroom when recording in digital. The user can select between digital coaxial and optical inputs.

The Sync Recording feature is probably my favorite function on this machine. It would be great for anyone who has a lot of MiniDisc, DAT tapes, old cassettes or records, but does not want to sit through hours of manually creating tracks after the end of each song.

If you are recording from a digital source to the machine in digital input mode, the unit will detect the Start signal the DAT machine places at the beginning of every new track, and create a new one on the CD. For analog recording, the machine can start the recording at the beginning of a track, indicate when the song ends and then start when it goes above the trigger level again.

I had a couple of old records I wanted to put to CD, but kept messing up the new track start points. However, the machine did it for me automatically.

The CD-RW750 offers a unique option that allows the user to record straight to the CD without the signal going through the frequency converter or the digital level control. This option is nice for users that have mastered their creation and don't want any

See TASCAM, page 26 ▶



## GOT CALLERS? STAC 'EM!

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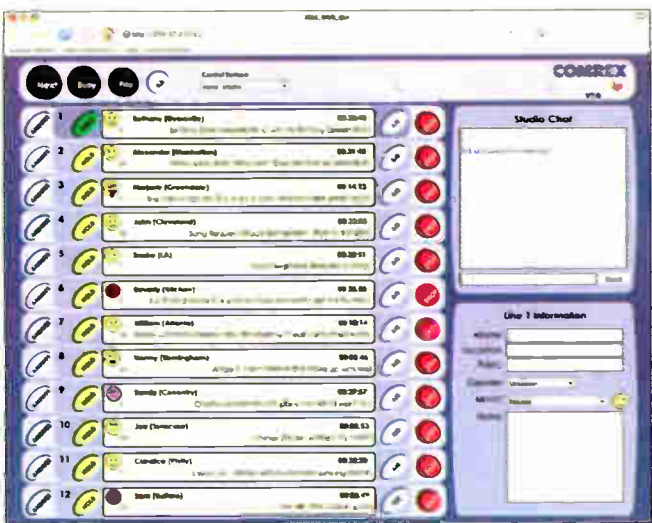
STAC (Studio Telephone Access Center) puts you in control of your talk shows, request/contest lines, call-ins and phoners with great sound, ease of operation and scalable configuration. Incorporating a pair of Comrex high-performance digital hybrids, STAC provides the most natural sounding telephone audio — even when conferencing up to four callers.

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- **Busy-All** makes starting contests a breeze.
- **Auto-Attendant** answers, plays your message and STACs callers on hold. Great stress relief for screeners and producers!



GUEST COMMENTARY

# Enhanced apt-X and Low-Delay Circuits

*APT Says Its Algorithm Keeps Coding Delay Under 5 Milliseconds for Analog, Digital Users*

by Jon McClintock

The author is commercial director of APT — Audio Processing Technology.

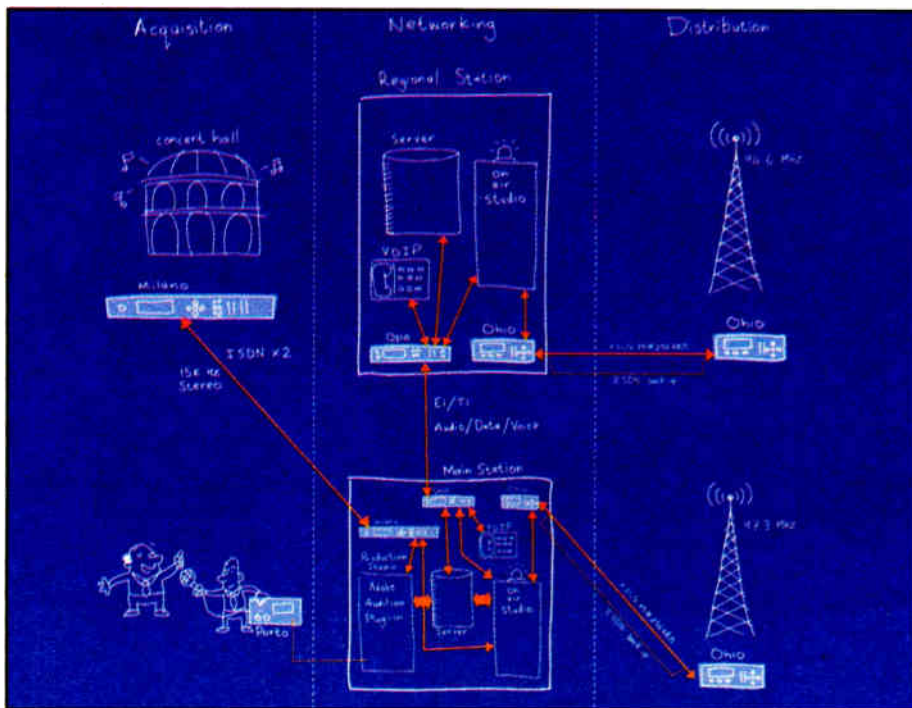
Over the past 20 years, the audio services that telcos supply to broadcasters have migrated from balanced analog copper circuits to digital solutions based on synchronous E1 and T1 networks. The next decade will see the development of IP circuit provision, but that is another topic.

The legacy copper circuits were heavily dependent on regular human intervention to maximize and maintain the audio performance (stereo phasing) and presented a number of engineering difficulties.

They needed constant maintenance (equalization) and required repeaters at regular stages to amplify the reduction of the signal due to line attenuation; they had a relatively poor dynamic range and were also vulnerable to crosstalk from adjacent audio and telephony channels. Being simplex in nature, analog channels did not offer any additional ancillary services such as auxiliary data or contact closure, meaning that broadcasters had to order additional audio circuits for return feed confi-

the one advantage that analog circuits did provide, which went some way in negating all of the above points, was a near-

For the complete round trip, various figures for maximum (or minimum) latency are bandied around; under 5 milliseconds is the desired figure and any delay beyond 10 milliseconds will start manifesting itself as a slight echo, which is irritating at best. Beyond 15 milliseconds this delay becomes extremely challenging and any delay over 20 milliseconds creates such an echo that it proves unworkable to all but the most seasoned on-air talent.



An APT graphic shows where low-delay broadcast circuits are needed in the broadcast chain.

**Benefits of J.41**

In the late 1980s research into digital audio data rate reduction was in its infancy; and in order to deliver the required audio parameters, service providers turned to the ITU recommendation of J.41. This recommendation gives the characteristics of equipment for the coding of 15 kHz monophonic analog program signals into a digital signal of 384 kbps. For stereophonic operation, two monophonic digital codecs can be utilized.

J.41 is a companding technique that takes a 14-bit word, reduces it to 11 bits and sends it over a digital medium; at the decoding end it recodes the companded 11-bit signal back to the original 14-bit word.

Designed as a simplex operation, J.41 has an encode/decode cycle time of approximately 4 milliseconds (including the transport time) and a dynamic range limited to 84dB. In terms of consistent stereo imaging, dynamic range and cross talk etc, the J.41 solution offered broadcasters an improved service over that of analog copper circuits, but they could still only get simplex services with no ancillary data channels. Furthermore, the operational cost saving enjoyed by service providers, was, in general, not passed onto the broadcasters.

**Different needs**

Since the first generation of digital services was introduced 15 years ago, broadcasters' needs have changed dramatically, and the increased awareness and knowledge of areas such as data transport costs, compression algorithms and tariffed services have taken the mystique out of moving program content from Point A to Point B.

With the advent of DAB/HD Radio (5.1 multi-channel audio in the future), RDS/RBDS, AES/EBU and increased performance in FM analog services, broadcasters are starting to demand improvements in the services provided by telco operators. The benchmark has been raised to a level where most radio stations require:

See APT-X, page 27 ▶

dence monitoring as well as dedicated POTS circuits for ancillary data. However,

instantaneous link between two points (studio and transmitter).

When service providers had a viable alternative to move away from the onerous operational overheads of analog circuits in the late 1980s they embraced E1 (2048 kilobit per second) and T1 (1536 kbps) circuits. Installing these circuits and terminating the data interfaces (G.703/G.704, X.21, V.35) with audio codecs on either end provided a service that was substantially easier to support, thus increasing the profit margin. The single performance legacy they had to ensure was that the encode/decode latency cycle was similar to the analog circuit it replaced.

Coding delay/latency within broadcast distribution networks is defined as the time taken to encode a signal at Point A (the studio), move this signal across a digital medium and then decode the signal at Point B (the transmitter site). The transmitted signal may then be picked up "off-air" and fed back into the headphones of the incumbent jock/DJ.

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## Tascam

▶ Continued from page 25 processing or added work done to it.

The unit offers a nice variable Fade-In and Fade-Out option, suitable for live recordings, and one you want to have for all live purposes. It also offers a Record Mute function that allows instant cutoff of the input signal, and records four seconds of silence on the disc. Lastly, you can un-finalize CD-RW discs and finalize any recordable CD in use.

Overall, this machine is an excellent addition to any studio that cannot afford to buy one of the high-end recorders with more functions. If you want to keep it simple, this unit is the one to go with. As mentioned earlier, it also can be used as a CD player.

John Martin is a student at the University of New Haven and production director of its radio station, WNHU(FM).

**Product Capsule:**  
Tascam CD-RW750  
CD Recorder/Rewriter

**Thumbs Up**

- ✓ Works well for both recording and playback
- ✓ S/PDIF digital I/O in coax and optical formats
- ✓ Accepts CD-R and CD-RW discs
- ✓ Easy analog recording
- ✓ Sync Recording feature

**Thumbs Down**

- ✓ Only offers unbalanced output and input via RCA jacks

Price: \$679

CONTACT: Tascam in California at (323) 726-0303 or visit [www.tascam.com](http://www.tascam.com).



## apt-X

▶ Continued from page 26

- ✓ Increased dynamic range to at least 96 dB equating to 16-bit word resolution.
- ✓ Fully duplex links for return feeds to permit confidence monitoring and other full-bandwidth audio requirements.
- ✓ Ancillary services to include RS-232 for RDS, contact closure and status monitoring and control.
- ✓ Further reduction in bit rate real estate: 768 kbps stereo demand is now considered onerous.
- ✓ But above all to retain the low coding delay associated with J.41 and the antiquated analog circuits.

Service providers in the UK, Denmark, Finland, Sweden and the United States have conducted exhaustive tests (which include blind listening tests with various genres of music and voice) into the improved feature set that broadcasters are demanding. At this time, the results have indicated that incorporating a low-bit rate, non-destructive digital audio data compression algorithm into a codec will address all of these requirements.

To this end, the 24-bit Enhanced apt-X algorithm from APT — Audio Processing Technology will constitute one of the main building blocks for the next generation of digital services.

### Gentle and non-destructive

Keeping the same audio bandwidth (15 kHz stereo) and using only half the data capacity (384 kbps), Enhanced apt-X can improve the audio parameters while keeping the encode/decode latency to under 5 milliseconds including transport time.

A service offering 24-bit Enhanced apt-X can expect the following:

- ✓ Dynamic range in excess of 100 dB.
- ✓ Fully duplex.
- ✓ Embedded RS-232 and an additional low-speed channel for contact closure.
- ✓ Option to expand to 22.5 kHz stereo.

As the Enhanced apt-X algorithm is based on time domain, ADPCM principles, its coding technique is gentle and non-destructive in nature. Coding algorithms in general have had bad press following the myriad of problems associated with highly destructive, frequency domain, perceptual coders, i.e. MPEG Layer II, Layer III, AAC etc. Enhanced apt-X has been proven both academically and in practice to be immune from these problems.

In summary, by implementing Enhanced apt-X, broadcasters can now avail of audio services from telco operators that will ensure they are maximizing their existing analog FM services and transporting crystal-clear CD quality content for DAB and HD Radio services. Most important, coding delay figures are kept under 5 milliseconds.

Contributors to this article include Charlie Wooten of Clear Channel and Fred Wylie, formerly of BBC; apt-X is a trademark of APT.

RW welcomes other points of view to [radioworld@inapub.com](mailto:radioworld@inapub.com).

### PRODUCT GUIDE

## Plan B Deluxe Notifies of Failures

Danagger Audio Works says its Plan B Deluxe silence eliminator protects radio stations and other audio providers from loss of listenership and revenues caused by dead air. The system combines failure detection, audio replacement and remote control in a self-contained unit, and detects silence or constant level noise on the program path, digital or analog.

Station personnel are notified by phone or e-mail after a user-set delay. Meanwhile, daypart-specific programming is fed to the listener from the Plan B's hard drive, DVD or CompactFlash.

Backup audio can be uploaded to the Plan B Deluxe via the Internet in com-

mon formats like WAV, MP1, MP2, MP3 or WMA. The user can specify dayparts, cut categories and rotations. Plan B Deluxe can be programmed to put itself



on the air at a specific time of day.

Network connectivity allows the Plan B Deluxe user to monitor audio sources, review logs, control relays, change settings, monitor status inputs and update replacement audio. Telephone line access

provides many of the same features, and lets authorized users make live emergency announcements directly to an analog program line. Both interfaces are standard.

An optional Plus module provides automatic or remote control switching to a secondary live program feed.

The Plan B Deluxe retails for \$2,750, or \$3,250 with Plus option.

For more information, contact Danagger Audio Works in Washington state at (888) 892-8346 or visit [www.danagger.com](http://www.danagger.com).

# THE SWITCH IS ON.



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Border to border.

Broadcasters in markets large and small are switching to the elegant **Rubicon™** family of console control surfaces from Sierra Automated Systems.

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Rubicon, and the versatile new **Rubicon SL**, are the primary user interface of a proprietary system of audio routing, mixing, distribution, intercom, IFB, and automation that we call the **Connected Digital Network™**.

At the network's hub is the **32KD** digital router/mixer, the proven performer in many

hundreds of radio, network, and film installations around the world.

**RIOLink** remote I/O router/mixer now provides stand-alone or backup mixing in addition to interconnection from the studio to the central 32KD.

To learn more about why so many broadcasters are switching to Rubicon and the Connected Digital Network, give us a call or drop us an email.



1.818.840.6749 [radio@sasaudio.com](mailto:radio@sasaudio.com)



PRODUCT GUIDE

## Klotz Debuts MI[C]XER Microphone Mixer

Klotz Digital released its MI[C]XER, a software-based mixer the company says meets the needs of stations specializing in news and talk radio formats or offering roundtable programs.

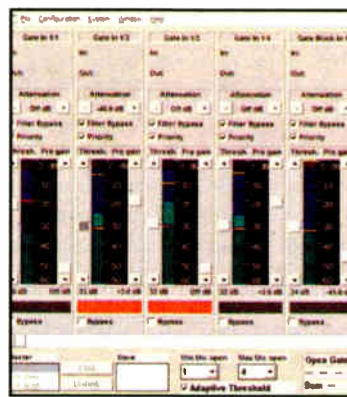
Up to 40 mono or stereo line-level inputs or mic channels are mixed. Each channel provides an individual level meter for level control and offers adjustment to parameters like pre-gain, threshold, attenuation or attack and release-time. Equalizers and dynamics

can be inserted in any signal path.

The MI[C]XER also allows the user to identify one mic as having overall priority. Microphones that are temporarily not in use or beyond the number of predetermined open mics are muted in order to avoid too many participants speaking simultaneously, and to eliminate noise from open mic channels.

The company says audio quality and intelligibility during multi-microphone recording are enhanced, particularly under difficult room acoustic conditions. The complete group of mics is operated via one fader of the mixing console. MI[C]XER is controlled and set up by a software GUI, which also enables to remote control via LAN or modem any single microphone.

MI[C]XER can be used as a stand-



alone tool or can be implemented into products and solutions used in connection with VADIS.

For more information, contact Klotz Digital in Georgia at (678) 966-9900 or visit [www.klotzdigital.com](http://www.klotzdigital.com).

## Inovonics 261 Has Four Processing Functions

Inovonics says its 261 digital stereo utility processor offers the same functionality as its predecessor, the Model 260, but adds features and gives broadcasters an unobtrusive means of normalizing and controlling audio levels in a digital or mixed-signal plant.

The 261 features four independent audio processing functions: Gain Riding AGC, Program Dynamics Compression, Broadband Limiting and Independent HF Limiting. It may be configured to incorporate a basic function, or to utilize processing options for program audio control.

The 261 accepts analog and digital program inputs, and provides analog and digital outputs simultaneously. Input/output levels and processing action is shown on LED bargraph displays.

For more information, contact Inovonics in California at (800) 733-0552 or visit [www.inovon.com](http://www.inovon.com).

## Pomona Debuts IDC/XLR Connectors

Pomona Electronics debuted insulation displacement XLR connectors, which the company says eliminate stripping and soldering conductors. Like other Pomona XLRs, they feature a clamping mechanism that withstands up to 100 pounds without disconnecting the cable.

The insulation displacement technology enables each conductor of the wire to be placed between two blades in the connector. As the connector is screwed together, the blades pierce the insulation, making contact with the conductor.



IDC/XLR connectors are part of the company's line of connectors and components for broadcast segments. The connectors are available in four configurations: models 7273 (male, silver contacts, nickel shell, thermoplastic back shell), 7274 (female version), 7275 (male, silver contacts, black shell, thermoplastic boot) and 7276 (female version).

Additionally, the company debuted an XLR/Triple Binding Post/RJ11 adapter, which eases connections to phone lines for ring down tests of audio lines or for phone communications across audio cables.

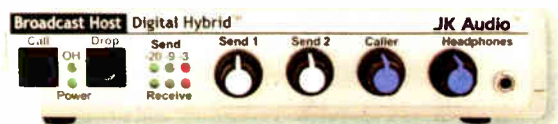
The XLR/Triple Binding Post/RJ11 features gold-plated pins and binding posts for connectivity. The three color-coded, five-way binding posts — for high, low and ground terminals — accept bare wires via the through-holes, alligator clips, spade lugs and single, dual or triple banana plugs connected either vertically or horizontally because of the 3/4-inch spacing between banana jacks.

For more information, contact Pomona Electronics at (253) 653-0522 or visit [www.pomonaelectronics.com](http://www.pomonaelectronics.com).

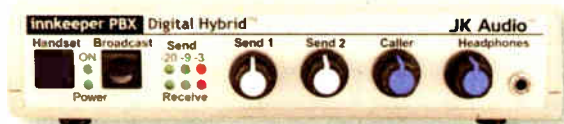
PBX Interfaces (Between handset & phone)



**PBXport** New in 2005, this professional digital hybrid provides talk show quality caller audio from any PBX phone system. PBXport allows you to send mic or line level signals through the handset cord of any telephone system and return only the caller's voice, ready for broadcast.



**BroadcastHost** The lowest priced digital hybrid anywhere. Designed for desktop applications where the phone line / audio interface must remain user-friendly.



**innkeeperPBX** Connect this digital hybrid between the base and handset of any telephone system. Turns every news/sports desk into a live interview studio.



**AutoHybrid** Simultaneous send and receive audio through analog telephone lines. Not just another half duplex auto-coupler, this is a full duplex AutoHybrid.



**THAT-2** Simple, convenient, professional. All JK Audio handset interfaces adapt to electret, dynamic, and carbon telephone handsets.



**innkeeper 1rx** Full featured phone line interface uses a proprietary dual-convergence echo canceller algorithm. Designed to achieve excellent separation without any setup, and without sending a noise burst down the line. A mix of features and common sense create a product that engineers can appreciate, but anyone can use.

RJ11 Interfaces (no phone needed)

NO POTS OR POTS. MAKE SURE OUR MICROPHONES GET ON THE AIR. JK Audio has solid solutions for every situation.

You want no-nonsense tools that do the job. Tools built to last. Tools even your talent can operate. JK Audio is your answer. Our solutions provide broadcast-quality audio to and from your telephone equipment, whether standard POTS or PBX. And, because we know your

reputation is on the line with every call, our rugged construction ensures that our hybrids remain bulletproof long after you've set them up. Our tools are surprisingly affordable, so give us a call or visit us on the web to make JK Audio part of your broadcast team.

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# Buyer's Guide

Tech Updates



Inside

Radio World

Consoles, Mixers & Routers

July 6, 2005

USER REPORT

## MPR Goes Modular With Element

*Axia's Element Console Enables Minnesota Public Radio to Build Customized Surfaces*

by **Ethan Torrey**  
Chief of Research and  
Development  
Minnesota Public Radio

**ST. PAUL, Minn.** Minnesota Public Radio is expanding our Twin Cities facility to keep pace with the growing amount of content we produce. Our St. Paul headquarters were already moderately sized, with eight control rooms, five on-air and production studios, two full recording studios and several small editing rooms.

The expansion will add another six control rooms, three studios, 10 small production rooms and a moderately sized auditorium space. These facilities will go on-line by January 2006.

Late in 2003, we began planning our new technical infrastructure with a thorough examination of the distributed routing/control surface model. Our goal was to determine if it would give us operational advantages. The answer to our research was a resounding yes.

In 2004 we began the task of deciding which manufacturer's system would best suit our needs, and after thoroughly weighing each system's strengths and weaknesses, we chose the Axia IP-Audio system and its new Element modular control surface.

We like the Axia system for several reasons. The lower cost of entry was a factor in our decision but not the driving force; we believe the combination of Ethernet and IP functionality is Axia's biggest advantage. An IP-based infrastructure is scalable, and economic forces beyond the broadcast industry will continue to add capacity and functionality to that structure.

The obvious questions about IP-Audio concern latency and reliable audio delivery. Axia gave us honest, complete and detailed answers to these questions. Axia's Ethernet links are switched connections — no hubs. An audio node with all its inputs and outputs running simultaneously, generating both RTSP and real-time audio, can't overload the capacity of the 100-BaseT connection linking it to the network. With guaranteed bandwidth, and some clever clocking mechanisms, latency isn't an issue.

With regard to cost, we found a significant difference between Axia and the other options we examined. Going with Axia cut our costs by roughly 33 percent. When comparing systems of similar functionality, we saw that the price difference was greater.

Which brings us to the console. We

liked the Axia concept but SmartSurface, their fixed-size control surface, didn't fit our operational needs. We said so, and Axia President Mike Dosch showed us Element, then still in development.

### Surface value

In contrast to SmartSurface, Element was a modular design that would allow us to build surfaces as large or as small as we wanted for individual studio applications. A major factor in Axia's favor was the fact that every Element surface would be fully functional, with no additional cost for EQ, dynamics processing or other features.



MPR produces both network and local station programming. This results in some unique operational requirements, and the capability required to fulfill these requirements was not a part of Element as we first saw it. But Axia was able to accommodate our needs, adding the desired functionality.

Element is available in multiple frame sizes that accommodate from four to 32 faders, making it suitable either for small news/voiceover rooms or large master-control applications. Element operates in conjunction with the Axia Studio Engine, which mixes program audio entirely in the digital domain before distributing it to the switched-Ethernet audio network using standard Cat-6.

Axia has taken the "surface" concept even further with Element, even moving its CPU out of the surface and into its power supply. Only two cables connect Element to the network: one Cat-5e cable to the local switch, and one power cable.

Element features four stereo program busses, dedicated off-air Phone and Record busses, and four assignable send/return busses for outboard effects or processing. EQ and voice dynamics are built in and can be

assigned on-the-fly, or saved as a part of each source's "profile," which is loaded whenever a source is assigned to a fader. Source names are shown in each fader's accompanying 10-character alphanumeric display.

The control surface itself is relatively uncluttered. Each module (faders come in sets of four) contains bus assignment and preview (cue) buttons. There are phone modules available that integrate directly with phone systems made by Telos or other manufacturers; and a master module, which provides control of Element's options and settings as well as monitor and headphone feeds.

Element uses an external VGA display rather than displays built into the console itself. This allows the use of any off-the-shelf flat-panel, providing flexibility. The position of on-screen clocks and timers in the central cluster, and the positioning of meters and other information provides real, usable information in a size and scale that is easily visible to the user.

Generating mix-minus with Element is easy. Each audio source connected to the network can be assigned a backfeed; this setting is saved in its source profile. When a codec or a phone hybrid is placed on-air, Element automatically generates a mix-minus and sends it to that backfeed without any operator intervention. Every source has its own unique mix-minus; the number of mix-minuses per console is limited only by its quantity of faders.

Element also handles talkback smoothly. Pressing any fader's Talk button lets the operator talk to that source. Pressing several talk buttons lets you talk to several locations at once. Individual mic or remote codecs can use the remote talkback function to communicate with the operator as well.

Because of the large amount of content MPR produces, we wanted studios that could accommodate any show at a moment's notice. Element functions equally well as an on-air or production console, so we sidestepped the need for different control boards in various studios. This reduces the learning curve, since our operators can do any show in any studio and be instantly familiar with the console's controls and operation.

We're told that Axia also is developing a "virtual Element," a PC controller that looks and works just like the physical console. This should prove extremely useful in news desk or bullpen environments where space is at a premium.

For more information, including pricing, contact Axia Audio in Cleveland at (216)241-7225 or visit [www.axiaaudio.com](http://www.axiaaudio.com).

USER REPORT

## Sison Employs Harris RMXdigital

by **Joe Tymecki**  
Chief Engineer  
Sison Broadcasting  
WXXX(FM)/WVMT(AM)

**BURLINGTON, Vt.** Burlington's 95 TripleX WXXX(FM) and WVMT(AM) were the first stations in the market to use Pacific Recorders radio consoles in the early 1980s, with the purchase of a BMX. The stations later purchased BMX-II consoles as they became available. This investment in excellent equipment had been expertly maintained, and the consoles served both stations for well over 20 years.

But even the best radio consoles wear out after a while; and in late 2004, Sison Broadcasting decided to replace its three Pacific boards.

When a key piece of technology such as an audio console is replaced, a list of user requirements must be developed with the stakeholders in the project. Ours included programming, operations, engineering, station management and the DJs who use the console on a daily basis.

**M**uch thought about what features are truly needed in radio broadcasting and how they are best utilized went into the design of this console.

Key factors necessary to success included a durable, easily expandable console with a familiar operating surface that easily integrated analog and digital audio. We also wanted to ensure the console provided excellent value for its price.

The next step was to examine available consoles and whittle the list to those that met our requirements. We considered every brand and model for which we could obtain information, eventually settling on a "short list" of three. Detailed discussions with these manufacturers allowed us to

See HARRIS, page 34 ▶



## USER REPORT

# SAS Chosen in St. Louis Upgrade

*Rubicon Consoles and 32KD Router Selected for Control Capabilities, Aesthetics*

by **Daryl McQuinn**  
**Director of Engineering and IT**  
**Clear Channel — Saint Louis**

**ST. LOUIS** When Clear Channel Radio decided to consolidate its six music stations here, I knew I wanted to install a large router, and consoles that were really router controllers. This type of mixing console would save a lot of wiring costs and be more flexible now and in the future.

There were many systems available. After comparing them I chose the SAS Rubicon consoles and 32KD digital audio router for several reasons, including the look and feel of the console, the experience behind the company and a price that fit nicely within my budget.

The installation of the consoles went smoothly. After spending a few hours with the SAS installation team doing preliminary planning, a configured router and ready-to-install consoles arrived at my new

studio building. Except for a few minor tweaks on the programming computer, the consoles were installed, connected and operated just as we had planned.

### Familiar feel

The 32KD features digital I/O, fault-tolerant multi-processor architecture, concurrent multiple channel switching for 5.1/7.1 channels, ATM network data linking and RIOLink for remote signal connectivity.

The RIOLink module occupies one universal slot and interfaces 32 channels of audio, in and out, plus data to a RIOLink remote chassis. The RIOLink connects to the remote location via Cat-5

or fiber optic cabling.

The modular Rubicon integrates into the 32KD and offers router input select on every module. Frame sizes from four to 40 modules are available, and modules include Input Channel, Control Room Monitor, Studio Monitor, Send Return and Slate/Oscillator.

We have been using the Rubicon consoles and the 32KD router for more than six months, and the on-air staff is happy with them. The controls are similar to ones that our staff has used in the past, so they find them easy to use. The way the system handles mix-minus feeds for our remotes impresses the operators because they don't have to think about it. Mix-minus busses are created automatically by designating a piece of equipment, like a codec or hybrid, as needing a mix-minus and the system takes care of the rest.

The ability to choose any source in the system and have it available on the console is a huge advantage and one that will save hours of work as things change over the next 10 years.

Additionally, everyone likes the fact that these consoles just plain look good. The fit and finish is nice, and the design

See SAS, page 31 ▶

## DSPX V2 now available

V2 software of the ground breaking FM - DAB - NET digital audio broadcast processor is now available

- 18 24-bit DSP's provide over 1 GIGA-MIPS of processing power
- Comprehensive BLUE LED audio metering and screen
- Digital and analogue IO
- Wide and multi-band AGC's with intelligent gating
- Multi-band programme dependent limiting
- Multi-band look ahead limiting and distortion cancelled clipping
- High performance DSP stereo encoder with composite clipping control
- Back panel and rackroom (front-panel) RS232 control
- LAN (TCP/IP) port for remote monitoring and control
- Real time clock for preset scheduling
- Remote trigger port
- Silence/fallback switching
- Password access and control
- Full Range of user presets with A/B switching
- Software upgradeable



### TECH UPDATE

## Arrakis XMIX Consoles Support Analog, Digital

The Xtreme-mixer from Arrakis Systems is a digital audio console that supports analog and digital sources; it has Penny and Giles slide faders with conductive plastic elements and cue detent and LED illumination for switches. It has three mixing busses, stereo cue, monitoring for a control room and studio and a telephone interface for on-air talk shows and off-line recording and communication.



The XMIX-10 is the 10-channel model and offers inputs and outputs such as two analog mic; 10 analog, stereo line; and two AES-3. The XMIX-14 is a 14-channel model and differs in that it offers 10 AES-3 inputs and outputs.

Additional features include metering for the three output busses; Program, Auto and Cue output bus assignments; six-position remote selector switches for input selection; an LED digital timer and digital timer control; and studio talkback.

The XMIX-10 retails for \$5,495.

The company also offers its Revolution consoles, which are modular with 8-, 18- and 28-channel mainframes available. Features include three stereo output busses and two telephone busses; monitoring for control room and studio; and analog and digital operation.

The Revolution line starts at \$3995.

For more information, contact Arrakis Systems at (970) 461-0730 in Colorado or visit [www.arrakis-systems.com](http://www.arrakis-systems.com).



Remote control a DSPX over the internet at  
[www.dsp-x.com](http://www.dsp-x.com)

Call our DSPX NYC office  
 1-888-8661672



# SAS

► Continued from page 30  
is sleek and clean.

If there was anything I would change about the Rubicon consoles, I might make the cue-level control bigger. That control is constantly used in our music stations and it is sometimes hard to find when you want to grab it quickly — although a larger control might not fit this equipment's design.

There also are a few things I would change in the software portion of the router and console. Some functions of each channel, like whether to record on the left, right or both channels of a record bus, can only be changed at the console. It would be simpler if it could be changed



McQuinn and Clear Channel St. Louis' 32KD routing system.

at the programming computer and then downloaded into the console. I have talked with the engineers at

release of the software. I can't wait to get the newer version.

For more information, including pricing,

**M**ix-minus busses are created automatically by designating a piece of equipment, like a codec or hybrid, as needing a mix-minus and the system takes care of the rest.

SAS, and apparently the things I would like to see changed are being incorporated into the next

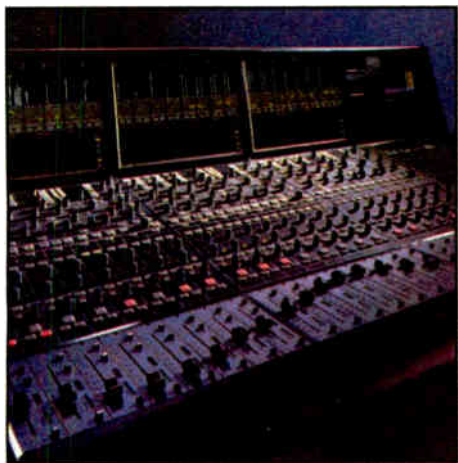
ing, contact Sierra Automated Systems in California at (818) 840-6749 or visit [www.sasaudio.com](http://www.sasaudio.com).

**TECH UPDATE**

## SSL V2 Software For C100 Includes 5.1 Improvements

Solid State Logic says Version 2 software for the C100 digital broadcast console has power enhancing options, such as greater I/O capacity and improved 5.1 features.

Features include TouchPan, which provides 5.1 panning access from the central touchscreen, with color-coded displays and control of surround parameters. The company says this addition eases setup and control for 5.1 productions.



The C100 digital broadcast console

Version 2 supports new I/O expansion for the Centuri core, which SSL says doubles the mic input capacity within the processing chassis, and thus provides a one-box solution for space-critical remote recording trucks and studio facilities.

Expanded cue-feed options provide a range of foldback features, including "conference"-type facilities, whereby a talent's foldback is toggled between a designated "cue" signal and the mix-minus signal, allowing off-air dialogue between segments.

V2 supports 44.1 kHz native sample frequency operation, thus increasing the quality of interfacing for audiophile radio projects, such as classical music stations. Additional highlights include TFT Graphics, which improve the operator's overview through per-channel display of processing, panning and source allocations.

For more information, including pricing, contact Solid State Logic in New York at (212) 315-1111 or visit [www.solid-state-logic.com](http://www.solid-state-logic.com).

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USER REPORT

# KAXE Adopts Mosaic at Infancy

*Public Station Selects Two Logitek Mosaic Consoles for Its Recent Facility Upgrade*

by Dan Houg  
Engineer  
KAXE(FM)

**GRAND RAPIDS, Minn.** KAXE(FM) is a C1 class community-licensed public radio station in Northern Minnesota. We recently built a new facility featuring two Logitek Mosaic control surfaces. Defying superstition, we went on the air on Friday, May 13.

During our console selection process, I had been interested in the Logitek system due to its good reputation. However, our air staff and I did not like the layout and looks of the NuMix and Remora line of control surfaces. The Mosaic surface was just coming into production and advance photos showed a professional-looking, traditional layout control surface that clinched our decision.

While I did not want to be on the bleeding edge of a new product, conversations with other engineers using Logitek convinced me it would be better to adopt a new product run at the beginning of its life cycle, rather than choosing a product that may be superseded at some point soon.

## 'Gee Whiz' effect

Mosaic control surfaces are desk drop-in units, and ours are configured with 12 Penny & Giles faders in modular blocks of two that remove easily for firmware upgrades and fader maintenance. Build quality is excellent, starting with the plated-steel framework housing the various modules held with stainless steel Allen-head machine screws.

Firmware upgrades are accomplished by replacing easily accessible ROMs, although there are a number of them. PCB construction is through surface-mount devices laid on a high-quality multi-layer board. Each module of two channels shares a split-screen LCD display for channel information. The user-exposed surface is brushed aluminum

rolled nicely at the front edge and bordered by wood on the sides.

A separate LED meter bridge attaches to the desk and houses a large meter for



KAXE's Mosaic control surfaces are configured with 12 Penny & Giles faders in modular blocks of two.

program and six LCD displays for clock time, monitor levels and future features. Each control surface is connected to a 2 RU power supply that also serves as the breakout location for studio GPI inputs and outputs via Centronics ports. GPI harnesses from these ports terminate in punch blocks.

I centrally mounted the 7 RU engine in the "Engineering Wall of Gear," which houses our broadcast equipment and faces our public area for that "Gee Whiz" effect. KAXE, while being a small rural station, runs a full complement of services including studios equipped with CDs, turntables, DATs, cassettes, phone hybrids, the NPR SOSS with two satellite downconverters and six demods, three ENCO workstations, Web streaming, services for the

ized nine-layer faders and can be programmed with setups for various users. The five-fader master module can control three side modules, each with up to 10 faders, resulting in 35 faders and 32 programmable keys.

Audio processing takes place in the TDM-based central unit, and enables simultaneous routing of 2,048 channels.



One analog I/O card can be replaced by an AES/EBU I/O card should the need for more digital I/O arise, as the cards are modular.

blind broadcast on our subcarrier and a microwave STL.

Consequently, we loaded the Logitek engine with I/O sound cards in both digital and analog format for a total of 84 input and 65 output sources. These cards break out with harnesses terminating in

This architecture has worked well for us, as it is exceptionally quiet. There is an additional GPI I/O breakout for the engine, a handy feature to have back in engineering.

## Surface, engine stability

I entered the world of radio engineering a little over a year ago and in that time have been baptized by maintaining a 29-year-old plant wired by various generations of engineers and volunteers, all of whom saw no reason to document any installation. Tasked with wiring new studios, I found myself on the steep end of the learning curve but motivated by moving away from an old plant.

My largest hurdle also was one I didn't anticipate being as difficult as it was, namely integrating the Logitek system with our ENCO automation. Both companies assured me the integration is well supported but neither offered a direct solution to doing so. I ended up hiring the services of a contract engineer familiar with ENCO to accomplish this integration. The most frustrating part was in having to write all of the commands twice — once in the Logitek trigger table to look for bus changes and once in Enco to execute those bus changes.

It's disappointing that there is no direct way of executing route commands (or other commands) via the serial port. I understand the reason (limitation in the Logitek serial protocol) but it is frustrating nonetheless.

**Critical listening of our air chain reveals a dramatic improvement over our previous console. Headroom on the audio inputs is fantastic; clarity of program material is great.**

Krone blocks. Wiring to and from the studios was done with Belden Mediatwist Cat-6 network cable for balanced analog and digital I/O and also terminates in Krone blocks. Interconnects were done with Siemon bonded twisted pair cross-connect wire.

The TDM structure allows the system to offer several sum busses and aux channels, and dedicated DSP cards are available for functions such as four-band EQ, compressor and pitch scaling.

The central unit also works as a router. More sub racks can be interconnected by way of MADI lines for an integrated mixer/routing system. Cards may be hot-inserted, and components like power supply and controller can be duplicated in master/slave configuration with automatic switchover in case of malfunction.

AEQ offers multi-user control software, with functions such as scheduling and DSP control, for dedicated routing applications.

The BC2000D's alarm system indicates malfunctions in the system, including missing power, lack of response from a card or absence of sound on a channel.

For more information, including pricing, contact AEQ in Florida at (954) 581-7999 or visit [www.aeqbroadcast.com](http://www.aeqbroadcast.com).

Fortunately, the Mosaic has been well received by our programmers. As a station that uses more than 70 volunteer programmers in addition to paid air staff, we need a system that is powerful, reliable and easy to use.

To date, the control surface and engine have been stable and provide volunteers with a familiar surface from which to work. Level monitoring is clear with a bright LED display of green, orange and red. Selecting different sources at a channel is a snap, and enough features can be locked out at the control surface that I can sleep at night.

Critical listening of our air chain, which remains largely unchanged due to reuse of existing equipment except for the Logitek system, reveals a dramatic improvement over our previous console. Headroom on the audio inputs is fantastic and the clarity of program material is great.

Having serial numbers 4 and 5 of this control surface, I expected this new product to have its share of kinks to work out. What has been positive is the response Logitek support has given in terms of working out software or firmware issues, going as far as giving me the personal cell phone numbers of support staff for evening and weekend questions in the weeks leading up to our station turning on.

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

TECH UPDATE

## AEQ Adds NCB-100 Control Panel to BC2000D

AEQ added an option to its BC2000D combination digital audio mixer and router. The NCB-100 is an XY control panel that is connected to the system's private Ethernet network, where the mixing consoles and the matrix control boards are connected; or the system setup computer.

It has 12 programmable keys with a large display, a scroll knob with a pushbutton activating function, four dual-function keys and the typical Take and Break keys. The panel also incorporates three GPIs and three GPOs, enabling it to be used as a talkback input and output element.

The BC2000D has assignable motor-



# The routing switcher gets a new twist.

(About five twists per inch, actually.)

**Everybody needs to share audio.** Sometimes just a few signals — sometimes a few hundred. Across the hall, between floors, now and then across campus. Routing switchers are a convenient way to manage and share your audio, but will your GM really let you buy a router that costs more than his dream car? Unlikely.

If you need a routing switcher but aren't made of money, consider Axia, the Ethernet-based audio network. Yes, Ethernet. Axia is a *true network*. Place our audio adapter nodes next to your sources and destinations, then connect using standard Ethernet switches and Cat-6. Imagine the simplicity and power of Ethernet connecting any studio device to any other, any room to any other, any building to any other... you get the idea.



*Routers are OK... but a network is so much more modern. With Axia, your ins and outs are next to the audio, where they belong. No frame, no conds, no sweat.*

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

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

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

### Are you still using PC sound cards?

Even the best sound cards are compromised by PC noise, inconvenient output connectors, poor headroom, and other gremlins. Instead, load the Axia IP-Audio Driver for Windows® on your workstations and connect directly to the Axia audio network using their Ethernet ports. Not only will your PC productions sound fantastic, you'll eliminate sound cards and the hardware they usually feed (like router or console input modules). Just think of all the cash you'll save.

### Livewire



*There's a better way to get audio out of your PC. No more consumer grade "k" connectors — with Axia your digital audio stays clean and pristine.*



*Put an Axia Microphone Node next to your mics and send preamplified audio anywhere you need it, over Ethernet — with no line loss or signal degradation.*

### Put your preamps where your mics are.

Most mainframe routers have no mic inputs, so you need to buy preamps. With Axia you get ultra-low-noise preamps with Phantom power. Put a node in each studio, right next to the mics, to keep mic cables nice and tight, then send multiple mic channels to the network on a single Cat-6 cable. And did we mention that each Mic Node has eight stereo line outputs for headphones? Nice bonus.

### Put your snake on a diet.

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



*An Axia digital audio snake can carry hundreds of channels of digital audio on one skinny CAT-6 cable. We know you're not going to miss soldering all that multi-pair...*



Scott Studios



*Axia is already working with some great companies. Like Enco Systems, Prophet Systems, Scott Studios, Radio Systems, Balsys Technology Group, and of course Telos and Omnia. Check [AxiaAudio.com/partners/](http://AxiaAudio.com/partners/) to find out who's next.*

### With a little help from our friends.

A networked audio system doesn't just replace a traditional router — it *improves* upon it. Already, companies in our industry are realizing the advantages of tightly integrated systems, and are making new products that reap those benefits. Working with our partners, Axia Audio is bringing new thinking and ideas to audio distribution, machine control, Program Associated Data (PAD), and even wiring convenience.

### Would you like some control with that?

There are plenty of ways to control your Axia network. For instance, you'll find built-in webservers on all Axia equipment for easy configuration via browser. PathfinderPC® software for Windows gives you central control of every audio path in your plant. Router Selector nodes allow quick local source selection, and intelligent studio control surfaces let talent easily access and mix any source in your networked facility.



*Control freaks of the world, rejoice: intelligent Axia mixing surfaces give talent complete control of their working environment. Reconfigure studios instantly and assign often-used sources just where they're most useful.*



**"This sounds expensive."** Just the opposite, really. Axia saves money by eliminating distribution amps, line selectors, sound cards, patch bays, multi-pair cables, and tons of discrete wiring — not to mention the installation and maintenance time you'll recover. And those are just side benefits: our hardware is about half the cost of those big mainframe routers. That's right... *half*. Once you experience the benefits of networked audio, you will never want to go back. [AxiaAudio.com](http://AxiaAudio.com) for details.





# Harris

► Continued from page 29

learn as much as possible about each product and how they fit our requirements.

Sison chose the Harris PR&E RMXdigital console as its new standard platform.

## Console configuration

The RMXdigital console's configuration is straightforward, with only one style of fader module. Modules are programmed through software or dipswitch settings to become microphone, line input or telephone modules. This programming design provides switches on each module that perform the required functionality to accomplish on-air production tasks.

I/O configuration is simple. The console comes with a minimum of four AES (digital audio inputs) and four stereo analog inputs. Additional input cards can be added in groups of eight switch-selectable inputs between analog and digital formats.

Outputs include analog and digital versions of the four program busses, plus four additional analog and digital outputs that serve a variety of functions, such as mix-minus through flexible programming capabilities. Redundant power supplies and a telephone system control panel integrated into the console surface were the only options selected.

The control surface itself has a modern look and style but is immediately familiar to any operator who has used a slide pot console. This was crucial to our decision as it eliminated the learning curve for our operational staff.

The RMXdigital console is connected to other equipment and systems through small crimp pin connectors for logic and audio signals. Each console comes with an ample supply of connector bodies and pins. A crimp tool, and most important, a pin removal tool were supplied. Cables are fed through the rear underside of the console to allow efficient integration with studio furniture.

Digital audio inputs of the 110-ohm balanced type also can accept unbalanced AES and S/PDIF (consumer format) digital audio. This eliminated the need for external baluns and format converters. Analog audio inputs are balanced high impedance although unbalanced consumer audio also can be connected. The approximate 10 dB of extra gain required for analog consumer format audio can be compensated for using the console's



internal gain. This eliminates the need for external "bump boxes."

The RMXdigital includes the ability to integrate at a high level into Harris' VistaMax networked audio system. We choose not to implement system-wide networking at this time but it was important to know that this technology is baked into the console.

## External systems, programming

The level to which RMXdigital interfaces to external systems is the strongest point of the console. We previously interfaced our BMX-II to telephone and call editing systems through use of external mixers and switch banks. This functionality is now handled within the RMXdigital. It's clear that much thought about what features are truly needed in radio broadcasting and how they are best utilized went into the design of this console.

Mix-minus feeds to multiple hybrids are generated through modules configured for phone use. The console uses an offline bus that the caller hears when they are not on air so the announcers can talk to the caller. The feed automatically switches to the correct mix-minus feed when the caller is put on the air.

A system where the announcers are on one channel and the callers on another is implemented by simply programming a set of auxiliary outputs as "telco record." The mix of announcer mics (or other sources) and multiple callers is generated and routed automatically.

I was unable to provide Harris with a detailed list of I/O for our consoles when they were ordered due to the compressed timeline of our project. The specific sources, types and names for our Production 2 suite were field-programmed as a result. The console configuration data initially proved challenging to modify.

Joe Marshall from Harris talked me through my desired changes. At the time, I saw this as an opportunity for Harris to develop a tool that will allow easy configuration and modification of the RMXdigital. I understand Harris has since responded with its VistaMax Control Center configuration software, which aids in configuration via a GUI interface.

Our DJs initially were concerned that a new console would have a difficult time matching the quality of our old BMX-II consoles. But feedback from station personnel who have used the RMXdigital has been positive. Although we are only one-third of the way through replacing our legacy consoles, the RMXdigital has proven itself.

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

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USER REPORT

# Audioarts D-16 Meets Specs

*Broadcasting School Updates Practice Studios, Opting for Features, 'Cool' Factor*

by **Bob Burnham**  
Chief Engineer  
Specs **Howard School of Broadcast Arts**

**SOUTHFIELD, Mich.** The Specs Howard School of Broadcast Arts in Southfield, Mich. has used a hands-on teaching approach to radio and television broadcasting for over 30 years. Thus, the need exists for industry standard equipment of recent design. An effort is made to keep some "oldies but goodies" on hand to expose students to equipment that may still be in service in smaller markets, but there comes a time when these "oldies but goodies" are useful primarily in museums, or as large paperweights and doorstops.

The school has four campus radio stations and 15 "practice" studios. When the time came to phase out our "old faithful" rotary-style consoles in the practice studios, the decision was made to replace them with digital consoles.

We settled on the Audioarts D-16 from Wheatstone.

## Cool combo

The console seemed to have the right combination of features at the right price, and the "cool" factor was high, which is important to the school. I decided to install one in a radio station and the other three in the practice studios.

In roughly two weeks, the four consoles we ordered were delivered. A month prior, Wheatstone had shipped me a complete installation manual, so I was able to make preparations prior to the console's arrival.

But the two supplied manuals — one outlines the programming of the console and the other includes operations and installation data — are not the strong points of this product. An index and specifications page are sorely missed. However, the company's level of support compensates for an inadequate manual.

The D-16 features several differences from the more traditional installation techniques. Like many broadcast products, the D-16 makes extensive use of the popular DB-25 connectors. In fact, each connection to the console, with the exclusion of the power supply, is made through one of these connectors. If you've stared at the DB-25 printer cable on the back of your PC lately, you'll notice there really are a large number of possible contacts.

Audioarts fits 16 channels (eight stereo inputs) of AES-EBU audio in one of these connectors, or eight channels (four stereo inputs) of analog audio. Counting all the control ports, there are 17 DB-25s on the back of this console.

Using this type of connector is helpful, but also a hindrance. The factory-supplied connectors feature the crimp-on style pins, which initially, I found to be negative because the factory-supplied crimp-on tool was not quality and useful only for bending and breaking off the pins. Wheatstone later sent me a high-quality tool that worked well with the supplied pins.

However, for the first console installed, I hand-soldered all the connectors using on-hand supplies.

An appreciated feature is the large and

well-documented diagrams for the DB-25 connectors. This is particularly welcomed by those of us who don't have microscopes built into our eye sockets, or are otherwise optically challenged.

Faders can be assigned to be fed from either of the "mono" channels, but only if the logic programming is configured to make the appropriate channel a mono channel. From both a wiring and programming standpoint, this part has to be done correctly. Fall asleep on the job at this stage, and



you won't get the expected results. Read the manual completely for a few key sentences buried here and there.

The process of setting up multiple mix-minus feeds is a fairly elaborate one. There

are faders specifically designated for multiple hybrid use in a talk radio/listener call-in environment. I did not have an immediate need to set up this feature for the school, but the approach taken by Audioarts appears straightforward.

The console has the ability to handle complex mix-minus situations. Imagine handling two remote sites simultaneously with an in-studio host, while taking listener calls at the same time. This console could handle this situation with no problem.

In conclusion, the D-16 provides a welcome change from replacing rotary plastic pots, re-soldering broken wires on the back of mechanical switches and changing capacitors that have dried up.

For more information, including pricing, contact Wheatstone in North Carolina at (252) 638-7000 or visit [www.wheatstone.com](http://www.wheatstone.com).

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Orban/CRL Founder and VP of Engineering Bob Orban (left), and Orban/CRL President, Chairman, and CEO Jay Brentlinger (right), receive Radio World's "Cool Stuff" Award for the new Orban Optimod-FM 8500 audio processor at the National Association of Broadcasters 2005 in Las Vegas.



## USER REPORT

# Pacemaker Keeps Ticking for La. FMs

*Multi-Format Access 1 Uses Autogram Consoles for R&B, Rock, Production Rooms*

by **Eddie Thurmond**  
Chief Technician  
Access 1 Communications  
(The Radio Group)

**SHREVEPORT, La.** Out in the world of radio, technology is changing every day. Engineers and technicians are similar to those in the medical profession, in that we must keep up with the latest changes coming down the line and also hold on to what's been proven over time. One item in which I

have come to trust is Autogram's Pacemaker console.

I have been in radio for 15 years, and 10 of those have been in engineering. In the last seven years, I have built or rebuilt over eight studios and production rooms for the company I work for using Autogram boards and Solution-20 units. Our stations include KLKL(FM) oldies; KTAL(FM) classic rock; KDKS(FM) smooth old school R&B; KBTT(FM) hip hop and R&B; KOKA(AM) gospel; and KYLA(FM)

classic country.

### 'Universal accessory'

Autogram offers various control boards. We chose to go with the Pacemaker 1032 in our control rooms, and the Pacemaker 828 in our production rooms.

The 1032 has 10 pots, eight dual and two with 8 inputs each, for a total of 32 stereo inputs. And if your format is talk with a crowd, the Pacemaker provides one to eight mic inputs. Each input and output uses a Buchanan connector, which eases installation and enables you to move a piece of equipment to another pot quickly when needed.

Outputs include one Stereo Program; one Stereo Audition; one Mix Minus; one Mono; two Line Monitor; two Headphones; and one Cue.

The 1032 has machine control and a legend strip for all inputs, VCA level control and electronic switching and selector switches. The front panel is engraved, and up to eight patchable mic preamps are featured.

The 828 offers many of the same features, except it offers eight pots — six dual and two with eight inputs each.

Speaking of pots, Pacemakers use Penny & Giles linear conductive plastic slide pots, which are durable.

To power the monitor speakers, we use the Solution-20 with a monitor amp card installed. The Solution-20 is a must-have for the Pacemaker boards. Autogram says it is a universal accessory system designed to fill the need for additional "accessory" blocks that are necessary in the installation of a radio station or commercial audio system.

**L**iving in the south, we are known for heavy lightning storms in the spring and early fall.

This is a rackframe unit that holds up to 10 cards and contains the power supply. However, there is no backplane and only +/-24 volts connect to the front of the card. Attached to each card is a socket into which plugs a connector that installs to the wiring with a screwdriver. When installed in the rack frame, the sockets are accessible from the rear of the unit.

If the cards are used standalone, the connector plugs directly into the socket on the card. Cards can be powered from any clean +/-24 volt source or from the +/-24 volts at 2 amps (total) available from the Solution-20 rackframe.

Each card uses a Buchanan plug on the back, which makes it accessible and easy to install. The type of cards that the unit will hold are the (RC-1) Relay card; (SDA-3) Stereo Distribution amp; (SMA-10) Monitor amp; DA-3 Distribution amp; (MPC-1) Mic processor card; (SAS-2) Stereo active two-channel switcher; (PRS-2) two-channel stereo passive switcher; and a (VCA-1) stereo voltage control amp.

The guts of these two boards are made up of individual printed circuit boards that are slotted to a motherboard. If anything happens to one of these cards, just pop it out, in with the new and keep going.

Living in the south, we are known for heavy lightning storms in the spring and early fall. And of course, we ground everything that is metal or looks like it could have some metal in it. But when lightning decides it's coming, you can't stop it. And we have had our share of strikes. Our Pacemaker boards keep on ticking. I may have had to borrow a card from another board, but they were back in commission in minutes.

Autogram also makes the digital-ready Pacemaker IIC consoles. Models PM228 and PM218 offer up to 28 modules, up to 40 stereo inputs, LED illumination, DC control and four lighted meters.

For more information, including pricing, contact Autogram in Texas at (800) 327-6901 or visit [www.autogramcorp.com](http://www.autogramcorp.com).



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## USER REPORT

# SLB Taps Aeon for Museum Studio

*Klotz Digital System Selected for Brigade's 'Showcase' Studio at Children's Museum*

by **Larry Berger**  
Executive Director  
SLB Radio Productions

**PITTSBURGH** SLB produces "The Saturday Light Brigade," a weekly radio program for children and adults that has aired on Pittsburgh public radio since 1978. The program features a blend of music, on-air phone calls, in-studio guests and live performances.

Not surprisingly, our studio needs have always been a bit beyond a typical public radio air control room. In short, we need to be configured for music radio, talk radio, roundtable interviews and live music — all produced in real-time. On top of that, we frequently conduct educational workshops for children.

In 2001, SLB embarked on a great opportunity when it entered into an agreement with the Children's Museum of Pittsburgh, then undergoing what would emerge as a \$28 million expansion that quadrupled its size. This agreement enabled SLB to design and construct a showcase studio within the museum that would provide SLB with a physical plant matched to its needs.

While a digital plant was important, we wanted a conventional-looking interface. With more than 100,000 people visiting the museum per year and weekly hands-on activities with kids, we needed a facility that looked and felt like conventional radio.

We decided on a control surface/main-frame concept as opposed to an integrated console. Based on technical capabilities as well as the company's enthusiastic interest in the project, we chose **Klotz Digital's** Aeon control surface, in what would become its first installation, and VADIS 220C frame. This solution has served our needs reliably, and was the right choice for our situation.

## Prewire

Installation was easy. Although consoles are long lead items, the Klotz Digital design and documentation allowed us to pre-wire the 12 input sources (three CD players, one computer, seven microphones, one turntable and one phone hybrid) needed for our opening last November in advance. Simple wiring runs (typically XLR to DB-25 connectors) were made from these sources to the VADIS rack. A similar approach was used for VADIS outputs.

When the Aeon and VADIS arrived, we put each piece in position, connected the two via a supplied 9-pin cable, plugged our DB25 connectors into the VADIS 220C and began configuration through Klotz Digital's GUI.

Although initial configuration was done by our Chief Engineer Mathew Theisz, the process was straightforward enough so that I understood it and can now make simple changes. This is because VADIS contains an imbedded Windows XP machine and uses a Setup Tool with familiar tabbed menus for defining system, I/O, fader, GPI and other parameters.

After checking that system and console information was correctly "read," the

I/O tab was used to document names of our various inputs/outputs, their positions on the eight PCI cards in the VADIS, and technical data (stereo/mono, desired monitor muting, talkback routing, etc.) all of which follow the input as it is assigned from fader to fader.

Although fader *assignment* is done with the Aeon, fader *behavior* is defined globally via the VADIS GUI fader tab. Parameters include settings for fader scale and peak level and, to my delight,

the ability to make faders behave like traditional consoles through enabling of options for A/B source selection and immediate entry to cue when a fader is closed. Monitor muting, GPI events and other functions also are done at the VADIS side and the resulting configuration is saved and loaded.

Fader assignments are made via soft-keys on the control surface. The process was straightforward and up to 128 assignment "snapshots" can be made for various scenarios.

For example, during a conventional music program, one might want a snapshot that populates the 12 faders with two

mics, three CD players, four digital sound card outputs and three turntables. For an interview program, one might switch to a snapshot that populates faders with eight mics, two CD players and two sound card outputs.

## Music too

Although we use a conventional analog mixer for larger live music groups, with its single output going to a line-level VADIS input, we frequently have used the Aeon/VADIS alone for groups requiring only four to six microphones. Setup is easy, and built-in DSP allows EQ settings and compression to be set on the fly.

Although some may prefer outboard equipment for these functions, the built-in DSP met our needs for presentation of small

See KLOTZ, page 39 ▶

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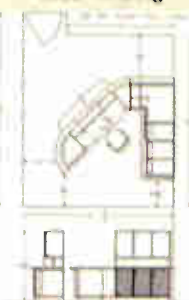
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USER REPORT

# XM Uses Model 230s for MLB Remotes

*After Adding Major League Baseball to Its Lineup, XM Needed Remote Setups for Game Commentary*

by Michael W. LaBoone,  
CPBE CBNT  
Broadcast Technical Services  
XM Satellite Radio

**WASHINGTON** Last fall, XM Satellite Radio announced an 11-year agreement with Major League Baseball as the exclusive satellite provider of MLB games and other programming. Until this point, the vast majority of XM remotes were live musical events, and a technician supported every broadcast. Now, however, our challenge has become designing and installing remote equipment in the homes of the MLB talent, who host live daily talk shows on XM Home Plate Channel 175.

Further, we needed to design a system that was rugged and reliable, and needed little attention. Because XM technicians are located in Washington, any failure would require the talent to work with a tech to determine the faulty device that would need to be swapped out. We would then, in all but the most extreme circumstances, ship overnight a replacement to be swapped by the talent.

As all of the installations are for a single talent, there was no need for a full-blown mixer, and several good reasons why a mixer would not be desirable in this situation. Our search led us to the Studio Technologies Model 200-Series announcer's consoles.

## Features and specs

While the majority of customers will use their announcer's consoles for live sports remotes, we saw a piece of gear that was flexible enough to meet the requirements for our application.

The console specifications were well within our desired parameters. The low-noise microphone preamp has adjustable gain from +20 dB to +60 dB, in 10 dB steps, and can supply 48V phantom power to the microphone. There also is processing to provide a bit of "gain riding" for the microphone.

With a compression ratio of 5:1, and attack and release times of 2 ms and 100 ms respectively, the Model 230 can handle the occasional outburst of excitement that sportscasters sometimes must express vocally.



The main output button can be set to mute when pressed, mute unless pressed, alternately latch on or off for each press or a hybrid mode.

Features on the Model 200-Series include connections for IFB and intercom systems, headphone output and an auxiliary relay. A unique feature is the ability to configure the units for their specific task. There are four operating modes on the Model 230, each designed for different requirements.

The main output button can be set to mute when pressed (cough button), to mute unless pressed, to alternately latch on or off for each press or a hybrid mode which allows both push-to-talk and alternate latching. Status LEDs give a con-

stant visual indication of the state of the console. There are many other configuration options for the talkback output, and the cue sources for the talent.

A picture diagram is located on the bottom of the cover plate for the unit, and it shows the location of the configuration dip switches, the switch function and other operating information, which comes in handy in the field.

potentially have made us seek another solution. The problem was that the talent could not hear themselves through their headset. We were able to work around this problem by adding a "Y" cable to split the line-level output of the mic preamp, sending one output back to an IFB input, and the other output to the transmission equipment.

But this created another problem. The level balance between the talent mic and the mix-minus from Washington could not be adjusted to the satisfaction of any of the MLB talent.

After further reading in the user's manual, I decided to e-mail Studio Technologies and explain our circumstances, in the hopes that they could help with our problem. I suggested adding an optional mode that would provide local sidetone to the headset output, and configure the two volume control knobs so that one would control only the mix-minus headset level, and the other would control the local sidetone level.

This way, the talent could adjust the mix ratio that they hear in their headsets to their own individual taste.

I got a reply the next day, and I had revised software the next week with all the features I requested, which are now standard in the Model 230.

We purchased additional 230s so that we could swap out the units deployed in the field, keep units in stock as spares and have some on hand for future needs. As each 230 was swapped out for units with the new software, it was evident that the talent were pleased with the changes from the previous version. We no longer get complaints from the talent, which was one of the biggest design goals: Put it in, and forget about it.

So far, the 230s have been trouble-free, and considering how well they are built, we expect them to continue operating as such.

Most engineers who have worked on remote broadcasts envision an all-in-one command station for the announcer's audio needs. With four versions to choose from, Studio Technologies has built the box for you.

The Model 230 retails for \$1,095.

For more information, contact Studio Technologies in Illinois at (847) 676-9177 or visit [www.studio-tech.com](http://www.studio-tech.com).

## Klotz

► Continued from page 37  
live acoustic music ensembles on the radio.

I like that the Aeon is surface-mounted. After paying over \$10,000 for custom furniture, I was not keen on cutting out a hole we'd have to live with forever. The surface has a low profile (about 1 inch), which allows great eye contact with our guests. Members of our studio audience, especially kids, can easily see what the operators' hands are doing. Buttons have a solid feel and are logically laid out, color-coded and LED-illuminated.

These features help professional operators adjust to the control surface concept. Also, in our training and demo programs, it is useful to be able to tell someone to press the lavender button and for them to see it light up after doing so.

Klotz Digital has taken an interesting approach with the meter bridge and cue speaker. There are none. The VU meters and DSP data are displayed on a user-

supplied LCD connected to the VADIS video card.

As for the cue speaker, we use the LCD panel's small built-in speaker. Although it took a little while for me to get used to it, this approach supports the "open" feeling we want and also lets us share VU and DSP data with others for training purposes. We are considering addition of an LCD projector to display this data in large format on our exterior walls so that visitors can see what we are seeing.

Given our unique needs, we are pleased with our choice. The product was within our budget and we continue to discover pleasant surprises and touches. Operation has been reliable and configuration options are robust. Although we have not implemented every feature, we hope to. Remote starts via GPI are next and we also hope to create GPI commands that museum visitors can use to provide an interactive experience.

For more information, including pricing, contact Klotz Digital in Georgia at (678) 966-9900 or visit [www.klotzdigital.com](http://www.klotzdigital.com).

## TECH UPDATE

### Broadcast Tools ADMS 44.22 Has Inputs for AES

The ADMS 44.22 from Broadcast Tools is a four-input stereo AES and four-input stereo analog matrix switcher with two independent stereo analog and AES outputs in a 1 RU profile. Each input is equipped with a three-band EQ, five types of filters and a leveler function. Any or all of the inputs may be mixed, faded or dimmed to either or both output pairs.



Additional features include selectable stereo VU meters; headphone amplifier; powered monitor output; 16 x 16 GPIO port and RS-232/USB port. The ADMS 44.22 also is equipped with an expansion port allowing a second unit to be added, increasing the inputs to sixteen.

The ADMS 44.22 retails for \$1299.

For more information, contact Broadcast Tools at (360) 854-9559 or visit [www.broadcasttools.com](http://www.broadcasttools.com).



TECH UPDATE

### SPL MixDream Enables Analog Integration

Sound Performance Lab says its MixDream analog summing device offers a design plan that provides for the integration of analog equipment in digital production environments and stereo mix-down at the analog level. MixDream can sum 16 audio tracks to a stereo signal; should the need arise for more than 16 tracks, multiple MixDreams can be linked.

Controls for stereo summing include adjustable insert level; stereo expansion control; adjustable analog peak limiter; adjustable outputs with added in/out switching of Lundahl transformers.

Multi-channel sessions can be mixed

and processed in analog, something the company says may be of importance

when an engineer wants to upsample to SACD or DVD-A.

Each input channel is equipped with a signal-present LED and a switchable insert loop. A three-stage toggle switch

per channel allows the choice of whether or not a channel should be

added to the mix bus. With the No-Mix switch control, a channel may be removed from the mix while remaining available for re-recording through its Direct Output.



The No-Mix function is suitable for adding track compression. The compressed signal can be re-recorded to the DAW for level automation. This also is known as "bounce back" capability, and without it, SPL says compressed signals could not employ level automation, as the compressor is inserted post fader.

SPL describes its MixDream XP as a "straight 16 in 2 summing box," and says price and space requirements are reduced without inserts and processing stages. The active summing stages are identical.

MixDream XP is suitable as a DAW summing extension or to expand MixDream with 16 further channels.

MixDream retails for \$3,795. MixDream XP retails for \$2,195.

For more information, contact SPL in California at (866) 477-5872 or visit [www.spl-usa.com](http://www.spl-usa.com).

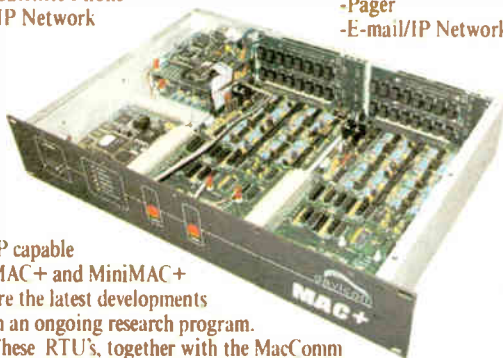
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## GUEST COMMENTARY

# News Is Better Here On Earth

*Research Suggests Satellite Subscribers Come Back To AM/FM Stations for News, Weather and Traffic*

by **Holland Cooke**

As Arbitron does, I gathered up some people willing to be interviewed, Adults 18+, roughly 50/50 male/female, evenly distributed across the United States. They got an online questionnaire, which you can try at [www.hollandcooke.com](http://www.hollandcooke.com).

So far, I have 1200+ completed responses. To put that sample size in perspective:

If you're in a medium market, that may be roughly the number of diaries in-tab for your market's entire Arbitron survey.

Unless you are one of New York's top stations, you're probably not mentioned in 1200+ diaries.

Many national presidential polls are derived from smaller samples.

I asked, "What do you like *most* about the AM/FM stations you listen to?" Their top three responses are "music," "information" and "It is local."

**Music** — Notwithstanding iPod, Sirius and XM, and the dreadful way music stations have cluttered and homogenized programming, people still use radio as a music appliance.

One recurring and useful theme is the commentary alluding to "choice," "control" and "variety." People seem to view radio as a menu, offering answers like "Most FM stations have a particular format, so you can choose which one to listen to." "The ability to listen to programs I like and the ability, if they are offensive, to change the station." "Music, NPR and Howard Stern." And "Talk radio in the morning; music choice."

**Information** — Comments addressed the programming staples that smart programmers constantly tweak and relentless consultants nag about: "Information about traffic." "News — if anything happens before I go to work, I know." "The weather."

Some corresponding "dislike" comments you'll read in a minute underline the importance of time-sensitive programming.

**It is "local."** — The Number 3 reason they like radio really hits a nerve, after all the cutbacks local radio has suffered in consolidation.

In the process of using research to derive information about our craft, we often have to probe to get a sample to articulate something which this sample came right out and volunteered: Listeners like radio because it delivers something competing audio products cannot — local information, stuff too local for satellite radio and more timebound than programming they load onto iPods.

Those surveyed offered answers like "What is local to my world." "Local flavor and information." "They have my local news." And "I love Chicago talk radio."

This unsurprising distinction perceived by listeners is bittersweet news, as radio has compromised itself so much by paring local programming resources. Any station that invests in engaging, relevant local content

— and effectively markets the advantages of listening — will benefit.

Another notable comment that researchers often have to work to unearth, but which this sample offered unprompted, is pertinent to defending AM/FM radio against the Sirius/XM paid subscription model: "It's free."

### Dislikes

The survey also asked: "What do you like least about the AM/FM stations you listen to?"

Many of these comments restate listeners' likes by describing how radio stations disappoint them.

**Commercials** — Listeners' biggest beef was an unsurprising and overwhelming consensus. Radio's two most injurious self-inflicted wounds post-consolidation were draconian cutbacks in local programming, *while* we were torturing listeners with intolerable commercial loads (and *while* iPod emerged and Sirius and XM's commercial-free channels launched).

Listeners appreciate that AM/FM radio, unlike satellite radio, is free. They understand that the trade-off is commercials, as with over-the-air television. But radio's ratings, and this research, show us there are limits — and that radio has crossed the line.

Answers include "Too many commercials, many of which are embarrassingly amateurish." "I hear the same ads over and over." "There is far too much advertising on the radio stations, and too much time between songs on FM stations." And "Commercials about male enhancement products."

**Repetition** — Yes, people value radio as a music appliance. But those surveyed said, "The music selection is annoyingly repetitive." "A classic rock station has 30 years of music, but they seem to rotate the same 50-100 songs."

Yes, people value radio as an information appliance. But those surveyed disliked "Repeated news reports — if you keep listening, they keep repeating." "Everything is owned by Clear Channel, so the same personalities do weather, traffic, news on all stations."

Yes, people value radio as a forum, but "the talk is nearly all right-wing wacko stuff."


Comments regarding technical issues included "static," "interference" and "some stations can't be heard in bad weather."

The survey screened out Sirius and XM subscribers who acquired satellite radio because it came factory-installed in a new car. What we're after is why deliberate aftermarket installers went so out of their way.

Answers include "more music variety," "commercial-free music," "better reception than AM/FM" and "better audio fidelity."

XM's big baseball deal and Sirius' Howard Stern blockbuster notwithstanding,

See SATELLITE, page 45 ▶




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# ◆ READER'S FORUM ◆

Radio World, July 6, 2005

## Big Radio

► Continued from page 46

update, carefully keeping the score sheets to the moment.

On football weekends, the college football scores would follow the game using two announcers, accompanied by the fight songs of key colleges over which the scores were read. They came from that same Western Union ticker tape quarter-by-quarter and touchdown-by-touchdown, with the final stories from AP or UP. There was an immediacy and excitement to the resulting air sound.

Daytime announcer and weekend color man George Allen did a half-hour birth report from the local hospitals at 10 each morning. Then he and Ernie Kline, who would later become lieutenant governor of Pennsylvania, traded programs until Wilson did his afternoon hit show.

Alan Boal, an excellent announcer, was fluent in Spanish. Working the 3 to 10 p.m. shift, he did an occasional 15-minute 3 p.m. Spanish-language music show. On Friday afternoons, once a week, chief engineer Bill Hines, a classical music aficionado, would announce an hour with carefully annotated 12-inch 78s presented in semi-formal style.

Felsner, the morning man, would come in to do the 6 p.m. 15-minute news to provide change-of-voice following Wilson's Wax Works. I worked from 5 p.m. to midnight six nights a week trading off programs with Boal until 10 p.m. when my personality show, tritely titled "Don of Rhythm," presented taped interviews with the day's pop music stars. This was recorded after midnight, or on my Thursday off on my personal tape recorder at Pittsburgh area ballrooms and clubs.

Nat Cole, Harry James, Tommy Dorsey, Les Brown, June Christy, Vaughn Moore, Gene Krupa, Benny Goodman — dozens of musical personalities of the time heard their records in that slot.

Allen would come in for a highly professional presentation of the 15-minute 11 p.m. news, then it was time for the

"Day Is Done" dream show with slushy instrumentals, a bit of softly presented poetry and romantic vocals until midnight. A five-minute locally produced newscast was presented every couple of hours throughout the day.

The city council meetings were broadcast live, as were parades and meetings of general interest. Remotes included a 15-minute feed by a Hammond Organ player at a local club, a polka band performed on the weekend-air from another club, hosted by Alan Boal. Every Saturday morning was devoted to an amateur hour from the auditorium of the Carnegie Library, attracting musicians and singers from a 30-mile radius.

### Programming is key

There's the danger of the glowing memory syndrome here. Having said that, please keep in mind that all this was over a half-century ago, before carts, cassettes or even reel tape for the first several years of WBVP's existence.

There was no network except for Pirate games. There were no satellite feeds, CDs, computers, electric typewriters, copiers, solid-state circuitry or sophisticated devices to increase effective loudness; no mic preamps with gates, compression and equalization — just compelling local programming. I recall walking down the street on a warm summer day and hearing WBVP's programming coming out of nearly every house, so vital and personality-filled was the content.

The WBVP experience proved to me that programming is the key to success in broadcasting, and appealing and eager talent is the key to commanding programming. We sometimes forget, with access to sophisticated audio studios, with endless space on the hard drive and the latest editing program, with multi-thousand dollar mics and top-drawer digital boards, with voice-tracking facilities and access to instant playback — we forget that talent is still needed to attract an audience.

Production values are so much easier to achieve, but frequently today's on-air product is over-produced, sublimating the talent to rapid-fire sound, simply because it can be done.

report (38 percent); to hear a local host or DJ (28 percent); to hear a sporting event (21 percent); to hear national or world news (21 percent); to hear Rush Limbaugh (13 percent); to hear Sean Hannity (7 percent).

Note: Limbaugh is not heard on satellite radio; Hannity is.

What's the bottom line? The response to this question echoes the responses to the question above.

Do those top four things — local news, weather, traffic and local hosts — as well as you possibly can. Tell people who do and don't listen to your station that you do those top four things. If you've got the No. 6 DJ, treat him like he's radio's biggest star. Remind people who do listen to your station that they don't have to leave you for No. 7, or for national news. Hitchhike your network's brand equity.

For more results from this survey, visit [www.hollandcooke.com](http://www.hollandcooke.com).

Holland Cooke is a news/talk specialist with McVay Media. 🌐



Don Kennedy in the WBVP control room, circa 1950.

Each host at WBVP imbued his programs with his own personality and selection of music. Thus, each program had a distinct flavor and approach, delineating it from others as numerically selected survey-

## Forum Decorum

The "Satellite Bash" response to Guy Wire by Richard Majestic (*Reader's Forum*, May 13) was nothing short of silly. I've always liked to read the section, but can we keep it to more thoughtful contributions?

The CPB Ombudsmen opinion box in the same issue was very much a serious piece, as was the CONELRAD history ("CONELRAD: Cold War Relic," March 16). Majestic apparently has an axe to grind and the forum isn't really the place to do it.

Andy Eliason  
WVCY(FM)/TV  
Milwaukee

## A Fond Farewell

Thanks for letting us say goodbye to Simone ("Simone Leaves Her Thumbprint," May 25). I go back to 1981 with Radio World, and I think I'm correct that the only employees who are still with IMAS from those days are Simone and Stefan.

I remember helping cover the 1985 NAB for the newspaper. RW has come a long way since then, and has always been a tremendous asset to those of us who labor in the dark, behind the scenes in this supposedly glamorous business.

Simone is one of us.

Gary Keener  
San Antonio, Texas

## Wow

When I saw the Marti transmitter in the lower picture of your article, I thought, "Who in the world would have taken a picture of our Marti and sent it in to Radio World?" ("This Pot Reserved for Marti Remote," May 25). It is a carbon copy of our 33-plus-year-old Marti transmitter, which we continue to use a lot.

It is amazing how our Marti continues to work great with minimal maintenance year after year. For 33 years we have dragged our unit into press boxes, businesses, farm fields, county fair barns and more. The RPU has been rained on,

driven music selections never could. The host was involved in the program moment-by-moment, passing that involvement on to the listener. Voice-tracked announcements of pre-selected limited playlists cannot duplicate that personal involvement.

The legacy of those early days has been passed on to the current operation of WBVP. After several owners, the station still has predominantly local programming and a staff of two-dozen full- and part-time employees. Listeners hear Geneva College football, high school games and extensive local news reports combined with network news. Only evenings, overnights and parts of the weekend defer to satellite feeds.

And there's one other part of that legacy. A full-time knowledgeable receptionist who has been there a dozen years answers the phone, and the phone number features the same last four digits as it did in the station's infancy.

WBVP is still one of the great smaller-market radio stations of the nation.

The author is the host and syndicator of "Big Band Jump." Reach him at [don@bigbandjump.com](mailto:don@bigbandjump.com). 🌐

snowed on, been in dust storms, dropped and tipped over ... and still keeps ticking.

I have broadcast with our Marti from as far away as 30 miles from the studios. I once used the Marti on a broadcast from a moving train.



Marty Melia and his dad Kay Melia used the Marti (visible from the rear) during football play-by-play last November.



Marty holds his Marti.

To this day ours is the only station in our market that uses, or has ever used, a Marti transmitter. Our competition uses cell phones for remote and sports broadcasts, a step down in quality from landlines. We always sound better because of the near-studio quality of the Marti signal.

Thanks for the article ... and hopefully there are some other Marti fans out there.

Marty Melia  
Melia Communications Inc.  
KLOE(AM)  
Goodland, Kan.

## Satellite

► Continued from page 44

content assets seem to take a back seat to the way satellite radio addresses listeners' dissatisfaction with the way radio delivers music, and with radio's technical problems.

Predictably, as Sirius/XM users hear how satellite radio's national news/talk/sports programming over-delivers AM/FM, these preferences may change. Listening to Sirius/XM feeds of CNBC, Fox News Channel, etc. will likely chip away at AM/FM Time Spent Listening. But AM/FM radio's silver bullet against national media will continue to be solid local non-music programming.

### If they come back

Sirius and XM subscribers told us that the reasons they tune into AM/FM radio: To hear local news (54 percent); to hear the weather (40 percent); to hear a traffic



## GUEST COMMENTARY

# Small Town Produced Big Radio

*The Author Reflects on His Days at a 250-Watt Independent and the Changes in a Half-Century*

by Don Kennedy

The date was May 25, 1948, when WBVP(AM) signed on in Beaver Falls, Pa., its call letters selected to represent that geographical location about 30 miles northwest of Pittsburgh. Those letters later came to mean "We Boost Valley Progress," a promise fulfilled by the owners, three men from Pittsburgh who had been involved in the city's WWSW(AM).

solid soundproofing.

Each of the two record studios was equipped with three Presto turntables, the gain ridden by engineers in one of three control rooms through the double-paned window. Turntable operators played the 78s and transcriptions for selected programs.

So it was indeed a vast change to go to work for the new WBVP, in a third-story walkup, where announcers operated the single Raytheon board and played their own



Recording the weekly Saturday 'Stardust Revue' amateur hour. From left, PD Chuck Wilson, CE Bill Hines at the OP6 and the back of the author's head as he introduces the show.

Scores of new radio stations were established in the years following World War II, as wartime electronic production turned again to civilian control boards and transmitters and radio moving into lower population areas previously served only by adjoining big-city stations.

It was a heady time for young people to get into the business. The need for people to operate those new stations opened up hundreds of positions across the nation previously only available in larger markets.

## Minimal surroundings

The year before WBVP signed on, I had been working at an established newspaper-owned station in a suburb of Youngstown, Ohio; it had been on the air since 1937. It was equipped with classic Western Electric boards and birdcage and salt-shaker mics in multiple studios with perfect acoustics and

records on two RCA 16-inch turntables with two arms each — one for 78s and lateral transcriptions, one for vertical transcriptions.

Soundproofing was minimal, with the two teletype machines barely muted through the single-walled control room/studio, and the exhaust fan from the bar on the street level rumbling in the background when the fire escape door was opened on hot nights. A single RCA 787 hung from the ceiling, and an RCA 44 was in the other room for extended newscasts, sports and commentaries.

It was basic equipment and minimal surroundings, but what wonderful programming came from there.

An irreverent thirty-something named Arnold Felsher did the morning show with the requisite time, temperature and news reports, but also with occasional phone calls. A half-century ago broadcasters were required to insert a tone every 20 seconds to

## Standards Should Be Non-Partisan

A recent move by the Bush administration crossed a line that had previously been unthinkable even to approach. In late April, the White House denied the applications of four U.S. corporate representatives for inclusion in the U.S. delegation to a telecom standards meeting, because the individuals had contributed to the 2004 Kerry/Edwards campaign.

As reported in Time magazine, the companies involved were Nokia, Qualcomm, a respected telecom consulting firm and none other than Ibiqity Digital. They all had applied to attend a meeting of the Inter-American Telecommunication Commission (CITEL), a telecom standards group that meets three times a year throughout the Americas. The April meeting was held in Guatemala City, and as a regional subgroup of the International Telecommunications Union, CITEL operates under ITU rules that require all delegates to be approved as part of a national delegation.

This approval generally is straightforward, performed in the United States by the State Department, and traditionally based upon technical qualifications of the applicant and company. In this case, however, as related to Radio World, the representatives were notified at the eleventh hour that their applications were not approved, but that their companies were free to propose alternative representatives. This led some of the affected parties to explore the reasons for their rejection, and it was learned that the White House had cross-referenced the names of attendees to the public list of Kerry contributors. (These were not exactly major donors; the contributions made were reportedly on the order of a few hundred dollars each.)

To its credit, when the story became public, the administration did not shrink from its decision. White House spokesman Trent Duffy told Time magazine, "We wanted people who would represent the administration positively, and — call us nutty — it seemed like those who wanted to kick this administration out of town last November would have some difficulty doing that."

But the lack of understanding for standardization processes revealed by these comments is staggering, particularly in the assumption that party politics would play such a predominant role. Perhaps it's understandable that politicians see everything this way; but it's another indication of how politics and technology generally don't mix well.

Party membership is an inappropriate criterion of choice for who should represent the U.S. consumer, its labor force and its economy in technical standards deliberations. The development of these important international agreements should be done by the most technically competent and experienced parties the nation can provide, regardless of their political views. Moreover, applying such penalties to citizens in corporate contexts could produce a chilling effect on their freedom of expression.

We can only hope that the precedent set here will not be repeated, but given the rhetoric to date, our confidence in this is not high. As the nation begins its 230th year this week, it seems it still has a lot to learn.

— RW

let the caller know the call was being aired.

One memorable such time was when Felsher phoned Dave Garroway, host of the then-new "Today" show on NBC-TV. Garroway was less than happy when he discovered the call wasn't a news report, but simply an on-air prank.

It was all informal; but everyone would listen to find out what was going to happen next, for Arnold had his finger on the pulse of the community and seemed to know everyone in government and entertainment, never hesitating to reveal the latest inside information.

## Personality parade

The program director was Chuck Wilson, who did the quarter-hour spon-

sored news at noon and presented the Billboard-charted records for the after-school teen crowd (and adults, too) on Wilson's Wax Works from 4 to 6 p.m. each weekday. Chuck also was the play-by-play announcer for key high school and Geneva College football games each week; plus high school basketball, assisted by color commentator George Allen, himself a skilled play-by-play man.

After daytime Pittsburgh Pirate baseball games, Chuck would do the scores of the other Major League games from a series of score sheets, kept inning-by-inning complete with pitching changes as taken from the Western Union sports ticker. After night games, I would do the major league score

See BIG RADIO, page 45 ▶

### —EDITORIAL STAFF—

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