IT Service Management for Broadcast — Page 34

To FM and Beyond
Digital Radio Mondiale expands its horizons.

Page 8

Open Up That Sound
Users get inside their audio processors in *Buyer's Guide.*

Page 41

Radio World

$2.50 The Newspaper for Radio Managers and Engineers

June 8, 2005

ontentDepot ow Slated or Fall

Daniel Mansergh

ıblic radio stations across the country ɔreparing to change how they move ıtore their audio, although the project taken about a year longer than origi- y anticipated.

'he rollout of the much-anticipated ıtentDepot, a next-generation replace- ıt for the Public Radio Satellite ɛm, is underway, with proponents ıising more reliable transmission of ork programs, more control and ing for program producers and an -to use interface.

ıt the NPR Public Radio Engineering ference in Las Vegas in April, PRSS ctor of Technology Marty Bloss and technical staff presented an update of tentDepot's features and system tecture.

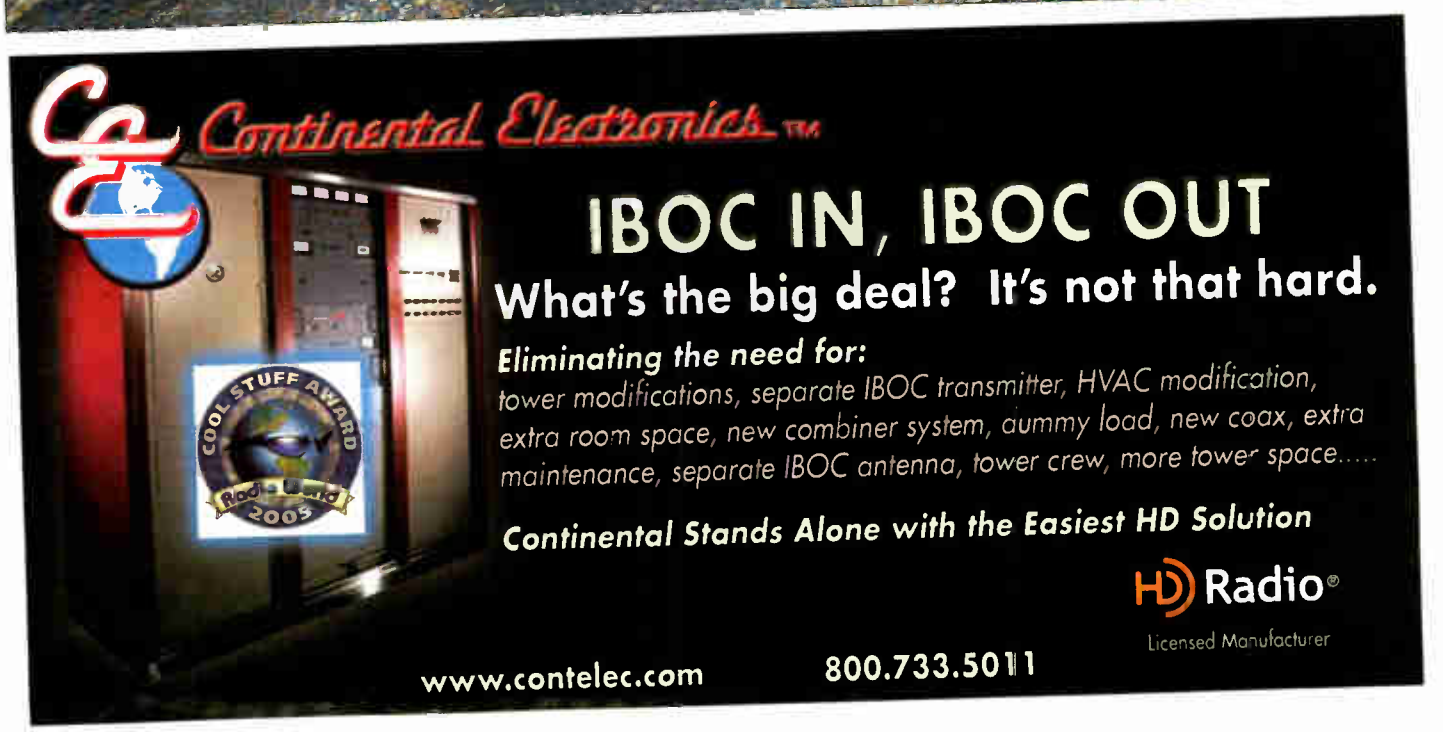
ı the minds of many of the assem- engineers were questions about dule and the practicalities of alling the new hardware.

he official word at the conference that stations would receive packages ı PRSS containing two storage vers, two streaming decoders, an L- splitter and system documentation e end of June. A 90-day dual opera- period, allowing full-time operation e new system while the old one is in place, would run through ember.

owever, Vice President of NPR ribution Pete Loewenstein unced in a May 6 memo to PRSS connected stations and non-com- ial program producers that the roll- ıas been further delayed. Citing itional development, review and ng" that needs to be performed on a piece of software, Loewenstein cated that ContentDepot would ly launch this fall.

he software in question interfaces ı various components of the tentDepot system. At press time,

See CONTENT DEPOT, page 6 ▶



Surround Debate Moves to NRSC Demo

WASHINGTON Engineers looking at surround sound systems to determine compatibility with HD Radio hope to make a recommendation on the subject to the DAB Subcommittee of the National Radio Systems Committee by the fall NAB Radio Show in September.

What the task group members decide to do could range from recommending best practices for surround sound that would be compatible with an HD Radio system, to setting a formal standard, to making no recommendation, according to confidential interviews with several members of the Surround Sound Audio Task Group.

"The committee is still working out the right approach," said one member. "Part of the goal is to determine what sort of role the committee could have in surround sound."

Several sources feel a sense of urgency about making a decision, to ensure that if one or several systems are chosen, it or they would offer backward compatibility with HD Radio receivers as well as other receivers in the marketplace.

In a private demonstration on May 9 at the Consumer Electronics Association, four surround proponents demoed their systems for committee members: Dolby, SRS Labs, Neural and the newly-formed, so-called "MPEG" group, a combination of the Fraunhofer IIS/Agere and Coding Technologies/Philips proposals.

The latter system is still in development; the others are complete and have been certified by Ibiquity Digital as compatible with its IBOC system.

In the demo, each company ran its surround sound audio through an HD Radio encoder/decoder, although the audio was not broadcast. The companies chose some of their audio cuts and the NRSC members also selected common audio samples, said sources who attended. All stressed that this was not a true listening test. The audio was not transmitted through an IBOC exciter, partly so the receiver would become transparent to the process and not affect the demos, participants said.

The 5.1 audio for each company was downmixed to stereo and also to mono, participants said. How systems perform downmixing is important because most content being aired on stations is not 5.1 audio.

Broadcast Electronics and Klotz worked on equipment coordination for the demos. A BE spokesman said Klotz reconfigured its routing switcher, while BE provided a BE XPi10 exporter and FXi 60 exciter.

Some sources noted that SRS and Dolby have an installed base of matrixed surround sound-compatible receivers in the market, and said it's important to maintain compatibility with surround systems in use should an additional surround system be selected.

In a panel in April at the NPR Public Radio Engineering Conference, Microsoft's Skip Pizzi, co-chair of the group and a columnist for Radio World, noted several issues about which engineers would like to know more, such as how a surround system would handle a mixture of content, for example if a station broadcasts only some of its programming in 5.1.

"Lots of mono content is still being aired. So we need to look at how a system would handle those transitions," Pizzi said.

Other issues include how a surround system would handle voice audio over 5.1 music content, as well as surround's compatibility with station infrastructure; although he said the latter is becoming easier as stations transition to routers that use an Ethernet type of structure. Participants also want to see how the systems, used with a digital signal, would affect a station's analog signal.

Several sources told Radio World they'd like to hear how the surround systems would perform when an HD Radio receiver blends to analog at the edge of a station's coverage area.

All the systems are stereo compatible, but there is debate about which system provides the best stereo reproduction, one source said.

There's also debate within the group about how quickly a decision needs to be made. Those who believe time to market is critical said IBOC should have every advantage to help it succeed in the marketplace.

— Leslie Stimson

Index

IT Service Management for Broadcast — Page 34

To FM and Beyond
Digital Radio Mondiale expands its horizons.

Page 8

Open Up That Sound
Users get inside their audio processors in *Buyer's Guide*.

Page 41

Radio World

$2.50 The Newspaper for Radio Managers and Engineers June 8, 2005

Should LPFMs Bump Translators?

Now that low-power FM is established, should it be licensed as a primary, rather than secondary, service?

The FCC is trying to decide whether new LPFMs should be licensed as a primary service — and potentially gain priority over existing and future FM translators in terms of licensing and interference concerns. LPFMs and translators are both considered secondary services now. Meanwhile, the commission is sorting through thousands of translator applications resulting from the last filing window, when it was deluged with requests.

LPFMs and FM translators vie for the same spectrum; right now, the translators have priority because those applications have been filed while there is no new application filing window scheduled for LPFMs.

The licensing question for LPFM is one of many technical and ownership changes the FCC is considering to rules that govern the low-power service. The agency is also asking whether LPFMs should be allowed to stay on the air where interference is predicted to occur within the 70 dBu contour of second- or third-adjacent channel full-service FMs authorized in the future.

The commission in March temporarily stopped accepting new FM translator applications while it considers changes to the LPFM rules.

Public comments have begun trickling into the agency. The items had yet to be published in the Federal Register in early May; comments were to be due 30 days upon publication of the Second Order of Reconsideration and Further Notice of Proposed Rulemaking (MM Docket 99-25.)

The following are excerpts of some of the public comments. At press time, only proponents had filed.

Provide primary status for the LPFM radio broadcasting service applications.

— Nickolaus E. Leggett

(I)t is the duty of the FCC to provide listeners with the opportunity for new voices to be heard on LPFM stations. I do not believe the argument that these small stations really take away from the transmission of larger, more powerful stations. ...

The FCC should take the painstaking process to avoid allowing one large media group or small interest group to gobble up all of these LPFM stations. We should allow for a variety of interest groups to be able to address their small listening audiences.

The FCC should investigate each claim for LPFM stations based on the interest group it will attract. I think it is absurd to allow one interest group of any kind, be it religion or sports etc., to have a monopoly of the LPFM stations.

— Nicholas Kolentse
Boston College
Chestnut Hill, Mass.

We must not forget that low-power FM was created so that new voices, not just the wealthy, would have access to radio in our country. All commercial FM owners are in fact very rich. Their licenses are worth millions of dollars and can be turned into fast cash.

Low-power broadcasters are not wealthy. They are Americans who love radio and they serve their communities for that love and not the love of a buck.

We must now protect the little guy from the big guy.

LPFM must be reclassified and given the same rights as the Big Boy broadcasters.

LPFM stations serve their communities. They should be protected in allocations. They should not have to move or go off the air for some wealthy broadcaster.

LPFM broadcasters should have the same right to upgrade their station class and make upgrades as the big boys.

See LPFM, page 5 ▶

Company: 25-Seven Systems
Product: Audio Time Manager

A few long-time radio/audio guys got together to form this company in 2003. They came up with what they think is a better way to handle time-compression algorithms. RW heard it first more than a year ago in prototype form; it's now shipping with version 1.17 software. "A uniquely valuable product with great, transparent performance and a well-designed user interface," one judge wrote. "These guys obviously knew their target market."

Essentially the ATM is a digital recorder that can record part of a show while playing back another, with playback up to 20 percent faster, which translates to 12 minutes of "new" time per hour. The designers use variable-width analysis windows to check pitch, tempo and spectral characteristics; other algorithms preserve musical rhythms and stereo placement.

So you can do things like manage unexpected program events, create availabilities and avoid bumping into network feeds. You might delay the start of an incoming feed or a recorded program yet still have it end on time; you could add breaks to a live event and then catch up. The company is also proud of the simple two-button operation and the 8x8 GPIO that lets it be driven instead by automation systems.

Retail: $7,950. Shown: Rick Sawyer, Derek Pilkington and Geoff Steadman get caught up.

Info: (888) 257-2578 or www.25-seven.com.

Company: AEQ
Product: DR-100 Digital Field Recorder

A pleasant surprise this year is the range of new choices available for field recording. Spanish company AEQ calls the DR-100 the smallest pro digital recorder, about the size of a cell phone; one judge called it "amazingly compact."

This solid-state, CompactFlash unit uses the same batteries as a Nokia phone, for 10 hours of operation. It has a built-in mic as well as a tiny external one, or you can plug in your own via the 1/8-inch connector.

The unit has switchable compression including MP2 and MP3; it can hold from 1.5 to 4.5 hours of audio. Editing can be done using the onboard audio editor or your computer; the unit transfers files via external modem or through a USB port. The unit includes an FM radio with 20 presets and comes with a carrying case.

Retail: $699. Shown: Miguel Sancho and Gerardo Vargas get small.

Info: (866) 817-9745 in Florida or www.aeqbroadcast.com.

Judges Note Multicast and Surround

As you flip through the pages of this issue, we'll introduce you to the winners of the 2005 Radio World "Cool Stuff" Award, radio's most prestigious technology honor.

The broadcast engineers on the judging panel are hand-picked by me and represent all facets of radio. They come from commercial and public radio. They work in big markets and small. They are veteran engineers and young ones, guys working at the network level and in the station trenches.

Judging anonymously, they are independent of influence or pressure from suppliers. They also operate under no arbitrary limitations as to how many — or how few — awards they can give out. Our panel is freshened each year with new participants so that the process remains vigorous.

The "Cool Stuff" is a significant accomplishment. It means a product was selected by the panel from those shown at the NAB convention as notable for its design, features, cost efficiency and performance in serving radio broadcast users. Judges walk the floor at the convention to educate themselves about products aimed at radio or suitable for radio use. They come to a voting meeting prepared to defend their nominations and vote on others. Cost and availability, function and features are considered.

Radio World announces the winners on our Web site and in this post-show issue. The winning companies may use the "Cool Stuff" logo in their marketing. Winners receive a placard for their booth, and later the engraved award itself. It's an honor many companies seek and promote proudly at conventions, in print and in their office lobbies.

Common reasons a product does not win an award: A supplier may have failed to inform us about the product; the item might have no firm price and/or ship date; the product was not displayed; the panel may have judged that the product was an incremental improvement on a previous version or was not sufficiently innovative.

"Cool Stuff" panels also have a history of honoring special industry contributions or unusual offerings. In past years, for instance, these have included the FCC, for an informative and accessible NAB exhibit presence; several pioneering RF suppliers who committed early to the IBOC transition; and Steve Hemphill for a 1946 GE transmitter replica.

Radio's Most Prestigious Technology Awards

This year the judges saluted two groups of companies for their roles in advancing new technologies: one for the development of multicasting, the use of radio's existing bandwidth for multiple audio program streams; the other for advocacy of radio surround sound and for demonstrations of how U.S. radio might implement it.

Occasionally the judges miss a deserving product, or they honor one that turns out to be a dog. This is true of all award programs; but if you disagree with RW's choices, please share your thoughts at *radioworld@imaspub.com*.

However, no award panel takes their job as seriously or has such an extensive history of careful deliberation. I am deeply proud of our judges, a bunch of guys who invested substantial time and effort in this process, who do so for no pay and little praise and who must listen without comment to the industry debate over their choices afterwards. Gents, my thanks.

★ ★ ★

In our May 13 issue, Tom Vernon reported on great ideas in radio software. He offered examples of engineers who had used their programming skills to create custom solutions to special problems encountered in broadcasting, such as a talking receiver-strength device to help with RPU alignments and a centralized management tool to handle control of audio processors over a network.

Vernon will write again on this topic and would like to hear from readers who have custom software experiences and great ideas. Write to him at *TLvernon@blazenet.net*.

★ ★ ★

Radio history fans, note that a special FM broadcast at the Alpine Tower in New Jersey this month will commemorate Major Armstrong's first public demonstration of wide-band FM 70 years ago.

Steve Hemphill and Charles Sackermann Jr. plan the broadcast June 11-12. They have an STA to conduct the broadcast on Armstrong's frequency of 42.8 MHz under experimental call sign WA2XMN. You can also listen online.

The program material includes excerpts from a 1941 test broadcast and a production of "Empire of the Air" based on the book by Tom Lewis. The planners said they'd also rebroadcast the final signoff of Armstrong's FM station W2XMN/KE2XCC, which went dark in 1954 after his death.

The event is not open to the general public though credentials for a limited number of radio history enthusiasts were being offered. For information visit *www.cscmgt.com* and click on the Recent News tab.

From the Editor

Paul J. McLane

LPFM

▶ Continued from page 3

LPFM is noncommercial. Let's keep it that way.

LPFM stations licenses should be able to be reassigned to other not-for-profit groups or educational institutions.

— Bruce Quinn
Columbia, Ind.

Should LPFM license be transferable?

(Colquitt Community Radio) believes that LPFM license or construction permits should be transferable only when special circumstances arise. There are times when the applicant cannot construct the station because of limited funds or other reasons. However, these applicants should not be allowed to profit beyond the actual expense of their application.

Should ownership be limited to local entities?

Since the LPFM service is designed to be community radio, why would the commission even consider allowing anyone outside the community (to) own the facility? The restriction of local ownership should remain in place.

Should the commission prohibit multiple ownership of LPFM stations?

We believe that the commission should not allow multiple ownership of LPFM facilities. This is community radio for the owner's specific community. We feel that multiple stations would be used as repeaters instead of community stations.

Should the construction period be extended?

Only in certain documented cases such as zoning issues. We applauded the commission's decision to permit minor change distance to be extended to 5.6 kilometers. This should allow any permit holder that is experiencing zoning issues to move their transmitter site to an acceptable location.

Grant LPFM stations primary status over FM translators

Yes. The recent translator filing window greatly reduced the available spectrum available to true community radio. Since a few groups have circumvented the commissions rules regarding applying for facilities that it never intended to construct, the commission should dismiss all the pending applications filed during the recent translator window. The commission should grant LPFM facilities primary status over FM translators.

Personal comment:

Colquitt Community Radio Inc. applauds the recent FCC decision to freeze further processing of translator applications. CCR urges the commission to use the available manpower that was being used to process translator applications to eliminate the backlog of NCE applications.

The commission has had a freeze in place on new NCE facilities over five years. This ridiculous. We understand that court challenges have delayed action; however, the courts dismissed those challenges several months ago. It is time the commission lift the freeze on new NCE stations. The five-year freeze actually denies access to public airwaves and should be lifted at once.

— Clyde Scott Jr., President
Colquitt Community Radio Inc.
Moultrie, Ga.

We applauded the commission's decision to permit minor change distance to be extended to 5.6 kilometers. This should allow any permit holder that is experiencing zoning issues to move their transmitter site to an acceptable location.

— Clyde Scott, Jr.
Colquitt Community Radio Inc.

I am one of the original petitioners who requested the establishment of the low-power FM radio broadcasting service (Petition for Rulemaking RM-9208 July 7, 1997). I am a certified electronics technician (ISCET and NARTE) and a licensed Extra Class amateur radio operator (call sign N3NL). I am also an inventor holding three U.S. patents.

My comments are directed at the commission's question: "Should all LPFM applications have primary status because LPFM stations are permitted to originate local programming?"

The basic purpose of the LPFM radio broadcasting service is to allow local community-based broadcasting. These small radio broadcasting stations are intended to allow local events such as school board meetings and town council meetings to be broadcast. LPFM also presents local news and bulletin coverage.

In addition, local musicians, poets, rappers, actors and authors have the opportunity to present their works on the air to the community. The bottom line is that LPFM allows local material to be available on the air.

Translators are broadcast stations that relay program material from other areas into a community. Translators are anything but local. This basic purpose of translator stations is directly in conflict with the purpose of the LPFM radio broadcasting service.

LPFM applications and existing LPFM stations must have primary status. LPFM stations must have priority over translator stations so that the local service of the LPFM stations is protected. Without this protection, the large broadcasting organizations will easily displace or block local LPFM service with nationally networked program content broadcast by translator stations. Since large organizations already dominate almost all of the broadcast media, protection must be provided to LPFM stations so that some local material will be available to listeners.

In return for this protection, the LPFM stations should actually broadcast local programs. The commission can certainly require this as a condition for granting primary status. However, requiring a "pledge to originate locally at least eight hours of programming per day" may be too strict a requirement.

Requiring six hours of locally originated programming per day may be more realistic for a newly established station. Alternatively, a limited local requirement could be imposed for the first year with an increased requirement in subsequent years.

Requested action for the survival of the LPFM service: Provide primary status for the LPFM radio broadcasting service applications.

— Nickolaus E. Leggett
Reston, Va.

Company: Aphex Systems
Product: Model 230 Master Voice Channel Processor

"A collection of Aphex's best comes together in one box, at a nice price," one judge wrote. "The adjustable, 'gated' compressor is great, combined with the downward expander, tube pre-amp, Aural Exciter, Big-Bottom 'fatten-up,' smart parametric EQ, phase rotator, phantom power, low-cut — it's *the* package for vocal." Another wrote, "This one will soon be an industry standard."

Features include 24-bit/96 kHz A/D; AES, S/PDIF and optical outputs; and soft-mute cough switch. Mic inputs are on XLR; outputs are bal/unbal XLR as well as TRS unbalanced.

Aphex positions the 1 RU box as a way to assist a newscaster or weather person whose voice could use a little help, or to tweak a weak outside feed. Put it in the production room or wire it up as a permanent air feed processor for special talent.

Retail: $799. Marvin Caesar and Donn Werrbach are shown.

Info: (818) 767-2929 in California or www.aphex.com.

Content Depot

▶ Continued from page 1

PRSS was developing a revised testing plan, and planned to announce new delivery dates in mid-May.

Earlier plans had called for ContentDepot to launch last fall; then the schedule was revised to this summer.

Once stations receive their hardware, the installation should not take much time, according to PRSS. Beta test users, including Vermont Public Radio Director of Engineering Rich Parker, have reported that the new system is easy to install.

"It really couldn't be simpler," Parker says in a training DVD distributed to station engineers at the PREC. Copies of the DVD will be included with each station's equipment package and the individual segments are available on the PRSS Web site at *www.prss.org*.

Three systems

The ContentDepot actually consists of three distinct interoperating systems, Bloss said.

The ContentDepot Catalog, launched in October 2003, is a Web-accessible database that allows producers to post and manage programs' distribution and to receive carriage and usage data. Producers have been entering program information since the site launched, allowing stations to browse the catalog to obtain descriptions, promos, marketing materials and audio files of select shows.

The cover of the installation video.

The ContentDepot Portal is another Web-centered database that allows multiple users from each station to log in and obtain access to the program information that is most relevant to their job functions. For example, program directors may be granted access to a station's program schedule to ensure that the proper shows are delivered, while on-air operators may only see alerts or notifications of updated programs in the schedule. Someone at each facility who is designated to administer ContentDepot will manage permissions of portal users at the station level.

Finally, the ContentDepot distribution system manages the process of getting programs to stations as they are needed. This represents the most tangible change for station personnel, because it directly affects how programs are acquired and broadcast.

Live vs. pre-recorded

A key concept within ContentDepot is differentiation of programs into streams and files. Streams are live programs, delivered for live broadcast, such as the NPR newsmagazine "Morning Edition" or the Classical 24 music service. Files are programs with longer lead times, typically recorded by stations off the satellite for later broadcast.

On the minds of many of the assembled engineers were questions about schedule and the practicalities of installing the new hardware.

The distinction is important for stations, because the two types of programs will need to be handled differently by station operations staffs. Live streams essentially are equivalent to today's SCPC channels, and stations will need to route one of four audio outputs available on the IDC streaming decoders to air or set their automation system to record the program, if needed.

Files, on the other hand, will be captured and saved on the IDC storage receivers without much involvement by station staff. Once a program is requested via the Portal, the ContentDepot distribution system will package an IP multicast file transfer and initiate transmission based on the projected need for the program from each station's schedule data. Each station's receiver then will either capture or ignore the data by checking the addressing of the data packets.

See CONTENT DEPOT, page 7 ▶

Content Depot

▶ Continued from page 6

Once a file is fully received and is resident as a complete file on the storage receiver's internal hard drive, the station's automation system will import the new file and make it available for playout or scheduling. PRSS has worked with 16 automation system vendors to ensure that file importing modules are available for the systems used by most interconnected public radio stations.

The program's producer determines whether the show will be distributed as a stream or a file, although the individual has the option to do both. "Any live stream can be captured and redistributed as a file," Bloss noted, which may be useful for programs that are carried live by some stations and rebroadcast later by others.

The ContentDepot fee structure will favor transmission of file-based programs; these require less coordination than streamed programs.

Forward compatibility

ContentDepot will replace the 20-year-old single-carrier-per-channel satellite network and its associated Satellite Operating Support System control software.

SCPC systems can be spectrally inefficient and inconvenient for some stations operationally, as all programs are fed as audio and must be recorded in real time. Many public radio engineers have said that the OS/2-based SOSS system has been difficult to incorporate into station networks and operational workflows because IBM is no longer developing the operating system.

In addition, the widespread use of alternative delivery methods for audio, such as ISDN and file transfers via the public Internet, has transformed the way many public radio stations operate, minimizing the need for relatively expensive satellite time for production use and missed program re-feeds.

Recognizing this, PRSS has turned to IP-based technology for the ContentDepot, coupling its existing satellite infrastructure with the DVB-S standard for satellite broadcast of digital data, to create what proponents believe will be a flexible and easily updated distribution system.

Working with Siemens Business Services, formerly BBC Technology, and equipment vendor International Datacasting Corp., PRSS has tested the use of unidirectional UDP, a common computer networking protocol, to transmit MPEG-1 Layer 2 audio over the DVB-S system.

PRSS staffers say this reliance on open standards would allow the system to keep pace with evolving technologies, avoiding the problems public radio stations experienced with the SOSS system as IBM's support for OS/2 waned.

Focus on IP-based standards also offers the long-term advantage of distribution flexibility. While satellite distribution is currently the most cost-effective method for delivering programming, PRSS says stations using ContentDepot will be able to take advantage of future high-capacity interconnection technologies, such as point-to-point fiber or Internet 2, as those become viable.

Company: Belar Electronics Laboratory
Product: FMHD-1 Precision
Digital FM HD Stereo Monitor/Analyzer

"HD stations finally get a long-awaited mod monitor to keep close tabs on their HD transmissions," one judge wrote. "A fine value that includes a spectrum analyzer display for under $6K." Shown as a prototype last year, the FMHD-1 is to ship this summer, none too soon for Belar fans who are going digital and need to decode their HD Radio signals. It also is designed to accommodate 5.1 and multicasting scenarios.

The monitor decodes the HD and analog FM signals simultaneously and displays HD Radio status, data, time alignment and configuration info, as well as audio metering and RF/audio spectrums. The unit is 2RU and uses a rotary thumbwheel for managing the color LCD display. Features include eight assignable analog outputs and three assignable optical AES/EBU outputs.

For stations planning to monitor multiple audio streams, the box supports that; for simultaneous monitoring you'll just need an optional second plug-in decoder.

Retail: $5,900. Shown: Mark Grant monitors things in the Belar booth.

Info: (610) 687-5550 in Pennsylvania or www.belar.com.

DRM Expands Into FM Band

by Lawrie Hallett

NORWICH, England Digital Radio Mondiale is moving beyond medium-wave/AM and shortwave.

Members of the DRM Consortium plan to extend their system to operate on frequencies of up to 120 MHz, including FM broadcast frequencies in VHF band II, 87.5 to 108 MHz.

Firmly established

The DRM Consortium has begun work on its band extension project. The various design, development and testing phases needed to finalize the revised specification are expected to take three and five years, meaning a launch date for the new standard of sometime around 2008 to 2010, according to DRM proponents.

The International Telecommunications Union, International Electrotechnical Commission and European Telecommunications Standards Institute have endorsed the DRM standard as currently defined, for use in the broadcasting bands below 30 MHz, which encompasses shortwave, AM and long-wave.

The move brings DRM into direct competition with the more established Eureka-147 DAB system, operational since the 1990s. More than 1.5 million DAB-capable receivers have been sold in the United Kingdom, and more than 150 DAB receiver models are on the market according to the Digital Radio Development Bureau, a marketing group in the United Kingdom.

DAB is another system endorsed by the ITU, developed to work in the broadcast bands between 30 MHz and 3 GHz and able to work in VHF band II.

Though suited to national network and other wide-area broadcasting, as a multiplex system, DAB can be somewhat inflexible and expensive for individual services with specific targeted or small-scale coverage requirements, because all broadcasters in such a market share transmission facilities and all have equal coverage areas and power levels.

The term "small-scale" in this story refers to a power level/coverage area that would be comparable to that achievable with the old Class D license or the current LPFM licenses in the United States. In the U.K., the regulator can tie a licensee to a specific format or targeted audience. Expenses would be a factor in some of these stations not choosing to use DAB; but serving a specific geographic area or specialized audience is likely the larger issue, experts say.

The DRM consortium members and the World DAB Forum, the marketers of the Eureka-147 system, believe their technologies are compatible for worldwide use and hope to convince receiver manufacturers to make radios that can decode signals from both systems.

On the transmission end, proponents of both systems hope to provide solutions — perhaps employing both on adjacent frequencies in the same bands — in the markets planning to migrate to digital platforms.

Part of the thinking behind the move to expand the capabilities of DRM is to improve the digital opportunities for small-scale and local broadcasters for whom Eureka-147 DAB is not appropriate.

Proponents of the two standards, the WorldDAB Forum and the DRM Consortium, announced plans to cooperate at the IFA consumer electronics show in Berlin in 2003 and now hold joint meetings on key technical and commercial topics.

According to DRM Chairman Peter Senger, broadcasters and regulators in many countries are examining digital options in search of systems that fit their own specific technical and market criteria.

Senger said Eureka-147 DAB has established itself as a successful solution for the higher-frequency bands in many countries, and broadcasters increasingly are implementing DRM for medium-wave and shortwave broadcasting.

"DRM expansion into the broadcasting bands up to 120 MHz will supplement these existing solutions," Senger said.

Technology overload

According to Annika Nyberg, president of the WorldDAB Forum, cooperation between the two groups means they both "pave the way" for the future of digital radio.

"DAB digital radio is ideal for broadcasting audio and data services to large groups and we have already seen radio groups migrate their market leading stations to DAB, as well as developing new quasi-national digital-only brands," said Ian Dickens, chief executive of the U.K. Digital Radio Development Bureau.

"For now," said Dickens, "DAB spectrum is limited and many smaller FM services have been unable to secure a spot on a digital platform. DRM could allow such broadcasters to make the transition while, at the same time, bringing new 'long-distance' stations in from Europe."

Company: Broadcast Electronics
Product: 4MX 50 AM Transmitter

Seems like most folks we talked to agreed that the 50 kW AM transmitter from BE was among the hottest — or Coolest — items on the floor.

"It doesn't get any cooler," writes one of our judges. "Look at the footprint, the lack of a modulator, on-board GUI (including an active Smith Chart of output matching!), 'one-for-one' power supply to PA amp design, HD-ready, *true* hot-swappable operation. It's the bomb!" (Oldsters, he meant that as a compliment.)

Features include the company's new 4M Modulation, a Fourier design incorporating zero-voltage switching and modulated RF duty cycle, which one judge described as "truly innovative"; typical efficiency of 88 percent; capability of analog AM, HD Radio and DRM; built-in redundancy; and that great footprint. It is 45 inches wide, 35 inches deep and 87 inches high.

Retail: $150,000. Shown: BE's Richard Hinkle and Jerry Westberg stand in front of their new Big Blue.

Info: (217) 224-9600 in Illinois or www.bdcast.com.

Company: Broadcast Electronics
Product: Now Playing/Now Playing Plus

These packages facilitate data services via FM RDS, HD Radio and station Web sites. The data may be program-associated, station branding, informational text (such as weather and traffic), album art and more. Now Playing is the basic package and Now Playing Plus is the more advanced.

What judges said: "All you will need to generate and manage your RDS and HD text scroll offerings. Allen Hartle and The Radio Experience have thought of everything in this nifty package." Also: "The TRE team at BE have envisioned and delivered on the only efficient 'produce once, use many' system for serving highly addictive artist and title, and other display info to all of the current program-associated data venues: RBDS, HD Radio and station Web pages … Hartle has been working on this project for over a dozen years," this judge continued. "Its efficiency, sophistication and flexibility really show a dogged commitment to anticipating a big need and fully filling it, just in time for the customer's head-smack of 'how am I going to handle all this?'"

Retail: Prices vary with hardware and message management software configuration. Shown: Allen Hartle enjoys the view from the BE booth.

Info: (217) 224-9600 in Illinois or www.bdcast.com.

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 cards, 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

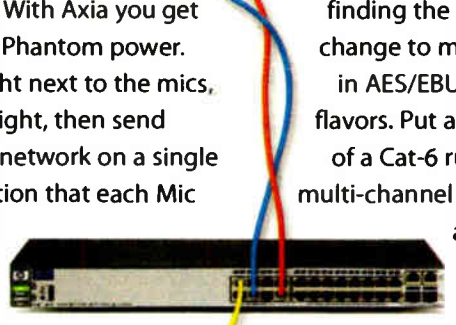
< · · · > 100/1000

There's a better way to get audio out of your PC. No more consumer grade ⅛" 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...

ENCO SYSTEMS INC

PSI

radio systems

Scott Studios

BALSYS

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/ 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 for details.

AXIA
A TELOS COMPANY

Broadcasters General Store BSW

Axia products are available in the USA from Broadcasters General Store and Broadcast Supply Worldwide. See www.AxiaAudio.com/buy/ for more information.

Dollinger, Littlejohn Upped at Clear Channel

SAN ANTONIO Clear Channel has promoted two executives: Lisa Dollinger to chief communications officer for the entire company, and Jeff Littlejohn to executive vice president of distribution development for Clear Channel Radio. Both are newly created titles.

Clear Channel President/CEO Mark Mays credited Dollinger with turning around public perception of the company, stating: "Two years ago, our company was largely misunderstood and fabrications were accepted as fact."

Having focused on the company's corporate image for the past two years, she now will expand her duties to concentrate on internal communications.

"It's an opportunity to work with employees more closely. Previously, I was working to correct inaccurate impressions from outside the company," she said.

> **Once content is created, I'm in charge of getting it distributed.**
>
> — Jeff Littlejohn

Littlejohn said of his new job: "You can sort of think of it as being in charge of delivering content to our listeners. Whether it's AM, FM, XM, streaming, subcarrier, HD Radio, RDS, iPod, cellular ... Once content is created, I'm in charge of getting it distributed."

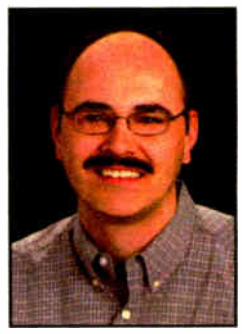
Lisa Dollinger

He also sets the direction for the technical efforts of the radio group.

His operation has moved from Covington, Ky., across the Ohio River to a building Clear Channel owns in Cincinnati, also putting him closer to the company's HD Radio installations in that market.

Littlejohn had been vice president of engineering for Clear Channel Radio.

Most of his former engineering responsibilities will shift to Steve Davis, recently named Clear Channel Radio's senior vice president, Engineering. Davis takes on management of the regional engineering VPs and day-to-day engineering matters, and continues to manage the capital budget and FCC/regulatory issues. Davis remains based in Tulsa, Okla.



Jeff Littlejohn

In her expanded role, Dollinger becomes chief communications strategist and spokeswoman for Clear Channel. The company said she would direct corporate communications and branding, reputation and issues management, strategic positioning of the company's global assets, media relations, consumer marketing, sponsorships and employee communications. She will also work with executive management on litigation, public policy and financial communications.

Dollinger joined Clear Channel in 2003 as senior vice president of marketing and communications for the radio division and was named senior vice president, corporate communications in 2003.

Before joining Clear Channel, she was vice president of corporate communications at Capstar Broadcasting and helped promote the company through its merger with Chancellor Media in 2000 (creating AMFM Inc.) and through its subsequent acquisition by Clear Channel.

— Leslie Stimson

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*, 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.

Tieline® TECHNOLOGY

Tieline G3 Vs Telos Xport...

You Decide.

Telos has recently published comparisons between their Xport POTS Codec and the Tieline Commander G1 Codec which has been obsolete since November 2004. Here is a comparison with the current Commander G3.

Tieline Commander G3 Vs Telos Xport

Feature	Tieline Commander G3	Telos Xport
POTS to POTS connection	Yes	No - POTS to ISDN only
POTS Audio Delay	100 Miliseconds	>600 Miliseconds
Maximum POTS Audio Quality	15kHz	15kHz
Low bit rate audio quality over POTS	7kHz as low as 9.6kbps	Telephone quality below 16kbps
15kHz Bi-Directional Audio over POTS	Yes	No - 15kHz 1 way only
POTS Compatibility	Yes Comrex/Musicam	No
Intelligent Gain Control	IGC + AGC	AGC
Warranty	2 Years	1 Year
Expansion Ports	2	1
12 Volt DC portable power options	Yes	No
Simultanous duplex Comms and Talkbalk*	Yes	No
Remote Control Talent's audio Inputs	Yes	No
Stereo 15kHz over POTS*	Yes	No
Dual Mono 15khz POTS*	Yes	No
Bonded POTS* Up to 48kbps mono	Yes	No
Audio Over IP Codec to Codec*	Yes	No
Weight	4 lbs	7 lbs
Dimensions	8.5x8.5x2.9 inches	9.25x12.75x3.5 inches
GSM 7.5kHz Wireless*	Yes	No
ISDN Options	Mono, Stereo, J-Stereo	Mono
ISDN Algorithms	Mpeg Layer 2, G.722, G.711, Tieline Music	AAC+ AAC LD, G.722
15kHz stereo/dual mono over 1 x 64K channel	Yes	No
User Remote Profiles	98	30
Configurable Macro Function Options	Hundreds	No
User configurable program/monitoring/comms	built in 11 x 6 cross point audio router*	No
Split Phones - Monitoring/Comms	Yes	No
List Price per pair **	**$5,750** (2x G3)	**$6,850** (Xport / Xstream)
Link Renegotiation	1 second	5-6 Seconds
Control Inputs and Outputs	2 in 2 out (Exp to 16 in/out)	3

www.tieline.com/rw **Order your FREE demo today** **800-750-7950**

** Refers to base MSRP without ISDN option for POTS Codecs and MSRP for Telos Xstream as of 4/1/2005. The Telos logo, Zephyr, Zephyr Xstream, Zephyr Xport are all registered trademarks of TLS Corporation, © 2004. aacPlus (TM) Coding Technologies. Comrex, Musicam and Telos and associated trademarks are property of their respective owners. Product specifications quoted from the manufacturer's manual listed on the website 5/11/2005 * Requires additional POTS, ISDN, GSM, IP modules for operation.

◆ NEWSWATCH ◆

Arbitron, Nielsen to Measure How Ads Affect a Buy

NEW YORK Arbitron and Nielsen want to use the Arbitron Portable People Meter to link ad exposure with actual buying behavior in various media.

In a pilot panel dubbed Project Apollo, the companies plan to equip some 6,000 U.S. households with PPM and HomeScan technologies this year. They aim to measure return on investment for marketing efforts.

Approximately 14,500 participants will carry Arbitron's PPM to record exposure to radio, TV and cable as well as audio-based commercials. Consumer exposure to other media such as newspapers, magazines and circulars would also be collected through different survey methods.

The information will be combined with data on consumer preference and purchases using Nielsen's HomeScan technology, which tracks buys of packaged goods.

Arbitron and Nielsen said the service would be separate from any offered for TV and radio ratings.

Appeals Court Strikes Down Broadcast Flag

WASHINGTON Broadcast flag proponents would now have to seek relief from Congress. That's after a federal appeals court in Washington struck down the FCC's so-called "Broadcast Flag" rule, which mandated that TV signals be flagged, or coded, to protect digital content from piracy.

Although the case involves television, experts have been following developments to see if the issue could affect digital radio.

The U.S. Court of Appeals said in its decision that the commission had exceeded its authority with the rule, which had required TV set manufacturers to make sets that can read the flagged signals by July 1.

The American Library Association and other consumer groups, including Public Knowledge, challenged the broadcast flag in court, saying it could lead to higher set prices.

The Motion Picture Association of America backed the rule, citing piracy concerns. The code, embedded in broadcast signals, is designed to block illegal re-transmission over the Internet and over other consumer devices.

NAB President/CEO Eddie Fritts said the association would work with lawmakers to authorize implementation of a version of the flag rule that protects free TV.

Ferree: 'Committed to Public Broadcasting'

WASHINGTON In his first public appearance in his new role, Ken Ferree, acting president of the Corporation for Public Broadcasting, said he does indeed listen to public radio and watch public television.

Public broadcasting offers up a healthy alternative to the "fried foods" of commercial media, he told attendees of the Public Radio Leadership Conference meeting in Washington in May. "No matter what you may have read or heard about me, I'm committed to public broadcasting."

A recent New York Times Magazine article quoted Ferree saying he didn't watch much public television or listen often to public radio. The story was inaccurate, he told Radio World.

The former head of the FCC's Mass Media Bureau has joined CPB as vice president and COO; the board named him acting president after President/CEO Kathleen Cox resigned suddenly in early April.

He urged attendees to think about trends in the media industry, such as individual wants and specialization. "This is now the 'My Yahoo' generation," referring to younger listeners that radio must start targeting.

At the same time, CPB is talking to stations about expanding the applicant pool for program grants, he said, in order to reach a wider audience and simplify the grants process.

Under the umbrella of reaching a wider audience, Ferree praised NPR's multicasting and digital radio initiatives.

SBE Honors Dick Burden

LAS VEGAS The SBE has awarded only its seventh lifetime achievement award, bestowing the honor on Dick Burden, CPBE, of Canoga Park, Calif., at its membership meeting in April.

He received the award in recognition of 55 years of contributions to the broadcast engineering industry.

Dick Burden

Burden joined SBE in 1966 and was an original member of SBE Chapter 1 in Binghamton, N.Y. He would help organize Chapter 47 in Los Angeles, serving as its second chairman and as program chairman from 1979-81.

He is a senior member of SBE and was elected an SBE Fellow in 1999. He earned Certified Professional Broadcast Engineer designation in 1990 and is Chapter 47's certification chairman.

As a student at Lafayette College in Easton, Pa., Burden was appointed CE of college radio station WJRH in 1950. A decade later he formed Burden Associates in Mount Kisco, N.Y., and in 1972, opened an office in Canoga Park, Calif. He has rendered technical services to radio stations and broadcast networks, and has done manufacturing consulting work.

In honoring Burden, SBE also noted that in 1958, he worked on the development of a system of stereo broadcasting in conjunction with Multiplex Development Corp. and holds a patent in that field. He served on the National Stereophonic Radio Committee, Audio Engineering Society Standards Committee and as an AES representative to the Joint Committee of Intersociety Coordination. He is also a former member of the National Radio Systems Committee.

Study: Fewer Ads Equals More Listeners

NEW YOK Forty-seven percent of consumers say that they would listen to a radio station "a lot more" if that station had fewer spot breaks, while 44 percent say that they would listen "a lot more" if that station had shorter commercial breaks. That's according to findings from a study by Arbitron and Edison Media.

More than eight in 10 respondents said listening to commercials is a "fair price to pay" for free radio programming, according to the research firms, while a majority of listeners say they "never" tune away from radio commercials while they are listening to the radio at work (63 percent) or at home (49 percent).

Relatively few listeners say that they typically switch the station immediately upon hearing the beginning of a commercial break — 6 percent of those listening at work say they switch immediately; 11 percent of home listeners and 28 percent of those listening in a car do the same.

More than 1,000 respondents were interviewed by phone in March. The results from this survey were tracked against a previous survey conducted in 1999. The study is at *www.arbitron.com.*

Company: Broadcast Tools
Product: ADMS 44.22 Switcher

This is a single RU, four-input stereo AES and four-input stereo analog matrix switcher with two independent stereo analog and AES outputs. It will find a home particularly in hybrid analog/digital plants.

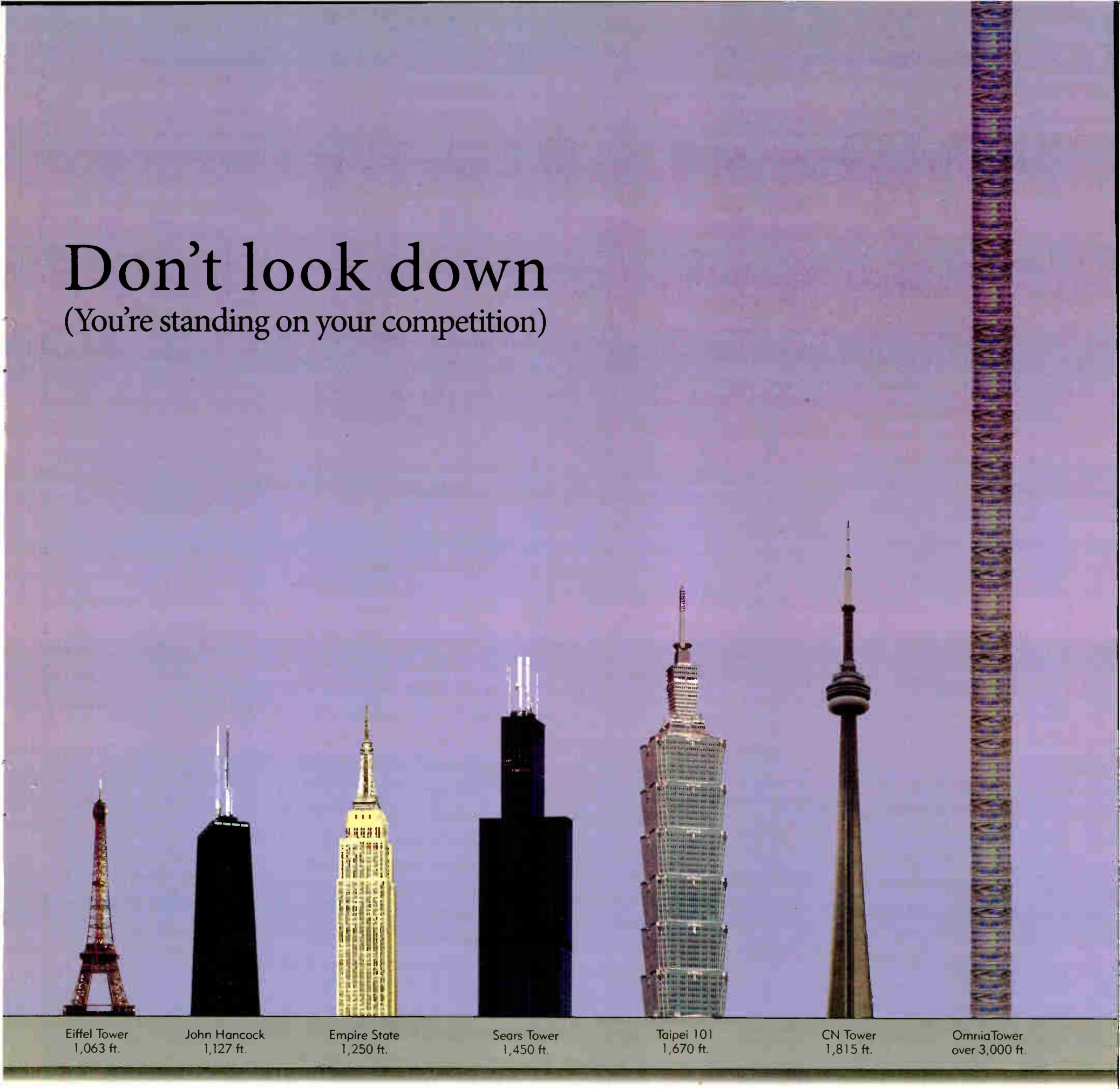
Each input has a three-band EQ, five types of filters and a leveler function. Any or all of the inputs may be mixed, faded and dimmed to either or both output pairs.

Features include a headphone amp; selectable stereo VU meters; a powered monitor output; a 16x16 GPIO port and RS-232/USB port. One judge: "Don Winget never stops dreaming up cool new tools for everything radio broadcast stations and engineers could ever need."

Shipping in July, the unit retails for $1,299. Shown: Don Winget and Connie Miller heft the goods.

Info: (360) 854-9559 in Washington state or visit www.broadcasttools.com.

Don't look down
(You're standing on your competition)



More than 60% of the Top 100 highest-rated FM stations in the USA have already upgraded to Omnia-6EX—the six-band dual-path processor for standard FM and HD Radio signals. The reason these leaders choose Omnia? Once you've heard it, you'll know.

The Empire State building is pretty tall. Taipei 101? CN Tower? Even taller. But Omnia dwarfs them all. In fact, if you stacked up all the Omnia audio processors in use around the world, you'd have a tower well over 3,000 feet high.

In just a few short years, Omnia has emerged as the best-selling audio processor in the world. More importantly, it's the most successful stations in top markets like New York, Los Angeles, London, Paris, Rome, Beijing, Tokyo, Amsterdam and Berlin, that have put Omnia on top. And more broadcasters are upgrading every day, using Omnia as their secret weapon to stay miles above the competition.

Speaking of heights, did you know that Omnia processing now powers stations broadcasting from every one of the famous structures pictured above?

Big or small, isn't it high time you upgraded to Omnia?

Omnia
A Telos Company
www.omniaaudio.com

HD Radio News

Multicast Receivers

Page 24

Radio World — Covering Radio's Digital Transition — June 8, 2005

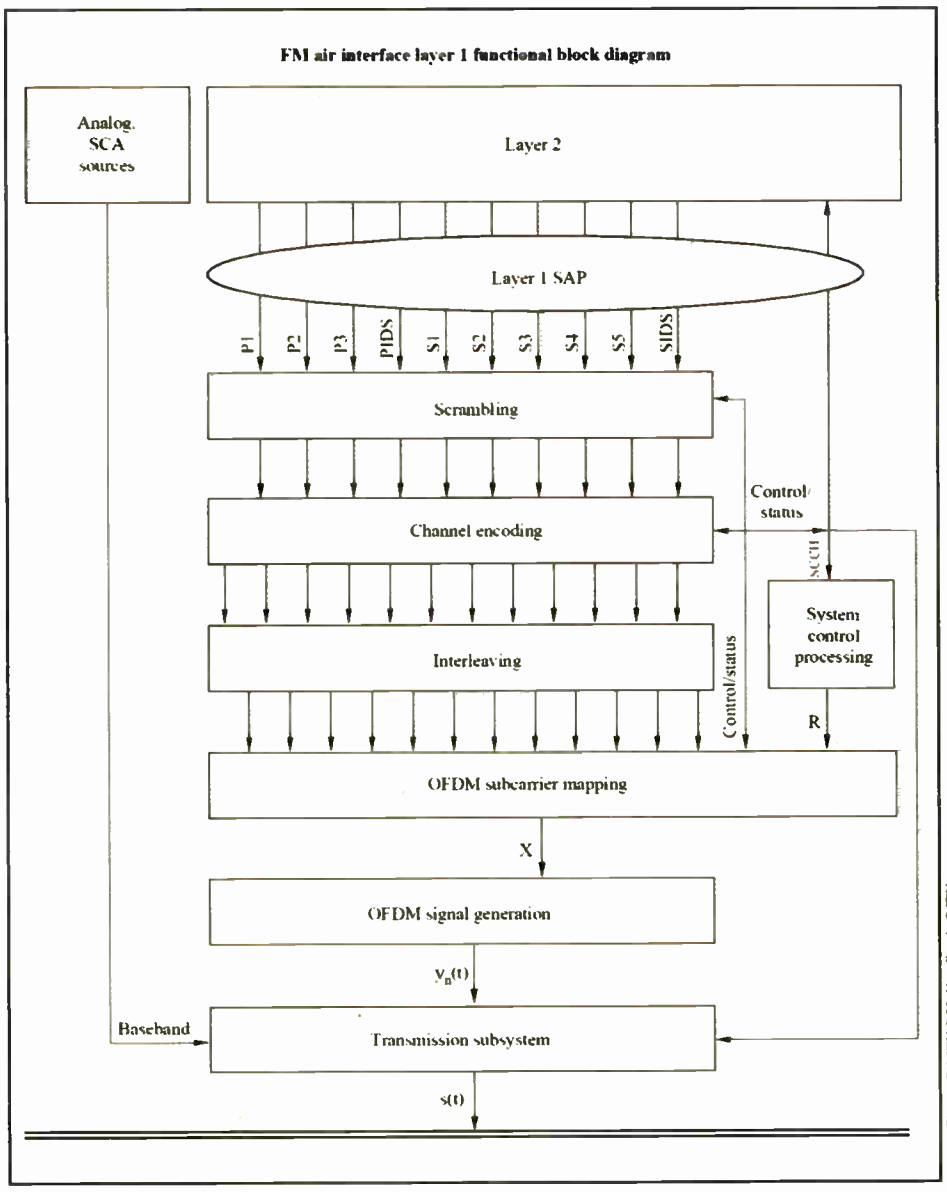
What's in a Digital Radio Standard?

by David Maxson

Note: Just as this issue of RW went to press, the new NRSC-5 digital radio standard, recently passed by the DAB Subcommittee of the National Radio Systems Committee, was published and delivered to the FCC.

Here, Radio World offers a look at an earlier IBOC standard. In an article prepared after NRSC-5 was approved but before it was published, David Maxson, a member of the body crafting U.S. digital radio standards, looks at how the ITU describes the IBOC system in its own recommendations, which parallel part of NRSC-5.

Maxson will look next at the details of NRSC-5 in a subsequent issue.



FM air interface layer 1 functional block diagram

Source: Figure C.1 ITU DSB Handbook. ©ITU

Theoretical Information Rates of IBOC Logical Channels
(After ITU DSB Handbook Tables C.4 & C.5)

Mode	Mode Description	Primary Logical Channels (P1-P3) Total Theoretical Information Rate (kbit/s)	Secondary Logical Channels (S1-S5) Total Theoretical Information Rate (kbit/s)
MP1	Hybrid	99	Not used
MP2	Extended (Hybrid with 1 extended group)	111	Not used
MP3	Extended (Hybrid with 2 extended groups)	124	Not used
MP4	Extended (Hybrid with 4 extended groups)	149	Not used
MP5,6,7	Extended and All-digital	Up to 148	All-digital: see below
MS1	All-digital	See MP5	104
MS2	All-digital	See MP5	130
MS3	All-digital	See MP5	105
MS4	All-digital	See MP5	154

Source: Compilation of ITU DSB Handbook Tables C.4 and C.5, ©ITU

Theoretical information rates of IBOC Logic Channels

Until the NRSC-5 standard is published in the United States, there remains little public information about what the inside of Ibiquity's digital radio scheme looks like. One source of information is the set of International Telecommunications Union Recommendations relating to Digital Sound Broadcasting.

In 2001 and 2002, the ITU incorporated IBOC into its recommendations on DSB technologies. IBOC stands shoulder to shoulder in the ITU recommendations with several other terrestrial broadcasting technologies: Europe's Eureka-147 DAB technology, which is also deployed in Canada, Japan's ISDB-T_{SB} (Integrated Services Digital Broadcasting-Terrestrial Sound Broadcasting) and Digital Radio Mondiale.

The ITU recommendations provide basic structural descriptions of these systems. The VHF-UHF systems are described in "Recommendation ITU-R BS.1114-5 Systems for terrestrial digital sound broadcasting to vehicular, portable and fixed receivers in the frequency range 30-3 000 MHz," while DRM and AM

See ITU, page 16 ▶

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 May 4, 2005. This page is sponsored by Broadcast Electronics. HD Radio is a trademark of iBiquity Digital Corp.

HD Radio in Boston

Call Sign	Freq.	Format	Licensee	On-Air?
WBZ(AM)	1030	Nws/Tlk/Spt	Infinity Broadcasting	Yes
WILD(AM)	1090	Urban AC	Radio One Inc.	No
WMKI(AM)	1260	Children	ABC Radio	Yes
WGBH(FM)	89.7	Cls/Jaz/Nws	WGBH Educ. Foundation	No
WBUR(FM)	90.9	News/Talk	Boston University	No
WNEF(FM)	91.7	Folk	Univ. of Massachusetts	No
WUMB(FM)	91.9	Folk	Univ. of Massachusetts	Yes
WBOS(FM)	92.9	AAA	Greater Media	Yes
WQSX(FM)	93.7	AC	Entercom	Yes
WTKK(FM)	96.9	Talk	Greater Media	Yes
WBOT(FM)	97.7	Urban AC	Radio One Inc.	No
WKLB(FM)	99.5	Country	Greater Media	Yes
WROR(FM)	105.7	Clsc Hits	Greater Media	Yes
WMJX(FM)	106.7	AC	Greater Media	Yes
WAAF(FM)	107.3	Rock	Entercom	No
WXKS(FM)	107.9	CHR	Clear Channel	Yes

HD Radio at ABC Radio

Call Sign	Freq.	Format	Market	On-Air?
KMKI(AM)	620	Children	Dallas-Ft. Worth	No
WFDF(AM)	910	Children	Flint	No
WMYM(AM)	990	Children	Miami-Ft. Lau.	No
KDIS(AM)	1110	Children	Los Angeles	No
WMKI(AM)	1260	Children	Boston	Yes
WWMK(AM)	1260	Children	Cleveland	No
WKSH(AM)	1640	Children	Milwaukee-Racine	No
WDRQ(FM)	93.1	Top 40	Detroit	No
WPLJ(FM)	95.5	AC	New York	No
WDVD(FM)	96.3	Hot AC	Detroit	No
KSCS(FM)	96.3	Country	Dallas-Ft. Worth	No
KTYS(FM)	96.7	Country	Dallas-Ft. Worth	No
WRDZ(FM)	98.3	Top 40	Indianapolis	Yes
WKHX(FM)	101.5	Country	Atlanta	No
KESN(FM)	103.3	Sports	Dallas-Ft. Worth	No
WJZW(FM)	105.9	Smooth Jazz	Washington	No
WYAY(FM)	106.7	Country	Atlanta	No

The Bottom Line

Total Licensed: 712

On the Air: 315

Last Month

Total Licensed: 701

On the Air: 301

Market Penetration United States

13,525 AM & FM Stations

Licensed by iBiquity and on the air

HD Radio at Susquehanna

33 AM & FM Stations

Licensed by iBiquity and not on the air

ITU

▶Continued from page 14

IBOC are described in "Recommendation ITU-R BS.1514-1 System for digital sound broadcasting in the broadcasting bands below 30 MHz."

ITU explains in the text, "The ITU-R Recommendations are approved by ITU Member States. Their implementation is not mandatory; however, as they are developed by experts from administrations, operators, the industry and other organizations dealing with radiocommunication matters from all over the world, they enjoy a high reputation and are implemented worldwide."

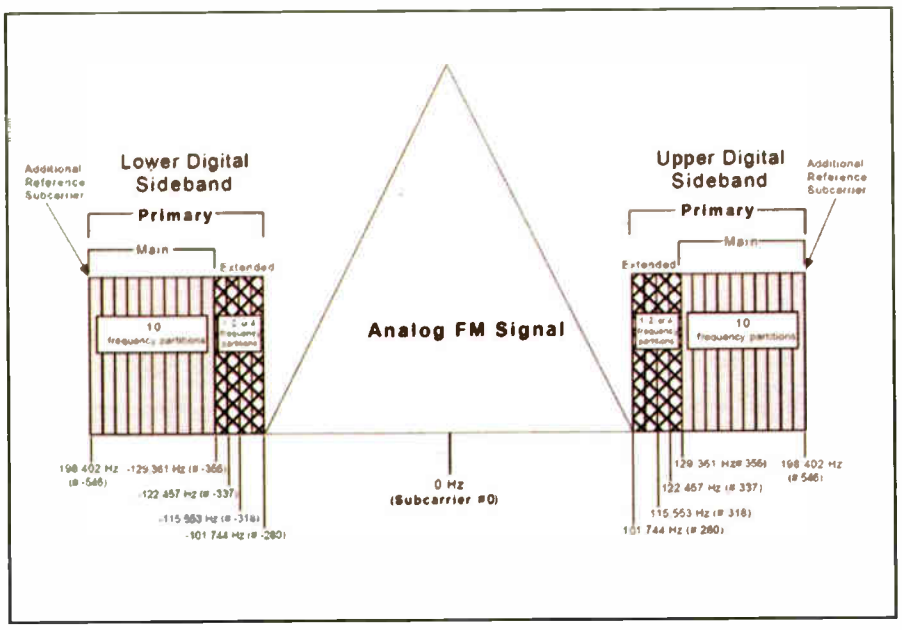
A paragraph from the Annex of the below-30 MHz Recommendation provides a good summary of IBOC systems:

"The IBOC DSB system is comprised of four basic components: the codec, which encodes and decodes the audio signal; FEC coding and interleaving, which provides robustness through redundancy and diversity; the modem, which modulates and demodulates the signal; and blending, which provides a smooth transition from the digital to either the existing analog signal, in the case of hybrid operations, or a back-up digital signal, in the case of all-digital operations."

Looking more closely at the components of the system, first of all, there has to be an encoder/decoder — a codec — to convert the sound to and from a format that can be transported across the radio channel. The ITU documents were created when Ibiquity was still working with MPEG AAC coding, so the ITI says in the text that AAC is used in IBOC technology.

The technology has evolved, and Ibiquity is now employing a codec called HDC. This has little impact on the ITU documentation, which does not contain any detail about the structure of the audio data stream. Similarly, as reported in the April 27 Radio World, the NRSC did not put the codec in its IBOC standard .

The ITU describes the IBOC system at the layers closest to the physical layer. Those familiar with the Open System Interconnection networking model will recognize the practice of describing a system in its functional layers.



Source: Figure C.10 ITU DSB Handbook, ©ITU

Spectrum of the Extended Hybrid Waveform

Layers, and more layers

The physical layer is the medium over which the communication is carried. For IBOC, the physical layer is the signal placed on the radio spectrum in the AM and FM bands. Annex C of the DSB Handbook describes the physical layer as "Modem, Interleaving, FEC, Scrambling."

These processing steps are contained in sub-layers that pass the coded audio and associated data from upper layers to the radio signal at the bottom.

Audio and data sources are divided into logical channels, depending on the mode of the transmitter, and are passed on to the Layer 1 Service Access Point for processing in the following sub-layers. These logical channels help organize the data streams of hybrid, hybrid extended and all-digital modes into useful groups.

Because of the way layering works, these channels can be entirely invisible to the users at both ends. The audio and associated data goes into the transmission system at some higher layer and at Layer 2 in the figure it is subdivided onto one or more logical channels (P1, P2, S1, S2, etc.).

Overlooking the details of logical channels, they can be simplified by viewing their total useful capacity to transmit information. The ITU DSB Handbook shows "theoretical information rates" of the logical channels of the FM system.

The three basic FM modes are hybrid, extended hybrid and all-digital. Hybrid mode is employed by IBOC stations today. When additional IBOC data capacity is desired, the hybrid digital signals can be extended by one, two or four blocks of digital carriers.

The IBOC signal is extended by expanding it closer to the analog signal. Sometime in the distant future, all-digital transmission occurs when the host analog signal is taken away and replaced with additional digital carriers.

The next step in the process is "scrambling." This is a process applied at the transmitter and reversed at the receiver. Scrambling is not a security feature. Its goal is to make the bit stream as noise-like as possible to improve transmission quality.

Error correction and interleaving

Repetitive patterns of ones or zeros in bit streams, called "periodicities," can cause interference when converted to the radio spectrum. The scrambler minimizes the appearance of undesired periodicities in the stream.

Following the scrambler is the channel encoder. This inserts additional data bits to provide redundancy to the information. Channel encoders perform computations on blocks of data, the results of which are added to the information stream. In the event of errors in the reception of a data block, the redundant information is used to recover from the errors.

If a system is running, say, a 96-kilobit-per-second audio stream, a channel encoder might increase the data stream to the equivalent of 240 kbps for transmission. The encoded rate is 240 kbps, while the useful information rate is two-fifths of that, or 96 kbps.

Such a channel encoder would be referred to as a "2/5 rate encoder." The redundant information provided by the channel encoder is an efficient way to fix the errors, as long as the number of errors does not overwhelm the repair process. This technique is also referred to as forward error correction.

The next step, the interleaver, addresses a common problem particularly in mobile radio channels — intermittent errors from bursts of interference. Such bursts are expected as the movement of the receiver varies its incoming multipath and signal levels continuously.

Instead of letting a burst destroy a string of related data bytes, it is helpful to spread the errors among bytes that are spaced in time and in frequency, thus giving the FEC a chance to several fix smaller errors independently. The interleaver takes a stream that is supposed to play in sequence and re-orders the bytes so they are not in sequence and not on the same frequency when transmitted over the air. The receiver puts the bytes back in sequence (reverses the interleaving) and corrects any damage with the FEC.

Once interleaved, the frames of digital information with FEC are ready to be put on the Orthogonal Frequency Division Multiplexing signal. This is a clever technique that transmits hundreds of low-power carriers that are crammed together in the radio spectrum.

Each OFDM carrier acts like a very slow modem, transmitting at rates less than 1 kilobit per second. For instance, ITU says the FM IBOC signal transmits 344.5 symbols per second. If an OFDM symbol contains two bits of information and there are 360 OFDM carriers available for transporting the information in hybrid mode, 344.5 x 2 x 360 = 248 kbps.

This quick calculation confirms there is just enough capacity on the available OFDM carriers in hybrid mode to deliver the audio stream with substantial FEC channel coding, as given in the example above. Some overhead in the capacity has to be reserved for providing a structure to the data stream.

As stated in the ITU Handbook, a higher layer in the OSI model, Layer 4 - Transport, formats the transmitted information for carriage on the physical layer.

See ITU, page 17 ▶

ITU

▶ Continued from page 16

This layer is not explained in the Handbook.

In summary, the ITU reveals a part of the IBOC system in its recommendations. That part consists of the elements closest to the physical layer. Transport and codec information is not detailed by the ITU.

Radio World will report on details of the NRSC's standard as they become available.

DIGITAL NEWS

Infinity's WUSN Begins 24/7 Multicasting

NEW YORK Infinity Broadcasting has begun multicasting its digital signal at WUSN(FM) in Chicago and says it's the first commercial station to do so continuously. WUSN(FM) HD-2 will be programmed independently of WUSN(FM) and focus on music from new country artists.

Both digital broadcasts will include song, title and artist information as text displayed on HD Radio receivers.

Dave Robbins, vice president and general manager of WUSN(FM) and WJMK(FM), said the extra channel compliments its main country station. There is no advertising on the supplemental channel now because few receivers can decode the multiple digital signals.

The station is allocating a bit rate of 64 kilobits per second for the main portion of WUSN and 32 kbps for the supplemental channel, an Infinity spokeswoman told Radio World.

Country station WUSN went IBOC in June 2003. The FCC has granted the station experimental authorization to multicast. Infinity has 24 stations broadcasting a digital signal, according to a spokeswoman.

Infinity Chairman/CEO Joel Hollander said the move would be the first of many related to Infinity's digital broadcast strategy. "We will continue to be aggressive in converging new and traditional media through creative programming and advanced delivery methods."

Infinity Launches Live Podcasting

NEW YORK Infinity's San Francisco-based KYOURADIO, which the broadcaster says is the first radio station devoted to podcasting, launched on Monday, May 16 at 9 a.m. Eastern. KYOURADIO's content features podcasts created by listeners, and is available in San Francisco at 1550 KYCY(AM) and streamed online at *www.kyouradio.com*.

The station's inaugural podcast was from Dave Winer, a software developer credited as instrumental in the development of podcasting technology.

Podcasting technology allows users to create and upload their own audio programs on the Internet; the programs can then be downloaded to multimedia players. With the necessary software, users can subscribe to their favorite podcasts and have them sent automatically to their players for listening at their convenience. Podcasts broadcast on KYCY(AM) and streamed online will

See HD RADIO, page 25 ▶

Company: Burk Technology
Product: G-Link G-Bus Expansion Series

When Burk acquired Gentner several years ago, the move put under one roof two of the more familiar names in remote control.

This new series of modular products lets GSC3000 users, of which there are many, monitor a wider range of site equipment. The G-Link products are for use with new or existing GSC3000s. They include AC-4 and AC-8 Remote Outlet Controllers for remote management of 120V inputs such as HVAC appliances, lighting and computers; the GT-4 four-input remote temperature monitoring unit; and the GX-128 for controlling X10 brand automation products.

The G-Link lets the user integrate remote facility monitoring on one platform and uses the same software and Web-based interfaces as the GSC3000. "Or imagine installing an entire remote control system with one serial interface cable," one of our judges wrote, referring to the OneConnect transmitter interface that provides a direct link between the GSC3000 and the transmitter, eliminating the need for parallel wiring and associated wiring hardware. "That's a time saver that takes the drudge out of transmitter installation."

Retail: Various, from $419 to $2,795. Shown, from left: Stephen Dinkel, Nathan Burk, Anita Russell and Bonnie Christiansen with Steve Dana, founder of Radio World.

Info: (800) 255-8090 in Massachusetts or www.burk.com.

GUEST COMMENTARY

Discrete Surround Can Be Simple

Telos/Omnia Disputes Criticism of Studio Costs And Questions Statements by Neural Audio

by Steve Church and Frank Foti

Continuing a debate over the best way to accomplish radio surround sound, this is in response to a Guest Commentary authored by Neural Audio co-founder/CTO Robert Reams in the April 13 issue.

At risk of giving the Neural surround system more attention than it deserves, we must reply to the statements the company made in its guest commentary. To not do so would leave a lot of incorrect information standing.

Neural seems to be under the mistaken impression that we, Telos/Omnia, developed the MPEG surround system we are supporting. Not so.

The inventors are Fraunhofer Institute for Integrated Circuits, a German publicly owned research laboratory with 450 staff and years of experience in digital audio. Fraunhofer developed both MPEG Layer 3 (MP3) and most of MPEG AAC. FhG IIS (the German acronym for Fraunhofer) worked with Agere Systems in the United States, which absorbed many of the audio researchers formerly associated with Bell Labs. There are significant contributions from Coding Technologies, who supplied the HD codec, and Philips, the consumer electronics company.

Third-party testing

We are not paid by them or anyone else to promote the MPEG system. If surround takes off, we expect to make and sell encoders, processors and studio equipment — but because the system would be a standard, so would any number of vendors.

If we weren't promoting this system, who would?

As a supplier to broadcasters, we do have an interest in keeping our industry healthy. We think surround is a great application for HDFM, and would be good for the future of radio broadcasting. That's why we are working to increase the odds that our industry gets it right.

As a sole source of a proprietary product, Neural's position is plainly different. They react defensively to our call for disclosure and testing by pointing to a few promo broadcasts as if they were somehow a significant test.

We believe disclosure and unbiased third-party comparative testing are the way to go. Remember how Ibiquity endured plenty of careful testing before the NRSC endorsed and the FCC approved its system? That process proved quite beneficial. Important flaws were caught and improvements made, such as the codec upgrade that very much enhanced audio quality.

Here are our responses to some specific Neural statements:

"The 'mechanical downmix' is something that has to happen in all spatial coding, including Fraunhofer, Agere, Philips and Coding Technologies."

The Neural guys simply don't understand, and have got this point completely wrong. The MPEG system is able to pass an original unaltered "artistic" stereo mix to stereo receivers. There is no downmixing or any other alteration of any kind to the stereo signal.

Matrix systems, including Neural's, *must* impose a fixed-downmix. They also must apply phase shifts. As we learned in the '70s, matrixed surround often plays quite weirdly on stereo or mono receivers. As would, indeed, Neural-encoded material.

We believe disclosure and unbiased third-party comparative testing are the way to go.

"Neural has been working with MPEG members for years."

Stefan Geyersberger, FhG IIS intellectual property licensing and business development director, replies, "We've been working within MPEG audio from the start. It is most irritating to read that lot of nonsense about MPEG: That MPEG knows nothing about encoding (!), that MPEG is a consumer organization, and, most absurd, that Neural was 'talking to MPEG' and is an MPEG member. I just checked with our current representative, who has been in all but one meeting since summer 1996. He says he knows all regular MPEG audio participants, and Neural has not been among them."

"If you were to actually talk to MPEG, as we actually do, Neural Audio is an MPEG member, you would find that they (MPEG) don't have much to say about encoding standards (like on the broadcast end). They only recommend technology on the consumer or decoding end."

Neural's claim that MPEG only cares about the consumer end really is nonsense. Of course, you must have both ends for any producer-to-consumer chain to work.

And MPEG standards are most certainly used professionally, with MPEG ISDN codecs the most obvious example.

"Only recently has it been appropriate to disclose the technology to consumer organizations (like MPEG)."

As of the time of this writing, there has been no Neural disclosure to MPEG. There were five entrants into MPEG's surround coding testing, and Neural was not among them.

"The Neural technology has been 'on the air' for quite some time now and has been proven to be stable, reliable and practical."

This claim is quite a stretch. We don't know of any HDFM station regularly broadcasting with the Neural scheme. The few promo broadcasts have been with jazz and classical music, not the pop and rock programming that dominate on the FM band. Jazz and classical producers usually use surround to recover room

See SURROUND, page 20 ▶

Special Cool Stuff Awards For Innovation in the Development Of Radio Multicasting

Believing that the U.S. radio industry is entering a period of significant technological change, Radio World's "Cool Stuff" Award judging panel singled out two groups of companies for their roles in advancing new technologies: multicasting and radio surround.

One public radio leader calls multicasting a "just-in-time digital reinvention for the original wireless medium." It will take years to deliver on that promise; but it could be the industry's best strategy for maintaining its primacy in the dashboard.

Our engineering judges expressed the strong desire to salute the original companies that worked on Tomorrow Radio — namely National Public Radio, Harris and Kenwood — as well as Broadcast Electronics for its ensuing advocacy and Ibiquity Digital for its support.

Shown: Neil Glassman of BE; Randall Richter and Jeff Detweiler of Ibiquity; Gary Liebisch and Tom Jones of Harris.

Surround companies are noted on page 39.

New Nautel FM
HD Radio Equipment

nautel

Ready for Digital.
Ready for Anything.

Virtuoso V10
3 kW Digital, 7.7 kW Hybrid, 11 kW Analog Transmitter

More Versatility

- Frequency agile: N+1
- Programmable frequency & power
- Better than 62% overall efficiency
- Compact, light weight rack (32" W x 72.5" H x 35" D) is ideal for tight spaces

More Redundancy

- Hot-pluggable RF modules
- Hot-pluggable PS modules
- Parallel rectifiers
- Redundant ventilation fans

More Duplication

- Dual digital exciters
- Dual IPA
- Dual IPA power supply
- Dual low voltage power supply

HD Radio
Pure Digital. Clear Radio.

COOL STUFF AWARD
Radio World
2005

Maestro M50
Direct-to Channel Digital FM Exciter

- Plug-and-play integration with Nautel's NE IBOC FM signal generator for digital or hybrid transmission
- Built-in programmable analog modulation time delay is ideal for HD Radio or FM synchronous applications
- Links with Nautel FM transmitters to provide digital adaptive pre-correction
- Six programmable pre-selections for frequency, power and audio source
- Instantaneous remote or local selection of digital, hybrid or analog transmission modes
- Diagnostic 128 event time stamped log
- Built-in DSP stereo generator interpolates AES/EBU digital data or L&R analog audio to produce digital stereo composite
- Built-in SCA generators and RBDS/RDS coder
- Universal AC supply: 90 V to 264 V

Contact Nautel for details.

Phone: (207) 947.8200 | **Fax**: (207) 947.3693
info@nautel.com | www.nautel.com

SIMPLY THE BEST ENGINEERED TRANSMITTERS

Surround

▶ Continued from page 18

ambience, while pop and rock production techniques involve more aggressive mixes with lots of channel separation, a tougher case for matrix.

"Somehow, Telos/Omnia continues to cling to the dangerous assumption that bitstream-based technologies are compatible with the day-to-day operations of a real, live broadcast facility."

Both of us are former CEs and we have plenty of experience with "real, live broadcast facilities." We now head a company that prospers only if real engineers decide to use our goods within real radio stations.

We note with a bit of wistfulness that we have between us over 60 years of real radio experience. (We started young!)

And there are another dozen ex-broadcasters among the Telos/Omnia crew. (One among them laughed that Neural's chastising us for not knowing broadcasting was akin to the Rutles, the so-called Pre-Fab Four, criticizing the Beatles.) Seriously, we do have our feet pretty firmly planted on the ground and wouldn't be proposing anything that wasn't truly practical.

"I would bet all of the Radio World readers would love to see a detailed cost accounting showing how there is 'near zero incremental cost differential' in building a discrete six-channel plant over a conventional stereo one."

Steve has given a paper on exactly this topic at the recent NAB show titled "Studio Structures for Surround Broadcasting." This forum is not the place to discuss this topic in detail, so we will direct those interested to *www.axiaaudio.com/surround* for an explanation.

Indeed, it could well cost *more* to use the Neural approach, as our Web article details.

"I am also sure that the folks at NPR would be fascinated in Mr. Church and Mr. Foti's proposal for shipping a discrete six-channel bitstream though the PRSS satellite distribution system to all of the NPR member stations for 'near zero additional cost.'"

Certainly there is no reason to hobble broadcasting forever just to accommodate a particular existing distribution system. On this logic, FM would not today have 15 kHz fidelity or stereo, since the mono telephone lines that radio networks used back when for distribution only went to 5 kHz.

Regarding our concern that the Neural system has not been the subject of the kind of careful testing that MPEG puts its proponents through, Neural stated:

"Mr. Pappas has authored a painfully detailed account of validating the performance of the Neural system. The article appeared in a recent RW supplement about the 'Toast of the Nation' broadcast."

We hope Radio World's readers recognized that the supplement was an "advertorial" insert, produced by the advertising department in cooperation with the participating vendors. Mr. Pappas and the NPR guys were right to be thrilled with having pulled off such an ambitious project.

But if there was something like a "validation test" described there, we missed it. (And citing one's own advertising as being indicative of such a test is pushing the credibility envelope a bit far, no?)

The article described no comparisons to the original, which would have been difficult owing to the broadcasts being live remotes.

We expressed skepticism regarding Neural's claims involving "watermarking" and remain doubtful. A previous Radio World article had quoted a rate of 16 kbps, and we reacted by observing that this was unlikely, and further said that, "Neural's secrecy is a barrier to making a valid assessment of their quite outrageous claims."

To which they replied:

"Neural's claims are not outrageous to those skilled in the art."

We expressed skepticism regarding Neural's claims involving 'watermarking' and remain doubtful.

It was Fraunhofer's experts who alerted us to the improbability of Neural's claim. They are most certainly "skilled in the art" as they've done research in the area of watermarking for a decade, have a number of published papers to their credit, and have developed and licensed numerous watermarking technologies.

The couple hundred bits per second that watermarking could reliably provide would not be particularly useful to solving the problems inherent in the matrix approach.

"Talk to the radio stations, guys; 16 kbps can produce much higher quality than a cell phone. There are many speech and data services that generate far more revenue than the promise of surround 'someday.'"

We think surround is worth some dedicated bits in the broadcast stream. Acura is running full-page ads touting surround sound in its cars — from DVDs, not radio. In the same ads, the company is promoting satellite. Shouldn't we broadcasters be concerned?

On the other hand, just where are the "many speech and data services" that "generate far more revenue"? Those seem to us to be more "someday" than a here-and-now enhancement of our main program service.

Anyway, it turns out that we don't need 16 kbps. Following the MPEG meeting April 18-22 in Korea, it has emerged that performance is very good down to 6 kbps. Isn't providing a high-quality compatible surround service

See SURROUND, page 22 ▶

Company: Comrex
Product: Studio Access Codec

The Cool Stuff judges found this to be a "brilliant design" that offers "unprecedented reliability and QOS control over the public Internet and commercial wireless services," making them viable for professional-quality, remote broadcast signal backhaul.

The Access is the first codec to use BRIC, or Broadcast Reliable Internet Codec, technology to deliver reliable, wideband audio over IP networks in real time. It promises 7 kHz bidirectional, low-delay audio over tough networks like cable, DSL, Wi-Fi and cellular data networks using its BRIC-UR algorithm, and Comrex cites coding delay of less than 100 ms. It also allows 15 kHz bidirectional stereo or mono over unconstrained networks or a single dialup as well as clean DSL or cable using its BRIC-HQ algorithm.

Tom Hartnett delivered a white paper on this technology at the show.

"Hartnett has launched the future of high-quality wireless broadcast remotes by finally harnessing GSM technology," one judge wrote. "Lots of stations will be using these and the portable units coming later."

Retail: $3,000 rackmount; $3,700 with backwards compatibility to existing POTS codecs. Shown: Kris Bobo and Hartnett.

Info: (978) 784-1776 in Massachusetts or www.comrex.com.

Company: D&M Professional
Product: Marantz PMD660 Portable Solid-State Recorder

A veteran public radio engineer on the judging panel wrote, "It's about time we had a broadcast professional recorder instead of consumer toys and the headaches of formats from hell, and miniplugs to boot. All the earlier products did was sell our reporters on the convenience of tiny form factors and just what unreliable products those were.

"Marantz brings us a rugged device, with XLR inputs to boot, and the holy grail of audio recording, no moving parts. It's ambrosia for technologists."

Retail: $649.99. Shown: Jodee Warwick and Brian Gorman.

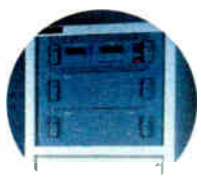
Info: (866) 405-2154 in Illinois or www.d-mpro.com.

Together We Have The Power To Move Radio Forward.

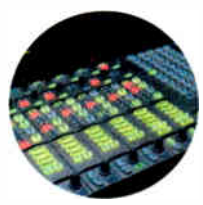
At Harris, we're taking our leadership in the radio industry to an even higher level. Shaped by the feedback of customers and audiences across the market spectrum, the newly-formed Harris Radio Team is rich with the industry's most comprehensive products, services and expert resources. All with a focused team solely dedicated to moving our industry, and your business, forward. It's a spirit of innovation built on decades of pioneering solutions for radio. So get your business heading in the right direction, turn to the new leadership of Team Harris Radio.

To learn more about the new Harris Radio Team, call us at **800-622-0022** or visit us at **www.broadcast.harris.com.**

THE NEW HARRIS RADIO TEAM IS ON THE AIR



AM/FM



AUDIO CONSOLES

DIGITAL RADIO

BROADCAST STUDIO

HIGH POWER AM

SYSTEMS & SERVICE

www.broadcast.harris.com

HARRIS

Surround

▶ Continued from page 20

worth that?

"Yes, there is secrecy. All broadcast and receiver manufacturers/OEMs work with Neural under strict non-disclosure agreements. With an NDA in place there is no barrier to disclosure and assessment."

So, Neural is saying it will explain how their system works only to those who are not allowed to talk about it. How convenient! An opportunity for scrutiny must be afforded to those who actually are motivated *and allowed* to scrutinize. We're talking about the future of broadcasting here!

"Telos/Omnia has received countless invitations to visit the Neural facility and experience Neural's surround technology. They apparently refuse. And: *Telos/Omnia has had a long-standing invitation to come to Neural to enjoy surround and salmon."*

Were Neural's salmon to give us as much indigestion as their claims, we might better pass! Seriously, what do they think — that an in-person pitch would wipe away our doubts and satisfy our call for disclosure and testing? Sorry, but a fishy meeting is hardly the point.

"Stop wasting time. Get into the arena and make your system function in the real world. Compete. Prove that it works in a real (from mic to antenna) broadcast environment."

About this, we agree. At NAB2005 in Las Vegas, we demonstrated a complete, practical chain from studio to consumer receiver. We also had live broadcasts to a prototype Bose Cabin Surround audio system installed in an Acura MDX SUV.

Yes, it took some time, but we are ready now to begin real on-air broadcasts. And we, indeed, look very much forward to competing.

Yet again in their RW commentary Neural spilled a lot of words, but didn't offer any useful information as to how the system works. They also did not dispute the superior performance of the MPEG system, because they know they'd lose that argument.

We have a Harris Neustar 5225 encoder/decoder which uses Neural's surround sound technology in our lab and have been listening to its effect on various kinds of source audio. We can say with confidence that you and your PD are not going to like what this box produces on your station's air.

In particular, there is quite a lot of general muddying and softening of impact, particularly in the bass. There is a pronounced change to the stereo image, with voices and instruments warbling and wandering around quite strangely at times. There is a "fake stereo" effect on mono material such as announcer voice.

The test setup.

We've also been making some measurements. See Fig. 1 for the test set-up. We ran the surround version of Roxy Music's "More Than This" though a simple fixed downmix according to the ITU-R BS-775-1 recommendation (Fig. 2). Then we ran it through the 5225 (Fig. 3).

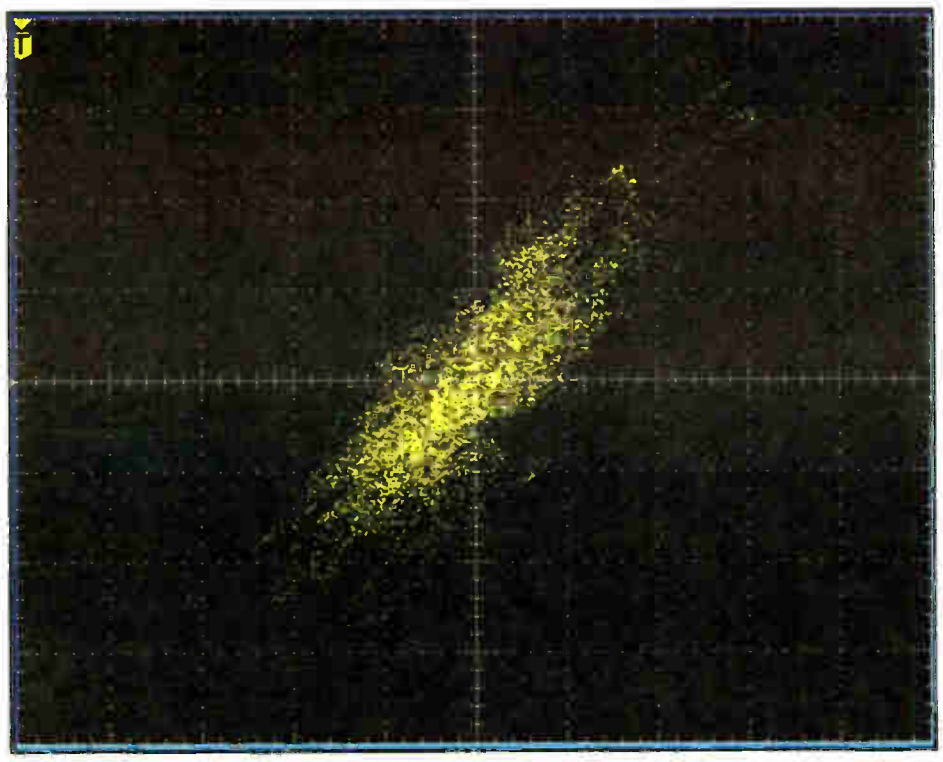
Notice the significant change in the L-R in the Neural downmix. There is a large 90-degree phase shift, which would sound like a hole in the center of the soundstage. The increased L-R level will also exaggerate multipath effects on the analog FM and cause the station dynamics processor to inflict more clipping distortion.

With matrix systems, there is always the risk of L-R manipulations causing problems. We learned this lesson in the 1970s and again a few years ago as stations struggled with "Q-Sound" recordings. We are convinced that Neural and other matrix systems will be unacceptable to stations with regard to both surround separation and stereo/mono compatibility.

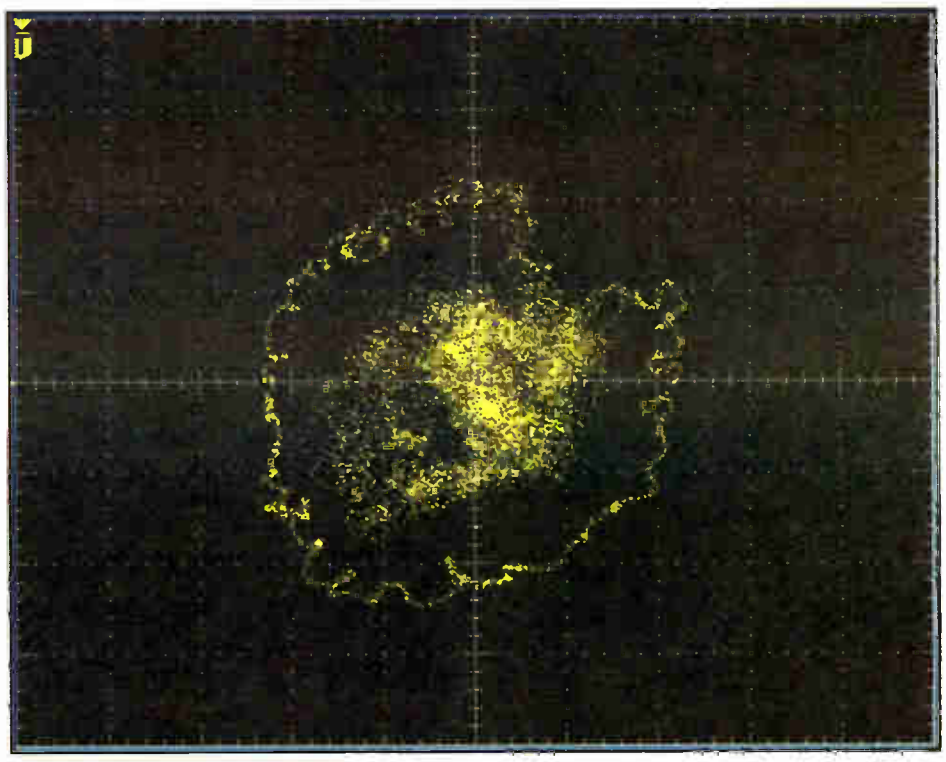
The MPEG alternative is just the thing for the HDFM application, offering excellent performance and perfect compatibility. Neural says that it would be impractical to upgrade radio studios to discrete surround. We counter that modern networking techniques offer a simple, elegant, low-cost solution.

And we say again, radio broadcasting needs better than re-hashed matrix schemes to effectively compete in the digital era.

The authors are Telos CEO and Omnia president, respectively. RW welcomes other points of view to radioworld@imaspub.com.



Roxy Music 'More Than This' ITU downmix.



Roxy Music 'More Than This' Neural 5225 Lt/Rt output.

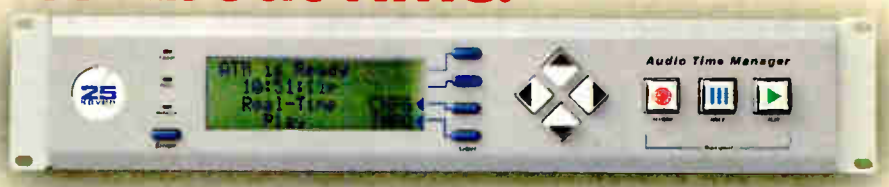
NEW! Optimod 8500 for HD Radio

Introducing the Optimod 8500 for HD Radio! This top-of-the-Orban-line processor is the ideal choice for FM stations simultaneously transmitting iBiquity's HD Radio, Eureka 147, or a netcast. Independent processing for analog FM and digital radio is standard: Orban's high-frequency limiting and clipping systems peak-limit the analog-FM output while a look-ahead limiter controls the digital radio output. The base sample rate is now 64 kHz, allowing the 8500 to offer 20 kHz audio bandwidth in the digital processing path. A built-in delay allows HD Radio broadcasters to bypass the delay in the iBiquity exciter and to use the 8500's stereo encoder and patented "Half-Cosine" composite limiter instead. This means that stations won't have to compromise the loudness of their analog channel to broadcast HD.

8500 List $13,990.00 LowestPrice@bswusa.com OR CALL : 1-800-426-8434 orban

NEW!!

It's About Time!



Audio Time Manager (ATM) from 25-Seven gives radio stations the power to shift live programming in real time without compromising sound quality. Squeeze more time (up to 6 minutes per hour) without audio artifacts or pitch change. On-air operations glide smoothly and undetectably between scheduled and breaking events – such as school closings, traffic updates, weather advisories, last minute promos, or additional advertising availabilities. By allowing you to delay the start of live programs and shorten their duration in real-time, ATM puts you in control of your broadcast schedule. A distinct improvement over previous time-based audio compression products, ATM does not remove important content, change pitch, damage inflection or create annoying artifacts; letting you maximize content while protecting your audio signature. Best of all, ATM is easy to use with simple three push-button operation. For ATM look no farther than BSW.

ATM List $7,950.00 LowestPrice@bswusa.com OR CALL : 1-800-426-8434 BSW& 25

New Broadcast Voice Processor

Aphex has created an analog, single-channel preamp and voice processor specifically for broadcasters. Its comprehensive features include tube preamplification, compression, gating, de-essing, parametric EQ, and Aphex' Aural Exciter and Big Bottom psychoacoustic effects. Call today for our lowest price.

230 List $799.00 LowestPrice@bswusa.com OR CALL : 1-800-426-8434

APHEX

FEATURES:
- Low noise tube mic preamplification
- Easyrider® auto-compressor: no pumping
- Logic Assisted Gate: no false triggering or lost parts
- Split-Band De-esser: no dulling
- Parametric EQ designed for vocal frequencies
- Balanced analog I/O and post send/return
- AES3, S/PDIF and Optical digital outs and work clock

FM Processor—HD Ready!

Omnia

The Omnia-5EX HD FM is an advanced FM processor with parallel processing optimized for delivering two simultaneous audio processing paths – one for FM, and another for HD Radio, DAB, satellite, or network streaming. After AGC, audio is routed to separate, dedicated output stages. The FM section has Omnia's famous distortion-controlled high precision final limiting with the required 15 kHz response. The HD/DAB section has a look-ahead final limiter with selectable frequency response that goes all the way to 20 kHz. And Omnia-5EX HDFM contains new processing enhancements that result in more bass punch, and more vocal clarity. Plus the price is thousands less than other HD processors.

OMNIA5EXHDFM List $7,980.00 LowestPrice@bswusa.com OR CALL : 1-800-426-8434

NEW!!

CD Players Don't Get Any More PRO Than This...

TASCAM

The new Tascam CD-01U Pro is a professional slot-loading CD player designed to fit in 1RU, with balanced XLR analog, RCA analog and digital outputs. This compact professional model will save room in your broadcast equipment rack. Also available is an affordable unbalanced version – the CD-01U. Both players have an RS-232 control port available for programming with AMX and Crestron systems. They also feature MP3 playback, 20-second shock protection and pitch controls for flexible performance. Order today!

CD01UPRO w/XLR out List $699.00 LowestPrice only $599! **CD01** wo/XLR out List $599.00 LowestPrice only $499!

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!

Large Diaphragm Shure Condenser Under $300!

Drive this baby on-air. The KSM27 delivers Shure reliability and outstanding sound at a bargain price. It has a 1-inch, externally biased diaphragm, Class A transformerless preamp and a subsonic filter which eliminates rumble below 17 Hz. Other features include a switchable 15 dB pad, internal shockmount and pop grille. Suspension shockmount included.

KSM27SL List $575.00 LowestPrice only $299!

Marantz Professional Compact Flash Recorder

marantz

It's here! Record hours of MP3 audio on a single Compact Flash card (or as high-quality WAV files) and transfer to your computer via USB. The Marantz PMD660 offers onboard stereo mics, or use your own mics via two XLR inputs. Virtual tracks let you compare edits and provide sound bites of varying lengths.

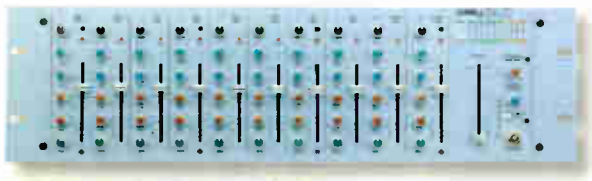
PMD660 List $649.99 LowestPrice only $499!

Comrex Digital Hybrid

COMREX

Comrex's digital hybrids provide the highest quality audio interface between your telephone line and audio equipment. Balanced XLR inputs and outputs; adjustable AGC and caller ducking; selectable auto mix-minus; auxiliary and headphone monitor outputs; remote control—it's all there. The DH20 is a 16-bit single telephone hybrid.

DH20 List $995.00 LowestPrice@bswusa.com OR CALL : 1-800-426-8434



12-Channel Rack Mixer

ALESIS

The Alesis MultiMix 12R is a 12-input/2-bus mixer featuring 8 XLR mic inputs with phantom power and 2 stereo line channels, all in a 3U rackmount chassis. In addition, it has a 2-band, fixed frequency EQ on each channel (12 kHz and 80 Hz), 2 aux sends (pre- and post-fader), insert points on 8 channels, headphone jack, and 60 mm faders for master level of each channel.

MULTIMIX12R List $399.00 LowestPrice only $299!

Broadcast Tech Tip # 361

There's a small possibility that your transmitter might go down. We advise a backup system. Just take this Mega Alternate Substitute Transmitter, climb your tower and start broadcasting! Nothing to it!

JK Audio Telephone Audio Taps

Connect the JK Audio THAT-2 between your telephone and handset for quick access to audio in and out of the telephone. Both RCA and XLR I/O and a handset selector switch. Use QuickTap to access audio out of any telephone. Simply connect your audio equipment to the audio output jack. VoicePath routes audio in and out of any telephone using your PC sound card. Use PC software to play your conversation right back into the phone line.

THAT-2	Telephone audio tap w/XLR	$215.00
QUICKTAP	Telephone audio tap	$59.00
VOICEPATH	Phone tap with software	$99.00

LowestPrice from $59!

Lowest Prices on everything at: www.bswusa.com

Same Day Shipping

Free Shipping on Web orders over $189

BSW

Knowledgeable Staff

LowestPrice@bswusa.com

1-800-426-8434

Stations Crafting Multicast Radio Deal

by Leslie Stimson

A year from now, you won't be able to find a new HD Radio that *doesn't* have the ability to decode multiple digital signals, or multicasting.

That's the opinion of NPR Vice President for Engineering and Operations Mike Starling.

When NPR began the process earlier this year of trying to package a group deal on HD Radio receivers for non-com stations, the network didn't expect a large portion of them to include the multicast decode ability. However, most of the new HD Radios shipping to retailers this month do include that feature, including receivers from Boston Acoustics, Polk Audio and newcomer Radiosophy; while other receiver manufacturers including Panasonic plan to move up their timetable for incorporating multicasting into IBOC radios.

> **We're cautiously optimistic that this could become something of a de-facto feature.**
>
> **— Mike Starling**

Kenwood shipped its HD Radio multicast tuner, the KTH-HR100-MC, in May.

"We're cautiously optimistic that this could become something of a de-facto feature," Starling said.

Some 67 non-commercial stations have asked the FCC for permission to multicast, according to NPR.

In May, an Infinity station said it was the first commercial station to multicast continuously (see page 17.)

Shopping strategy

Members of the NPR Multicast Receiver Team met privately in April at the NAB convention and again in May at the Public Radio Leadership Conference. Of the 16 members, eight are from NPR member stations: Tom Dollenmayer, WUSF(FM), Tampa, Fla.; Tim Eby and James Ary, WOSU(FM), Columbus, Ohio; Bruce Haines, Northern Indiana Public Radio; Torey Malatia, Chicago Public Radio; Jim Paluzzi, Colorado Public Radio; Roger Sarow, WFAE(FM), Charlotte, N.C.; and Steve Shultis, WNYC(FM), New York. The remaining eight are NPR staffers including two engineers: NPR Senior Engineer Jan Andrews and Starling.

Team members are sorting through information from manufacturers that answered NPR's Request for Information for a potential group buy of up to 50,000 HD Radio multicast receivers. They were awaiting prototypes in May and hoped to select companies by next month that would make HD Radios available to non-coms for a negotiated group price. The radios would be used as premiums or promotional items or items that station employees could purchase at a discount.

The plan is to include a station participation component with a "significant percentage return," according to a memo from the receiver team to stations. In other words, stations that refer consumers to a particular receiver manufacturer to purchase their HD Radio would get credit for that referral. It was unclear what form the credit would be in — rebates, as some manufacturers are offering broadcasters; credit towards future purchases; or some other arrangement.

"Station managers in particular are leading this discussion because that's where the rubber hits the road. It has to happen there," said Starling, who added the group is "talking about what really successful promotion and marketing would look like on the air, off the air and how we make sure we're partnering up with folks where we'd be comfortable saying, 'This is a really good value for our customers, for our listeners.' We're getting closer."

Stations that take part would need to agree to promote HD Radio on and off the air.

The group wants the public radio group plan to offer three type of HD Radio receivers: auto, high-end home and an economical home unit.

In the memo, the group stated it is working to secure terms to avoid inventory risk for stations, simplify the ordering process and track station referral credits.

Some 60 noncoms had converted to HD Radio as of early May, according to NPR, which predicts about 500 more on the air or in the process of converting by year-end.

HD Radio

▶ Continued from page 17

not be available for download, Infinity said.

Users began uploading their podcasts for free on April 27, when the station was announced. Once uploaded the material becomes eligible to be selected for broadcast.

More than 400 podcasts had been uploaded from users at launch. Submitted podcasts covered a range of topics, including life in San Francisco, thoughts pondered while commuting, highlights from the world of science, time travel, amusement parks and the best in bluegrass, indie, rock and Asian music.

Infinity said listener interests and feedback will determine station programming, which would be evaluated daily.

Kenwood Multicast HD Radio Tuner Available

LONG BEACH, Calif. Kenwood's version of an HD Radio tuner that can decode multiple digital signals is available through the Crutchfield Catalog.

The KTC-HR100-MC includes the features of the original Kenwood KTC-HR100; the HD Radio tuner connects to most Sirius-ready Kenwood receivers and song title/artist info and other text content appears on receiver's display. The unit also includes stereo RCA outputs.

Crutchfield has been selling the Kenwood KTC-HR100 HD Radio tuner for more than a year. EVP of Merchandising Rick Souder said the multicast version retails for just under $400.

The KTC-HR100-MC was not yet on the Crutchfield Web site in mid-May, but customers could order by calling (888) 955-6000.

Puerto Rico's WPRM Goes HD Radio

Quincy, IL UNO Radio Group station WPRM(FM) in Puerto Rico has gone IBOC with a Broadcast Electronics transmitter. The station, which serves the San Juan market, is said to be the first facility in Puerto Rico to make the transition.

UNO Radio Eng. Alberto Pereira, left, and Jesús Gomez install BE HD Radio transmitter and exciter on San Juan station WPRM(FM).

"UNO Radio's adoption of HD Radio technology positions the technology for widespread adoption outside the continental U.S.," stated Scott Stull, vice president of broadcast business development for Ibiquity Digital.

WPRM(FM) is a 25kW Tropical format station licensed to 98.5 MHz; it's the first of 12 sister stations to implement HD Radio.

The station converted to HD Radio using a BE FMi 31 HD Radio transmitter with HD Radio signal generator and an FXi 60 digital FM exciter into a separate antenna.

Company: Harris Broadcast Communications
Product: RMXdigital Audio Console

Introduced a year ago but not shipping until last fall, this could easily have been overlooked in the busy Harris booth. But the Cool Stuff judges noted the network-friendly nature of this air console, which Harris sees as putting digital audio networking to work for smaller and medium-sized operations.

The RMXdigital is descended from the company's PR&E BMXdigital console for big markets and is a component of its PR&E VistaMax system, which eliminates or cuts down on standalone routers and distribution systems. The board is appropriate for consolidated operations of two or more stations in one facility.

(For our part, we really liked the new Harris PR&E StereoMixer too, another addition to the VistaMax lineup that is, frankly, quite cute.)

The series starts at around $10,000; a typical 20-channel unit is in the low $20K range. Ted Staros is shown with his baby.

Info: (513) 459-3400 in Ohio or www.broadcast.harris.com.

Workbench

Radio World, June 8, 2005

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

Backups Mean Peace of Mind

by John Bisset

Former contract engineer Bob Hughes writes that after reading some of the more recent *Workbench* columns, he's become even more aware of the need for "backup."

In light of concerns over transmitter site vandalism and various ways to secure those areas, he started thinking about buildings that house transmission equipment that are subject to water damage from various and sundry sources, i.e., water seepage at the foundation level, broken pipes, power failure, etc.

For years he has lived with a situation at home that has a potential for disaster. A side entrance to his basement has a sump well at the bottom of the stairs. In the event of heavy rains, the pump could fail to do its job. Over the years Bob has experienced many storms that have given the pump a workout. This is fine as long as the power is still on. But lightning strikes can take out a feeder in a heartbeat.

Bob's dilemma: "What if no one is home to start the portable generator to supply power to the sump pump?"

Fortunately, the times that he has lost power in a heavy downpour have been few, and someone was there to connect the generator. Still, there was that nagging fear that one day, luck would run out. So in lieu of backfilling the basement entrance, Bob set out on a quest to find a cure.

Many hardware stores had sump pump battery backup devices: but the pump is a separate unit from the main device and most sump wells will not accommodate both the main unit and a DC powered backup.

Enter the world of the UPS. Bob contacted APC and asked for their advice. They had a model, the Smart UPS 1500, that would accommodate Bob's pump with some headroom to spare. The pump is a Flo-Tec, 1/3 HP, and approximately 9 amps at 120 volts.

Bob contacted Flo-Tec and got their concurrence on the viability of using this particular model. The UPS was rather expensive, around $500; but the peace of mind is priceless. Fig. 1 shows the APC unit, Fig. 2 the outlet wiring.

Translating this into a commercial situation could save a facility thousands of dollars in damaged equipment and station "down time." By the way, when you make a proactive effort to reduce risk like this, contact your insurance company. In the case of surge suppressors, I've had companies reimburse all or a part of the cost, which the insurer may see as a small cost to avoid a damage claim. At the least, they should reduce your premium; it's kind of like installing a burglar alarm on your car.

However it turns out, inform your manager and owner of the steps you took to protect his or her investment.

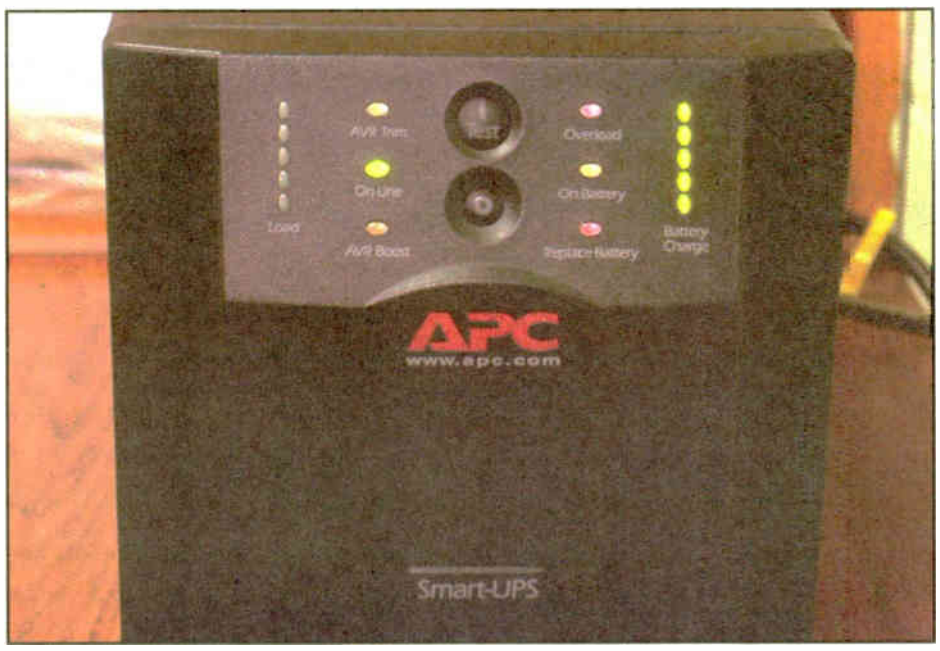


Fig. 1: A UPS can be used to keep pumps working.

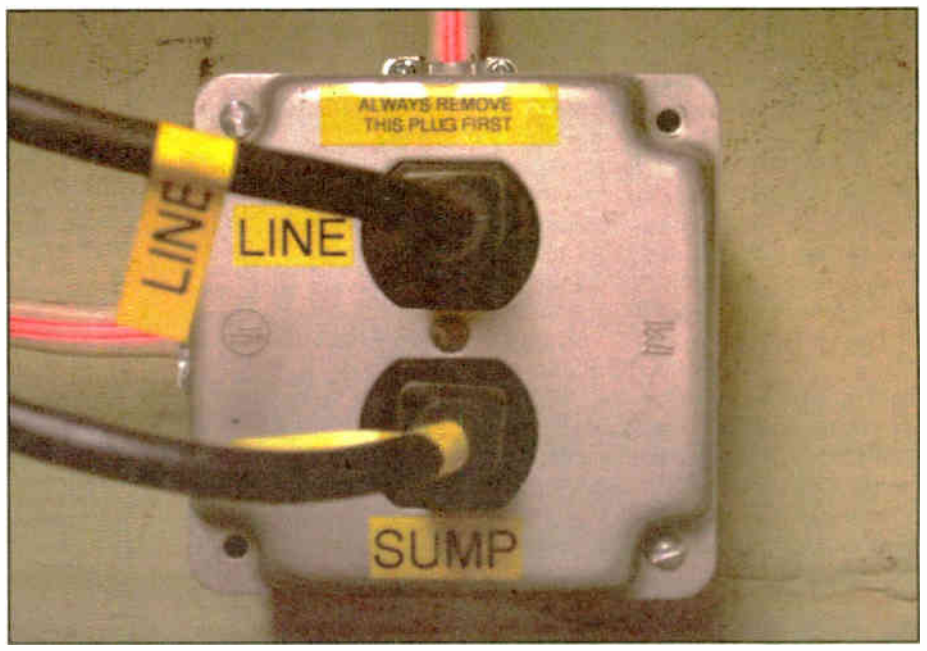


Fig. 2: This AC outlet provides UPS or generator feeds.

Bob Hughes can be reached at *robertkhughes@cox.net*.

★ ★ ★

Summertime projects often keep engineers in high gear. In many cases, warm

See CHEMICALS, page 28 ▶

RoadStar™ & NetStar™

On the road or in the studio, deliver perfect stereo via IP or ISDN

Both RoadStar and NetStar come complete with IP and ISDN connections, AAC, AAC Low Delay, MPEG 2, MPEG 3, G.722 and G.711 encoding, and can even send and receive linear uncompressed audio. Both are effortless to operate, with automatic recognition of the calling codec and a built in Web Server for remote control from anywhere. Both give you 8 contact closures and ancillary data. Both can automatically switch from IP to ISDN, or vice-versa, if the primary link becomes unreliable.

NetStar is rack or tabletop mount. RoadStar is portable, with a built-in 4-channel mixer, 48 VDC phantom power, analog and AES/EBU inputs and outputs and a dual headphone monitoring system. Now, you can take your *stereo* show on the road and deliver spectacular audio your way.

RoadStar rear panel

MUSICAM USA

670 North Beers Street, Bldg. #4
Holmdel, NJ 07733 USA
732-739-5600
732-739-1818 fax
sales@musicamusa.com
www.musicamusa.com

MUSICAM USA is the d/b/a of Corporate Computer Systems, Inc.

Chemicals

▶ Continued from page 26

weather means more time at transmitter sites.

As you inventory spare parts, fuses and bulbs for the trouble lamp, also check on any containers of chemicals stored in the transmitter building or storage shed. Stephen Poole chiefs the Crawford cluster of stations in Birmingham, Ala.; he offers a tip from the "Be-Careful-Where-You-Store-Stuff" department.

A couple of years ago, Stephen bought a bottle of CLR calcium, lime and rust remover and stored it at one of his AM sites. He'd planned to use it to clean the toilet there, but one thing led to another — it was never a high-priority item — and it never got done. The CLR just sat in the storage room in the new building.

Over time, on trips to the site, Stephen noticed that the copper and aluminum in that storeroom began to look terrible. The aluminum had white oxide powder all over it; the copper was turning green.

He didn't make the connection, figuring it was just Alabama's legendarily high humidity at work. The transmitter site air conditioner has an economizer on it, after all, that opens a vent and pulls in outside air whenever the temperature is below 60 degrees. Alabama air stays humid well below that temperature.

Finally, the air conditioner stopped working. Stephen called a technician who inspected it and said that all it needed was a good cleaning deep inside; everything had become corroded.

Over time, on trips to the site, Stephen noticed that the copper and aluminum in that storeroom began to look terrible. The aluminum had white oxide powder all over it; the copper was turning green.

How, Stephen wondered? He started investigating and found that the bottle of CLR was emitting fumes that caused the corrosion. He disposed of the bottle; and so far, no recurrence. Watch where you store those corrosive chemicals.

This is a suitable time to inventory old containers of chemicals at the transmitter site. Dispose properly of any that aren't used. Those that you keep, make sure they are labeled and stored correctly.

Thanks, Stephen, for the safety tip. Stephen Poole can be reached at *spoole@crawfordbroadcasting.com.*

★ ★ ★

Summertime weather also means many of us get our share of thunderstorms.

Like all transmitter manufacturers, Stuart Peters, who heads BE's Field Service Department, gets a fair share of lightning-related questions this time of year. I spoke with Stuart about ways to minimize transmitter damage due to lightning.

His reply stunned me: All too many transmitters are installed with little or no grounding.

In an AM application, if the spark gap balls at the base of the tower aren't properly set, or there's a damaged static drain choke, the lightning won't be shunted to ground. Instead it may travel up the transmission line and into the transmitter. Once at the transmitter, if there's inadequate grounding — copper brazed to the station ground or ground rod — the energy will find ground through components or PC boards. Massive destruction can occur.

Nowadays, most transmitters are so simple to install, little things like brazing the ground strap from the transmitter to the station ground can be put off, even forgotten. Some manufacturers provide ferrite cores or other suppression devices to be installed with the transmitter.

I inspected a station once where the ground strap was brazed to the transmitter and disappeared into a trough in the floor. The trough was covered by a piece of steel. Lifting the steel, I saw that the copper strap just lay there, connected to nothing.

The engineer explained he had been told that the pressure of the steel trough cover plate on the copper strap was a sufficient ground, because the trough was in the ground!

Check little things like this. In a new acquisition, yank on the copper to make sure it's properly connected. Trace the strap to see where it goes. Make sure ground is ground.

In an effort to reduce exposure to lightning claims, insurance companies are now hiring broadcast consultants or contract engineers to investigate claims for them. Forget getting paid on a claim if the equipment wasn't properly grounded. An insurance adjustor may not know the difference; but when an engineer familiar with good engineering practice inspects the site, it's another story.

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

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

Company: Heil Sound
Product: PR 40 Microphone

It's hard not to get pumped up around Bob Heil, shown, who exudes passion for his work.

With the PR 40 he's hoping to bump some long-time favorites out of their shock mounts in your on-air studios. This is an end-fire, dynamic mic that lists for $209. It uses a DM 6 element that the company cites for its response down to 28 Hz and its mid-range performance for voice articulation.

The mic uses a copper-wound voice coil with a neodymium magnet structure, which Heil says creates a magnetic field 10 times stronger than traditional magnets. Heil also is a friend and ham radio buddy of musician Joe Walsh, who was at the NAB show and ham reception and who had a hand in spawning the new line. Retail: $209.

Info: (618) 257-3000 in Illinois or www.heilsound.com.

Company: Continental Electronics
Product: 816HD Transmitter

If your FM analog broadcast system requires 10 to 50 kW TPO, Continental says you can do HD Radio by simply adding this transmitter, an IBOC signal generator and an HD Radio license from Ibiquity. The concept uses your existing RF system without the requirements of a separate antenna, IBOC combiner, circulators, IBOC transmitter, tower mods or other add-ons.

This is a single-tube unit. Owners of recent-vintage 816R FM transmitters may be able to upgrade their Continental transmitters to the new design.

The judges said, "Hundreds of existing 816 tube-type FM rigs will be able to do low-level HD Radio with a few modifications." "So they finally did it; they got HD Radio to work with a tube. If you've got a really high-power requirement and like a single-amplifier package, the Continental 816HD may be the one for you."

Pricing will vary based on application, with retail $80,000-$240,000. Alan White, Adil Mina and Dan Dickey are shown.

Info: (214) 381-7161 in Texas or www.contelec.com.

THINKING ALOUD

Think I'll Borrow Me a Bose

by Charles S. Fitch

A few years ago, a group owner client of mine did not renew a cell carrier's antenna lease on a station tower because the carrier wouldn't go for a steep increase in rent.

I asked him, "What are we doing? These guys are great tenants; cut them a break." His response was, "We're not in the real estate business, but in the broadcasting business."

"I thought we were in the business of making money," I replied.

"Yes; but we must focus on what we do most and the best. Those guys are just a distraction at this dollar level."

On that same theme, Polaroid at one time years ago decided that it was not so much in the camera business but in the film business. To increase sales, it gave a Polaroid camera to just about every community lending library in the country. If people needed instant pictures for any reason, they could "borrow" a Polaroid camera.

The camera was a small cost in the company's equation. The film these borrowers purchased for that camera was a real profit center.

I was reminded of these anecdotes on a recent trip to the library.

Borrowed time

Probably the most familiar high-end radio receiver in the United States is the Bose WaveRadio. The company, focusing on what it really does (selling radios) and the ideal profile of who buys them, has sent WaveRadios to selected lending libraries in the United States. Patrons can borrow a WaveRadio and audition it for a week. If the user wishes to buy one, he or she simply mentions to the order desk that they are making the purchase decision based on the loan. The library receives 10 percent of the purchase price.

Smart.

This got me thinking: Too bad we can't apply this loan out/test drive concept to radio time sales. Or maybe we can.

Perhaps your local library could loan out a media kit provided by your station titled "How to Make the Most Out of Radio for Your Community Project or Business." Inside would be a cassette or CD with examples of best and worst radio spots, plus helpful hints how to make a better PSA for the borrower's group and a better, more focused commercial for their business. You could even whip up that CD in a morning in the production room, thus creating a commercial for yourself.

It seems to me this idea embodies one of the fundamental tenets taught by the best business schools: When a customer know you well, he or she will buy you more willingly.

Opportunity

The kit could include lots of media stuff on the powerful essential difference of radio over other media (don't get me started here), a litany of success stories and finally the optimal cost-per-reach that radio provides. If radio helps draw 100 people to a bake sale, those same folks will think of radio first rather than last when they advertise for their business.

Has anyone tried such an approach? Let us know at *radioworld@imaspub.com*.

Meanwhile, the Bose receiver promotion is so successful at the Farmington Library near my home that Bose has upped the count of loaners from one to five. And I'm still on the waiting list.

It goes once again to prove what my sagacious mother told me when I was 8: "Your library card is the most powerful charge card in your wallet. The card is your entrée to a massive wealth of powerful knowledge."

Charles S. Fitch is a registered professional consultant engineer and frequent contributor. Recent articles include his memories of CONELRAD and Marti remote gear.

This Bose promotion is so successful at the Farmington Library near my home that Bose has upped the count of loaners from one to five. And I'm still on the waiting list.

The Big Picture

Photo: Gary Hayes, BBC

by Skip Pizzi

Under Construction: Radio Rules

Now That NRSC-5 Is in the FCC's Hands, What Happens Next for Digital Radio Regulation?

by Skip Pizzi

The FCC has been in receipt of NRSC-5, the IBOC standard, for a while now, so focus of the industry has shifted the commission's way, awaiting the next steps on digital radio regulations. One of the key external elements the FCC was anticipating prior to moving forward on IBOC rules was NRSC-5. Now that this has been delivered, will final IBOC rules be forthcoming, or will further interim steps be required?

First let's consider what NRSC-5 contains, or more importantly, what it *doesn't* contain.

Several important items are not included in the standard. First, there is no audio codec specified for IBOC, and no method delineated by which a transmission can specify any particular codec(s) in use on the channel. Second, there are no specifications for IBOC datacasting in the standard — although the NRSC is continuing work in this area, and a datacasting update to the standard might be forthcoming at some point in the future.

What NRSC-5 does specify with substantial completeness is the IBOC AM and FM *transmission* systems, without saying much about the *content* transmitted therein.

Thus, the first major regulatory question is: Does NRSC-5 provide enough detail for the FCC to move forward with development of final IBOC rules based solely upon the standard; or will the commission have to do additional work of its own before reaching an adequate level of specification for such work?

Specifically, how will the FCC handle the codec issue? Certainly the standard provides plenty to work from, but its omissions are not negligible, and these gaps may require substantial staff effort from the FCC to fill.

Process-wise, a number of options are possible, from soliciting comment on NRSC-5 via Public Notice, to issuing another FNPRM, to moving straight to R&O. It will be interesting to see how the FCC chooses to proceed under these unusual circumstances.

Content protection, anyone?

Another open question regards what if any next action the FCC will take in the area of digital radio content protection. You may recall that along with its last FNPRM on digital radio, the commission issued an NOI on content protection. The RIAA filed voluminous comments to this inquiry, advocating the establishment of a system akin to the "Broadcast Flag" (the content-protection system proposed for use in ATSC digital television).

Most other commenters disagreed; and meanwhile the courts have invalidated the DTV Broadcast Flag rules on the grounds that the FCC has no jurisdiction over how receivers handle broadcast content once the signal is demodulated, unless explicitly given such authority by Congress. Moves are underway to have Congress grant the FCC this authority for content protection rules, but the outcome here is also decidedly uncertain at press time.

On the other hand, if a new content protection solution is devised in the DTV environment, this approach might find its way into IBOC as well. So again, the commission may be forced to wait for external developments before closing a key digital radio topic.

Wait, there's more

The list of unsettled second-tier issues for IBOC regulation is also lengthy. It includes AM nighttime operation, dual-antenna transmission for FM, Supplemental Audio Services rules, an emission designator for IBOC, FM-IBOC translator rules and more. Some of these items certainly will be addressed in the FCC's next regulatory step for IBOC, but some may remain open.

A few other interesting issues in this area have been raised recently, one in this publication's April 27 issue. In a Guest Commentary, broadcast attorney John Garziglia calls for rules requiring all satellite radio receivers to include IBOC AM and FM capabilities. This is not unprecedented; the FCC's rules for new digital cable-ready receivers

See RULES, page 31 ▶

Rules

▶ Continued from page 30

include a phase-in requirement for inclusion of ATSC terrestrial broadcast DTV tuners, for example.

To date, the satellite radio industry has voluntarily included analog AM/FM tuners in all their receivers, of course. This simply made good sense for the primary automotive market, where the idea of multiple radios was impractical and unwelcome. It also is good business during any transitional phase to combine support for both legacy and emergent formats in any new products. But this voluntary integration may not last forever, and there is likely to be significant push-back from the satellite radio industry to any move that would mandate inclusion of terrestrial receivers, even analog, but especially IBOC.

This would not be purely an issue of cost. Consider that the audio quality of satellite radio is fairly similar to that of analog radio. In fact, on a good reproduction system, FM analog terrestrial audio sounds noticeably better than satellite radio services, especially for voice-only channels. (Voice services on satellite radio are more akin to AM radio quality.) Nevertheless, satellite radio does not suffer from the impulse noise of terrestrial AM, nor the multipath distortion of FM, so on balance, quality issues are probably a wash between satellite and terrestrial analog radio. Add IBOC to this equation, however, and the balance could shift substantially in terrestrial radio's favor, with both music and voice services sounding substantially better on terrestrial than on satellite radio. Thus an attempt to require IBOC reception capability in satellite radios is likely to face a pitched battle.

Any discussion of new radio regulations might also include the issue of "podjacking," as well. There is a growing number of reports from automotive listeners that when they pull up to a traffic light at a multilane intersection, the FM station they were listening to is momentarily interfered with, if not overtaken by the adjacent car's iPod FM modulator accessory. Consider that in some cases, the iPod modultor's antenna may actually be *closer* to the adjacent car's receive antenna than it is to its own (e.g., iPod on the passenger seat, radio antenna on the rear deck, adjacent car one lane to the right with its radio antenna on the left side). Further, some of these devices only offer frequencies at the lower end of the FM band, meaning that NCE stations bear the brunt of the problem.

On the other hand, other users report that they cannot maintain a consistent signal from their iPod as they drive around town, due to the inability to find an FM frequency that is consistently vacant enough to not interfere with their iPod signal. So there is pressure to increase the output power of these modulator accessories. Thus the FCC may be forced to react to the podjacking issue in upcoming rulemakings, as well.

Whatever happens, radio will be squarely on the FCC's agenda in the near future. The new population of the commission makes this an even more interesting scenario for commission watchers. Stay tuned.

Skip Pizzi is contributing editor of Radio World.

Company: Linear Acoustic
Product: Aeromax-HDFM Multichannel Digital Processor

Radio World COOL STUFF AWARD 2005

Promising audio processing for FM, multiple HD Radio programs and 5.1 surround, this box, shipping in summer, features multiband processing, surround encoding, composite spectrum analyzer and front-panel headphone jack. The company, based in Lancaster, Pa., was founded by Tim Carroll, formerly of Dolby. His company also makes TV products including the Octimax 5.1 and Upmax 2251 processors.

One judge complimented the radio processor's "fantastic" user interface and called the processor "a real answer for smooth, full-fledged HD-Radio conversion without audio processing compromise." Another wrote, "A worthy performer … this product is a serious contender in the FM/HD processing arena."

The company said retail price is yet to be finalized but that it will be in the $10,000-$12,000 range. Shown: Mike Canevaro of SRS and Tim Carroll get down with it.

Info: (212) 315-9551 in New York or www.linearacoustic.com.

FIRST PERSON

The Give-And-Take of Eminent Domain

Obliged to Move Its Towers, WOR Negotiates Terms With the Developer

by Thomas R. Ray III

In the May 25 issue I described the genesis of a project to rebuild the transmitter site of legendary New York station WOR(AM).

WOR was offered numerous sites for relocation of our transmitter facility. None were acceptable for various reasons —undersized, or surrounded by far too much metal in the form of bridges and utility towers.

Being informed of this, ENCAP, the developer, sighed and said they had a 100-acre piece of land that was virgin swampland and which they wanted to keep pristine. They gave me a map and asked me to see if our tower configuration would fit anywhere on this piece of property.

I was able to make the array fit, with Tower No. 1, the reference tower, on a small peninsula. Success! And here's the best part: The location is only 2,500 feet north of our present one, right in the same general neighborhood.

Talks continue

We had found land, but we were still in the process of getting quotes to come up with a number to rebuild the facility. During this time, we received the standard condemnation letter from the State of New Jersey, informing us that we would need to be off our land in 90 days. Like that was going to happen. We informed NJMC that we couldn't just close up shop; since we were negotiating in good faith, NJMC would not act on its threat.

We were also given a book describing the "relocation assistance" available to us should we need it. Had we not been able to negotiate a move, the State of New Jersey would do the following for us:

•Pay the actual reasonable cost of moving, with a maximum distance of 50 miles.

•Pay the actual reasonable cost of inspection and/or license fees for the new location.

•Pay the actual reasonable cost of reconnecting utility service.

•Pay the actual reasonable cost for any changes to an existing building we would move into.

•Pay for equipment or personal property, where the street value of the old equipment would be deducted from said payment.

•Pay the cost of moving, providing three quotes were obtained from moving companies.

•Pay $15 per hour for costs related to searching for a new location, up to $1,000. Very "generous."

Several things wrong with the above list as relates to a broadcast station.

First, the term "reasonable." What is reasonable to you and me generally is not reasonable to a government entity, as they march to the beat of an entirely different drummer and live in a perfect world of their own making.

A photo by the author shows WOR's existing array.

•We were given clear title on a piece of property approximately the same size as the piece of property we were giving up.

•We would construct an entirely new facility from the ground up, said facility to have full capabilities, including back-up transmitter and generator, fully paid for.

•ENCAP was to include us as an insured entity on their environmental insurance policy, in the event the new WOR property turned out to be polluted.

•ENCAP was to include WOR in its Army Corps of Engineers permit for the project.

•The present WOR transmitter facility would not be dismantled until the new site proofed out and was ready to be licensed by the FCC.

The state would expect Buckley Broadcasting to shoulder the better part of the expenses to relocate. We were not about to do that.

Regarding their offer of $15/hour for costs for searching for property: I spent most of three weeks looking, and I can tell you that $15/hour barely scratches the surface once you count in my salary and auto expenses. That to me is more of an insult than a help.

Finally, nowhere in their guidelines is there any mention of having to reconstruct an entire facility. Broadcast stations, particularly AM stations, are in a league of their own. What this means is that the state would expect Buckley Broadcasting to shoulder the better part of the expenses to relocate. We were not about to do that.

When negotiating in an eminent domain taking, you should find out how important your piece of property is to the entity. ENCAP let it slip that our piece of property was extremely important, as it was just inside the gateway to the entire complex. I talked this over with our attorneys and we decided to play hardball, as we were in a position to file suit and tie this project up for several decades.

WOR would move on several conditions:

In return, WOR would absorb certain costs for our personnel to install the equipment and work on the Proof of Performance, we would not cause legal problems for ENCAP's project, and we would construct the new facility in the most expeditious way possible.

The developer accepted our proposal, and a deal was cut.

We then waited two years for the entire project to be funded.

Ball rolling

While waiting for funding to come through, WOR drew up the necessary building plans, Tom Jones designed the new antenna system and we started filing for permits.

It goes without saying that we needed FCC and FAA permits to construct the facility. We, of course, needed environmental permits, state permits and local building authority permits, the strangest of which is the Bergen

See WOR, page 34 ▶

Company: Henry Engineering
Product: MultiPhones

This distributed headphones system provides stereo headphone listening facilities for multiple users. Why is that cool?

"It takes both large and small equipment to build a radio station, and Henry Engineering meets a need with their new headphone system," as one judge put it. "I like the daisy-chain wiring system over pre-made Cat-5 cables for ease of installation and maintenance. … Compact and simple enough to let you put a headphone station anywhere you need one."

The little headphone pods can be flush-, cabinet- or desktop-mounted; they have useful controls for talent and guests — stereo headphone amp, volume control and headphone jacks, a cough button and "mic on" LED — and are connected with Ethernet. The master unit provides audio and power for 12 pods, and occupies one-third of a rack width.

Retail: $295 for master unit; $75 per pod. Shown: Hank Landsberg listens in at the show.

Info: (626) 355-3656 in California or www.henryeng.com.

Company: Nautel
Product: Digital Adaptive Precorrection

Nautel's direct-to-channel digital M50 exciter includes new adaptive pre-correction capabilities. It was this concept that the Cool Stuff judges liked. Spectral integrity without costly filters.

If you're doing HD Radio, you don't want deviations to the HD Radio mask. As Nautel puts it, the high amplifier linearity required for digital can be affected by changes in the system such as those caused by a change in VSWR, an adjustment in transmitter output power, a change in amplifier temperature, or aging and failures of RF amplifiers. "Any one of these events can result in serious deviations to the HD Radio mask, poor sound quality or even interference with other stations."

So the M50 exciter monitors the output of Virtuoso transmitters and responds to changes by automatically "'pre-correcting" the RF signal.

"Not only is this a great concept and feature, the show floor demonstration was a kick," one of our judges wrote. "With a V10 operating into a mismatched load, similar to an iced-up antenna, you could watch the intermodulation slowly fade out as the automatic correction took place."

This also means that Maestro exciters do not have to be matched to specific transmitters.

Price varies by product; the M50 exciter retails for $11,900. Shown: Mike Woods, Tim Hardy and Scott Martin.

Info: (207) 947-3693 in Maine or www.nautel.com.

HIGHER DEFINITION

Orban's new flagship and the next step beyond the 8400, the new, all-digital 8500 offers major improvements: twice the sample rate, twice the DSP horsepower, and built-in HD Radio™/digital radio/netcast processing with 20 kHz bandwidth.

The 8500's competitive sound takes 8400 version 3.0 sonics to the next level. The 8500 will import and run any 8400 preset, so anyone with carefully customized 8400 user presets can upgrade to the 8500 without missing a beat. For HD Radio broadcasters, a built-in, defeatable 8-second analog-channel delay lets you use the 8500's built-in stereo generator and patented "Half-Cosine Interpolation" composite limiter to maintain full loudness on your analog channel.

All processing structures have about 4 milliseconds less delay, making headphone monitoring even easier for talent. For the most critical off-air monitoring requirements, you can even use one of the new "ultra-low latency" presets with only 3 milliseconds of delay.

Ethernet is now built-in. Of course, you can also control the 8500 via modem, serial connection, GPI, external RS-232-interfaced automation, or internal clock-based automation with Internet time sync—the 8500 is always easy to integrate into your facility, regardless of complexity. And we've retained the 8400's famous ease-of-use that makes it easy for you to brand your sound by creating your own custom presets—even if you're not an audio processing expert.

Ready for higher definition?

No matter what your audio processing challenges may be, Optimod-FM 8500 is ready when you are.

orban crl

www.orban.com

Introducing Optimod-FM 8500

COOL STUFF AWARD
Radio World 2005

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.

WOR

▶ Continued from page 32

County Soil Conservation Permit. This is a swamp. We are not digging; if anything we are filling portions of the swamp to get the facility out of the flood plain.

Surprisingly, the FCC acted rather quickly and approved our application for construction permit in under nine months, contingent on FAA approval.

Our new antenna system design still maintains the three-tower dogleg array, with Tower No. 2 being slightly farther from Tower 1, and Tower 3 slightly closer to Tower 1, than in the present array. This will allow WOR to pull in its null a little bit to satisfy the FCC's "ratchet down" clause. While radiation in the direction of our null will be roughly 10 percent less than it is at present, we do not feel this will have a significant impact on reception in the direction of the null.

If anything, WOR would like to put more signal in the direction of the null. When the Lyndhurst facility was designed, it was desired to keep a good amount of power in the direction of Philadelphia, while maximizing power towards New York City and Long Island. The physics of this array dictate that power will be pulled from a direction to the northwest of the site.

In 1965, this area of northwestern New Jersey and Orange County, N.Y., was sparsely populated. In 2004, the northwest corner of New Jersey is packed to the gills; Orange County is the fastest-growing New York City suburb and is almost "full." But because of decisions made with the first directional antenna in the 1930s, and the redesign and move of the antenna in 1965, WOR is stuck protecting a Canadian station in the Niagara Falls area.

While everything was well with the FCC, the FAA was another story. They told us we needed to reduce our tower height by 40 feet, which would have put WOR's antenna efficiency below that required for our Class A status.

The next time we chat, we will discuss the fight with the FAA.

Tom Ray, CPBE, is corporate director of engineering for Buckley Broadcasting, WOR Radio, N.Y.

IT Service Management for Broadcast

by William M. Eldridge

In the days of analog recording, routine maintenance for tape machines and other studio gear was a must; and emergency plans were straightforward. As broadcast has turned digital, more and more information technology equipment and software has been integrated into the facility.

Unfortunately, evolving IT techniques for managing the facility are less well known, at a time when facilities are taking on much more expanded and complex tasks. This article attempts to address this blind spot by focusing on one possible approach to the problem, IT Service Management.

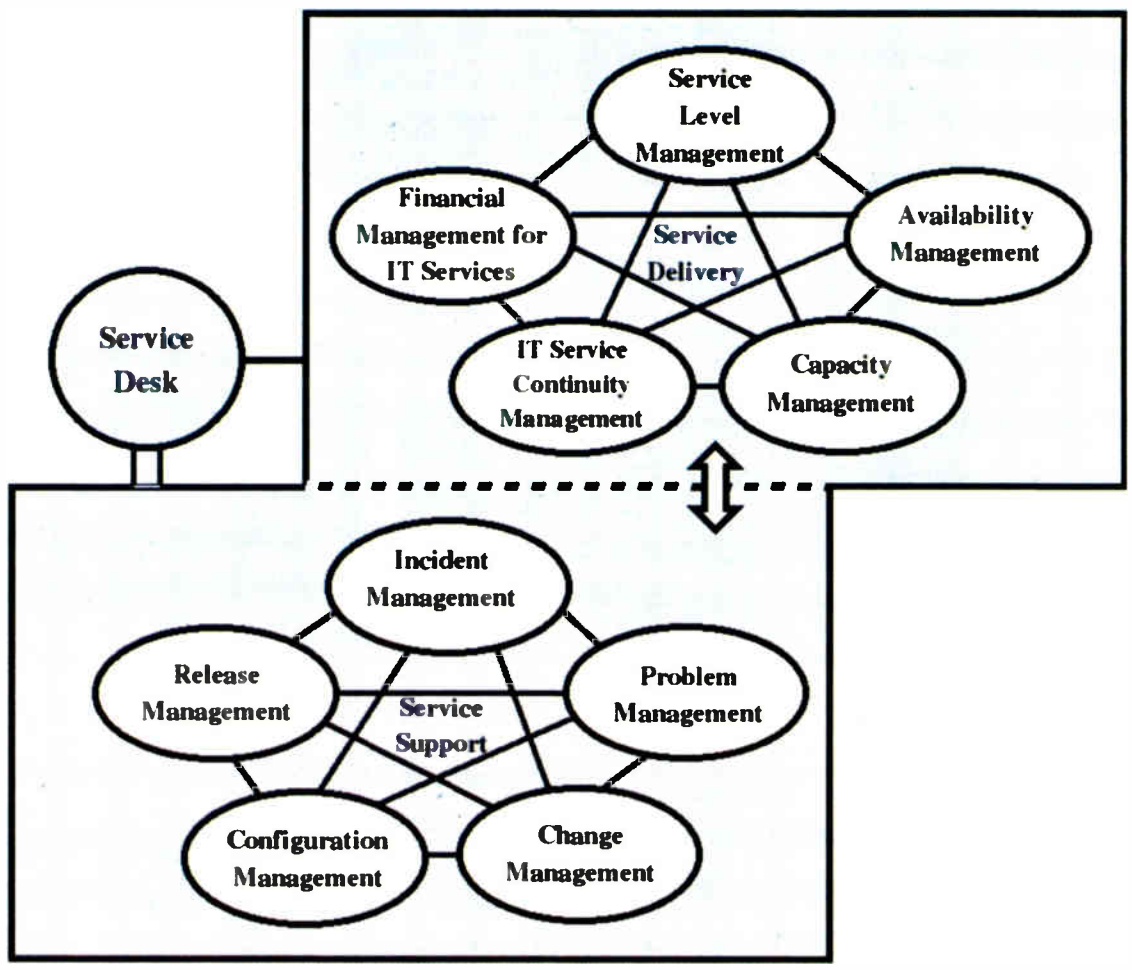
Uncertainties

The promises of the digital age of broadcast have been delivered somewhat unevenly, and not just because of the slow introduction of digital TV.

The hardware for PC-based recorders is certainly cheaper than professional tape machines, but expensive software, computer personnel and training are just some of the areas where the gains are frittered away. Early optimism noted that electrons don't wear out; however, hard drives do. Replacement of tape heads was a planned expense, but upgrading PCs, operating systems and software versions is often ignored until too late; while the components, configuration and maintenance that assure PC multimedia high quality are frequently given short-shrift.

Merging broadcast systems with the desktop and portables has brought new uncertainties regarding the effects of viruses, network breakdowns, problems in remote access and other IT issues to

See IT, page 36 ▶



Service Support and Service Delivery

Company: Orban/CRL Systems
Product: Optimod-FM 8500 Digital Audio Processor

Pleased to see industry stalwart Orban offering several products this year, the judges singled out its new flagship processor. One wrote, "Every imaginable sonic parameter is adjustable to achieve the sound you want for both FM and HD. The remote PC control interface is superbly done and so easy to use."

The 8500 has 64 kHz base sample rate, twice the processing power of its predecessor and processing for digital radio and Webcasting with full bandwidth. Defeatable HD diversity delay is in place so you can use the stereo encoder and composite limiter on your analog channel. Presets from an 8400 can be imported.

Retail: $13,995. Shown: Bob Orban and Jay Brentlinger.

Info: (510) 351-3500 in California or www.orban.com.

Company: Potomac Instruments
Product: PI-4100 Medium-Wave Field Strength Meter

"It's not just practical, professional-grade and full of vitals; it's sexy."

Bet you haven't heard *that* adjective applied to a Potomac product before.

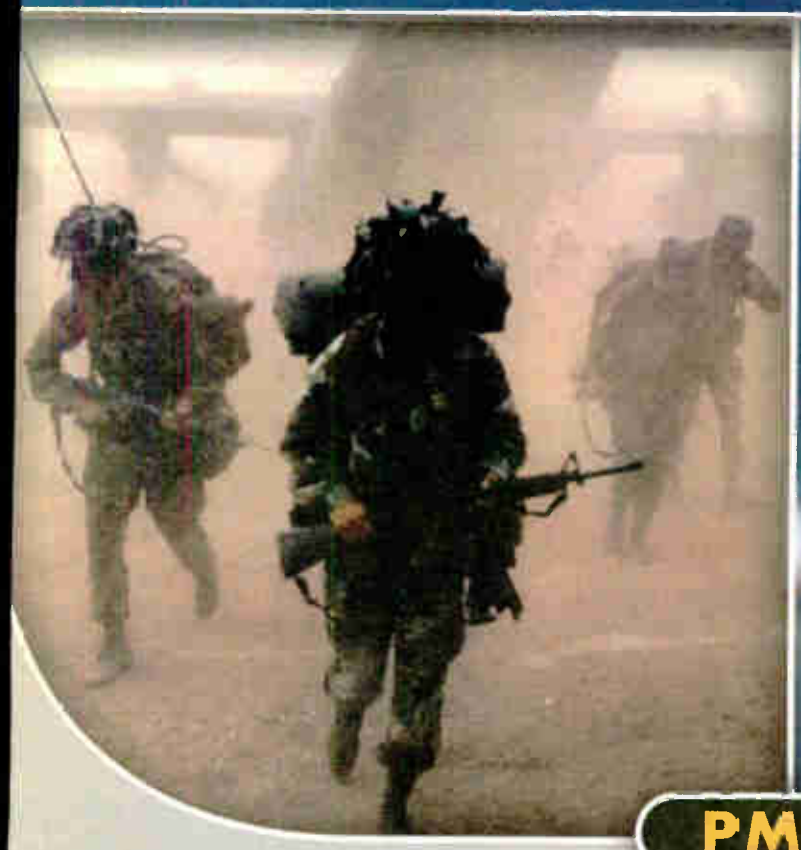
"This is probably one of the coolest new pieces I've seen in years," one judge wrote. "Direct, LCD read-out of field in dBu, mV/m, bearing, heading, radial, trending, downloadable — can't wait to get one."

The PI-4100 is intended as a successor to the classic FIM-41. This is a digital-tuning survey instrument for the measurement of electromagnetic field strength in the 520 kHz to 5.1 MHz range. It weighs about 5-1/2 pounds and combines a radio frequency voltmeter, calibrated shielded loop antenna, internal GPS receiver, internal calibration source and data acquisition hardware and software.

Retail: $11,750. Chris Babendreier and Dave Harry go mobile.

Info: (301) 589-2662 in Maryland or www.pi-usa.com.

Breaking News
in the **Palm of Your Hand**



PMD660

The Marantz Professional PMD660 is the first compact solid-state recorder that fits in the palm of your hand. When breaking news hits you need to know that you have a professional hand-held recorder that will provide high quality digital audio and quickly get the "big stories" to the newsroom! Virtual Track Mode (VTM) and Copy Segment features allow on-board editing so you can record in the field, edit the file and send directly to the station to hit the next newscast!

- 4 hours of uncompressed 48k .wav recording on 2 gig card
- USB direct download
- 4 hour battery life (alkaline, NiCAD, NiMH)
- XLR inputs with 48v phantom power
- One-touch record with 2 second audio cache
- On-board editing with Mark Segment for transfer of customized audio files
- Virtual Track Mode (VTM) allows easy playback of customized marked points of recording
- EDL markings during record or playback
- No moving parts / no maintenance
- Two Built-in Stereo mics
- Optional RC600 Remote Control available

COOL STUFF AWARD
Radio World
2005

marantz PROFESSIONAL

D&M Professional

For more information visit www.d-mpro.com

IT

▶ Continued from page 34

play in on-air delivery. Problems with a forgotten password, slow hotel Internet access or a full mail folder may not seem serious compared to an erased interview or poor recording quality, but if they keep the material off-line when you need it on, it is almost the same as dead air.

Additionally, the steady mounting effect of these problems has a large effect on facility operations.

IT Service Management can help to bridge the digital divide in the studio by organizing the procedures and processes into intuitive areas. While properly assigning expectations, it not so much decreases complexity as places it into proper categories. From there, the level of detail required depends on the organization.

An example can be taken from Service Support.

A typical call to a Help Desk might note that an audio station is not seeing the network. As an Incident, the priority is to get the station back to a usable state quickly, while as a Problem, the priority will be to find out the exact reason the station stopped functioning.

The two roles may be provided at the same time by the same person (e.g. you find the network cable is bad and replace it), while a quick Incident fix might be using a floppy for file transfer or rolling in a spare recording station and research the Problem later. Both roles will rely to some extent on Configuration (such as equipment, software versions and settings) as well as Change (typically what has changed most recently).

Similarly, Change and Configuration work closely together. Changes to equipment and software cannot be made willy-nilly without negatively affecting the facility. Without a proper record of changes (Configuration), carefully implemented changes can still be misunderstood or unnoticed by new staff, paving the way for a future disaster. Release Management complements these two by trying to roll out Change to a number of subsystems in a pre-tested, orderly fashion, rather than haphazard or emergency changes to individual software or machines.

A forgotten password or a full mail folder may not seem serious, but if it keeps the material off-line when you need it on, it is almost the same as dead air.

While this is a simplified view of these roles, it is obvious that a great amount of record keeping and communication is required to do ITSM right. This should not scare off the small facility, where frequently multiple roles fall on one person, nor should it be an excuse for doing nothing. There are tools available to help.

Numerous payware and open source packages are available for organizing trouble tickets and change records (e.g., ZenTrack and dotProject) even when maintained by one person. Though a regularly maintained spreadsheet or mailboxes can be searched quickly on a PC, typically this approach prevents the better communication that the other systems provide, including informing management. In any case, the best of systems will do nothing if information is not entered regularly.

One of the areas IT Service Management helps in is defining IT as a black box with various inputs, outputs and features and costs. Upper-level managers may be out of touch with technical issues, so placing approximate figures on down time, repair costs, numbers of incidents and other issues allows management to order its functional and budgetary priorities. At its best, this can be defined in terms of Service Level Agreements (SLAs) equivalent to those used for outsourcing services.

The word 'outsourcing' should not make staff unduly paranoid.

The word "outsourcing" should not make staff unduly paranoid; if an in-house staff can provide a well-defined cost-center interface to the company, the services stand less chance of needing to be outsourced unless it makes overwhelming sense to do so. More typical is that management hears marketing hype about outsourcing savings and has few metrics as to its in-house IT effectiveness.

IT Service Management can help identify areas where true efficiencies and cost savings really can be had, through outsourcing, specialized systems or changes in procedure, rather than relying on guesswork.

Some of the areas for which SLAs can be drawn up include costs (Financial), resource design (Capacity), deployment and management of resources (Availability), and recovery and contingency planning (Continuity). Properly planning usage and growth is essential for assuring the facility's Capacity in different areas, while if maintenance keeps Availability off-line, the planning is useless. Every support person would love to have unlimited storage and 24x7 maintenance agreements, but not every station can afford these. Emergency planning (Continuity) can range from a set of emergency tapes to full off-site facilities, depending on the budget and need.

More support

All of these IT Support areas need to be tied into the company's Business Model and a Risk Management evaluation to set the higher-level priorities. These requirements trickle down to lower-level issues.

If a station has a single on-air audio server, maintenance on that machine has to be planned much more carefully than to desktop stations. A station that's funded by advertising revenues may need to be back on air much faster than a non-profit station. Even such considerations as whether the broadcast is the Olympics or a late night tele-shopping may enter into the equation.

Risk Management is a field all to itself and ranks costs, probability and severity on a number of criteria, including costs of doing nothing vs. other alternatives. It also evaluates sometimes-hard-to-quantify costs such as good or bad PR, effect on the future potential of the company to expand or perform, alternate uses of IT money and so on.

Alongside Risk Management is facility Security. Besides traditional concerns such as fire and power outages, the new IT-enhanced facility has to worry about viruses, hackers, spam, more complicated Digital Rights Management issues and other threats that affect both program acquisition and transmission. The basic Security triangle includes Confidentiality, Integrity and Availability, and balances protection mechanisms with the cost, the likelihood of the threat and its severity. Security is an issue in both Service Delivery (e.g., it assigns and monitors Continuity and Availability goals) and Support (it assures Incident and Problem procedures fit the facility's Business Plan and resource constraints).

While this article has focused on providing a general sketch of IT Service Management, next time we will dig into the different areas of ITSM along with practical applications for the broadcast industry.

This article is based on a paper presented at the Broadcast Engineering Conference at NAB2005. Reach the author at dcbill@volny.cz.

Company: Waves
Product: MaxxBCL Bass Enhancement and Dynamics Control

"A retro approach to audio processing, taking workstation plug-ins and turning them into a flexible, bulletproof standalone hardware device," the judges wrote.

"Superb performance, especially for optimizing sound on the portable receiver, but without compromise to listeners using larger, fixed or mobile receivers."

Traditionally, Waves argues, bass is boosted with EQ, which can cause problems of over-modulation and, on the receiving end, distortion and "over-excursion." Boosting bass this way, it says, also means sacrificing overall loudness; and listeners using earbuds, computer speakers and small car systems aren't well served.

The company says the MaxxBCL's MaxxBass processor uses a patented psychoacoustic algorithm to create a harmonic image made up of higher frequencies, so broadcast chains are protected from over-modulation and listeners hear more bass.

The unit's L2 Ultramaximizer peak limiter can be used to protect inputs on live music feeds via ISDN or in front of the inputs to an automation system "to give a more even and fuller sound to the music archive." Waves' Renaissance compressor is also included, useful for controlling audio segments of varying levels.

Retail: $3,200.

Info: (865) 909-9200 in Tennessee or www.waves.com.

Company: Wheatstone
Product: Vorsis AP3 Digital Signal Processor

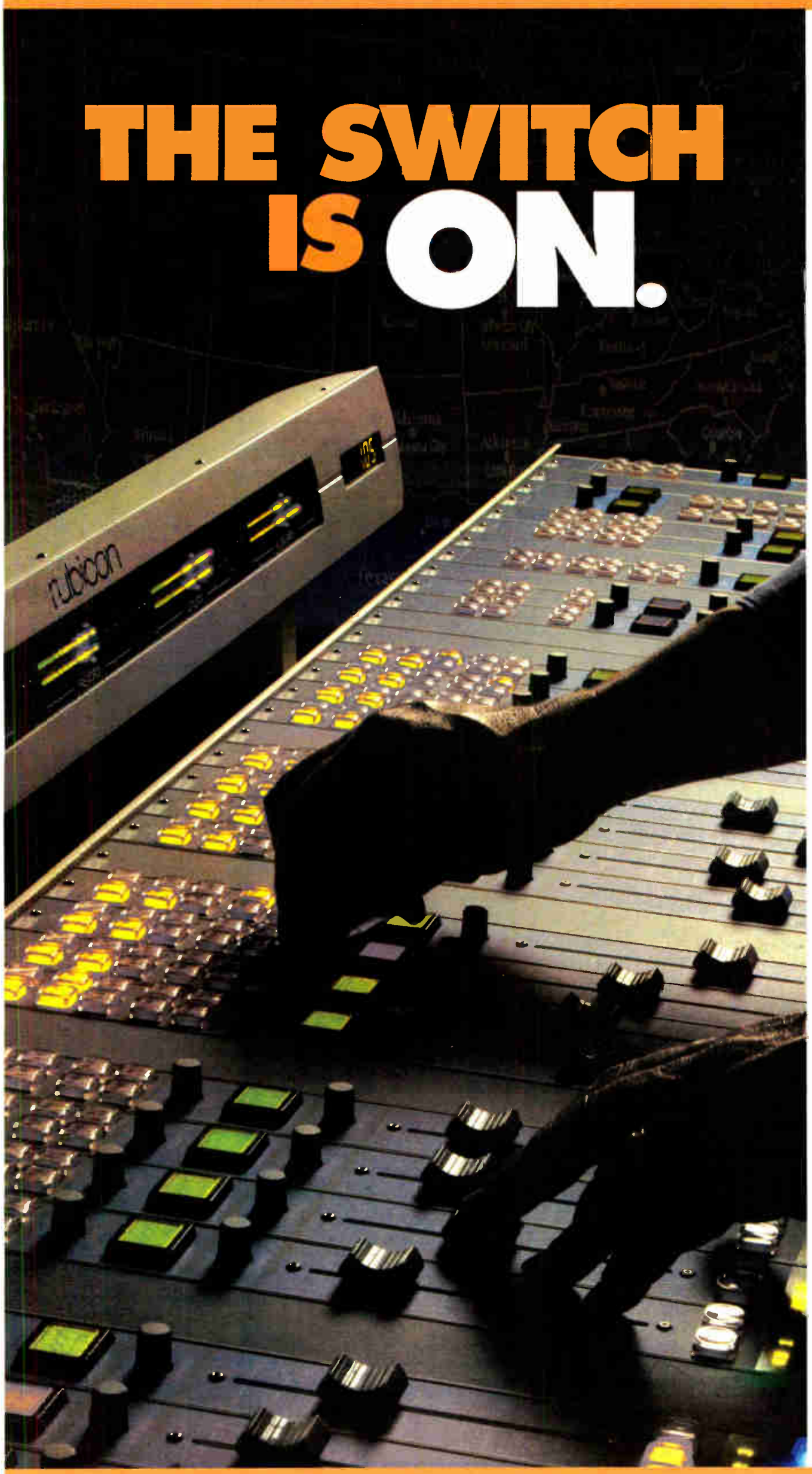
Wheatstone is out with a new line of single-space audio processors, which moves the company into a new product niche.

The Vorsis is a two-channel/stereo audio processor that provides analog/digital I/Os, multi-band processing, analog mic or line inputs, a four-band parametric EQ, three-band compressor and tunable filters along with overall AGC, limiting and expansion. Settings can be stored and replayed as password-protected presets. Front-panel display includes input, output and gain reduction meters. Remote monitoring and operational control are possible using Ethernet-enabled GUI software. The full-bandwidth unit is suitable for HD Radio processing.

Retail: $2,999. Shown: Jay Tyler, Andrew Calvanese, Paul Picard, Phil Owens and Darrin Paley relax at the booth.

Info: (252) 638-7000 in North Carolina, or www.vorsis.com.

THE SWITCH IS ON.



Coast to coast.
Border to border.

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

In return, Rubicon's power, adaptability, and easy-to-use controls are turning on hundreds of DJs, operators, engineers and programmers across America.

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**™.

Rack mounted 32KD Digital Router/Mixer, RIOLink remote I/O and Rubicon power supply

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.

SAS **SIERRA AUTOMATED SYSTEMS**

1.818.840.6749 radio@sasaudio.com

Products & Services SHOWCASE

D&M Professional said **Jodesha Broadcasting**, which has two FM music and one AM news/talk station in Aberdeen, Wash., bought a second PMD660 for news use. Bill Wolfenbarger is president and chief engineer of Jodesha Broadcasting. The stations also use a Marantz PMD670 Recorder. ...

Klotz Digital reported it has sold its 350th digital audio mixing console in the United States. The company established a U.S. presence seven years ago. The console was a VADIS D.C.II on-air model for **Radio One** in Lanham. Md.

Separately, Klotz said **XM Satellite** has expanded its Vadis audio and control platform in its tech center in Washington. XM expanded last October to accommodate its Internet streaming services, and again in April for Major League Baseball. Each was preceded with an expansion to the inputs and outputs of the central router core.

"This brought the size up to 3808 x 4320 with enough capacity still for further expansion," Klotz stated. "XM Satellite Radio now has in use a total of 144 Vadis 880 audio frames making up the TOC. A further 100 frames are in use in the studios within the D.C. facility." Remote facilities in New York and Nashville complete the platform.

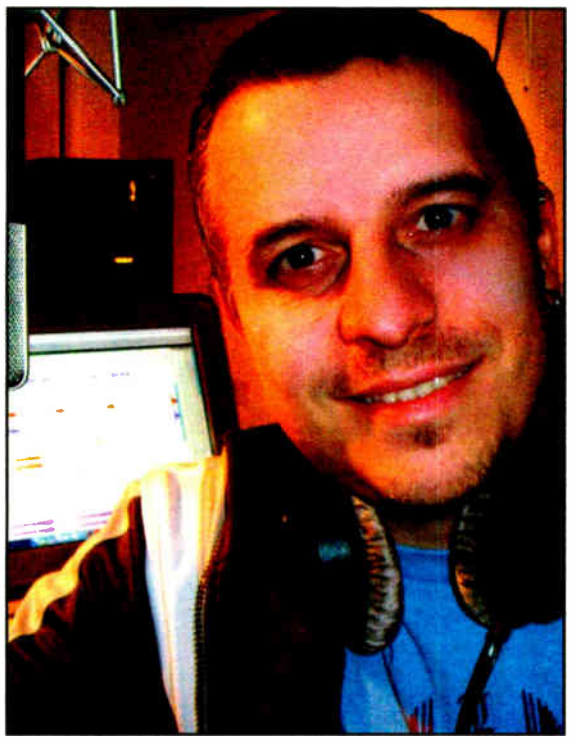
The XM router in Washington handles the audio and serial data routing for the facility. Song title and artist information is routed as serial strings in RS-232, RS-422 or combined forms and follows the audio.

"Due to the large number of channels being broadcast and the immense size of the router, silence sensing at specific points in the system had to be automatically integrated," Klotz said. "These sensors trigger the initiation of primary, secondary and tertiary switching as necessary to ensure that XM can broadcast without loss of signal." ...

Separately, **ATA Audio** said XM purchased Scoop E-Z and Scoop Studio POTS/GSM codecs to broadcast live feeds for the Major League Baseball channel. The units will be used in POTS mode at various major league venues; the GSM will act as a back up. Ed Schwartz is VP of broadcast engineering for XM. And **CBS Network News/Westwood One** purchased the Scoop E-Z and Scoop Studio POTS/ISDN/GSM units, which were used at the Academy Awards, Rock & Roll Hall of Fame induction Pope John Paul II's funeral. ...

Megatrax Production Music used the spring NAB convention to promote its relationship with **Shadoe Stevens'** new syndicated radio program, "Top of the World." This is Megatrax's first foray into syndicated radio programming. ...

The **Harris Broadcast Communications Division** said **Clear Channel Radio** purchased 100 **Audemat-Aztec** FMB80 dynamic RDS encoders. This is the second phase of Clear Channel Radio's RDS rollout, following the installation of FMB80 RDS encoders at 192 of its FM stations in 2004. Harris is an authorized reseller of Audemat-Aztec gear. ...



Michael Stuber

Axia Audio said it sold an Axia IP-Audio networking system to news/talk station **WOR(AM)**, Buckley Broadcasting's New York flagship. The station is the first in the country's biggest market to use switched Ethernet for audio routing and transport, Axia said.

WOR's new lower Manhattan facility includes nine studios, six news booths and a master control/tech center. Included in the purchase were nine Axia SmartSurface Studio Control Surfaces and Studio Mixing Engines, and dozens of Audio Nodes. ...

Michael Stuber is using **Genelec** S30D monitors for his work creating radio promos and branding material for two Swiss radio stations. **Parsons Audio** supplied the monitors. ...

Dielectric Communications said Service Broadcasting's **KRNB(FM)** in Dallas-Fort Worth purchased a DCR-M10 antenna and custom tower top to upgrade its signal. Dielectric installed the antenna and custom FM tower top onto a 2,000-foot tower in Decatur. The company also uses a Dielectric CBR master antenna for Dallas' KKDA(FM) and is buying a second antenna for KRNB, which will serve as a full-power auxiliary antenna for analog service and allow for future digital broadcasting. Gary Wachter is DOE for Service Broadcasting. ...

"Voice to America," an international call-in show that launched in 2004, is using a **Comrex** Matrix with GSM Module for broadcasts from various global locations. The show brings perspectives from other countries to listeners in this one. Matrix was used in the show's coverage of last fall's U.S. presidential elections in a remote from the 600-year-old Lamb and Flag pub in Oxford. ...

OMT Inc. said **Commonwealth Broadcasting Corp.** has committed to standardizing its radio group on the iMediaTouch Digital Audio Delivery System. Commonwealth is based in Glasgow, Ky. It has 24 stations in eight clusters.

"The company employs a centralized audio distribution infrastructure and will be using OMT's iMediaTouch, advanced Remote VoiceTrack application and the iMediaAccess (WAN) content sharing technologies to share audio and talent voice tracks across the group," the supplier stated. The announcement was by OMT founder Ron Paley and Commonwealth President/CEO Steve Newberry. ...

SBS Radio in Europe has installed 34 **APT** WorldNet Ohio ISDN codecs to distribute radio content from studios to transmitters located in various parts of Sweden. The broadcaster has 8 million weekly listeners via 53 radio stations in five countries. The core compression algorithm employed by the WorldNet Ohio is Enhanced apt-X.

Separately, Australia's largest radio broadcaster, **Austereo**, ordered WorldNet codecs from APT. Austereo had been using a combination of other codecs in its national network. Models now used include the WorldNet Tokyo for studios and the more portable and economical WorldNet Milano for outside use.

"Previously restricted to 128k joint stereo with MPEG Layer IIa, Austereo had to record any musical content on DAT at the venue and physically transport it to the production studio for post-processing," APT stated. "Now, using apt-X compression at 256 kbps and higher, audio can be sent directly to the production studio for editing and re-broadcast." ...

Logitek has begun shipping its Mosaic digital console; the first buyers are **KAXE(FM)** in Grand Rapids, Mich., and the **Australian Broadcasting Corp.** KAXE purchased two Mosaic-12 consoles and a Logitek Audio Engine; the Australian Broadcasting Corp. bought a large system of six Audio Engines, three Mosaic-12 consoles, three Remora-10 consoles, three Remora-4 consoles and various router control panels via Australian distributor **Maser**.

Separately, Logitek shipped Console Router Systems to **KASU** at Arkansas State University, **KRFC** in Fort Collins, Colo., **KRZA** in Alamosa, Colo.; **WUSF**, Tampa, Fla.; **WBWI** in West Bend, Wis.; and **EMAP**, via **Preco**, a UK distributor. Console orders were received from **Salem Communications** (including 10 Audio Engines and eight Remora-10 consoles), **KKDA** in Dallas/Ft. Worth, **WUMB** at the University of Massachusetts in Boston, **WVIA-FM/TV** in Pittston, Pa., and **Syracuse University.**

Send news and photos of recent notable equipment orders to radioworld@imaspub.com.

Special Cool Stuff Awards For Advancements in Radio Surround Sound

In addition to saluting companies that are pushing multicasting (see page 18), the "Cool Stuff" Award judging panel singled out several organizations for their roles in advancing radio surround sound. The companies are Neural Audio and partner Harris; Telos/Omnia/Axia and partner Fraunhofer Institute; and SRS Labs.

Anyone following this debate knows that *how* radio will solve the surround puzzle is far from settled, and that other companies have supported exploration into radio surround. The Cool Stuff judges recognized these factors but felt strongly that the participants above were responsible for increasing industry awareness in a way deserving special note.

As one judge wrote, "For anyone who has heard great surround content, it's a mind-expanding experience that can give you goose bumps. The corny phrase about taking audio listening to a new level is really true with great surround. It's what brings HDTV to life, and it has the potential to do the same for future radio listening.

"Coupled with a robust HD Radio delivery platform," he continued, "these technologies produce remarkable results never before possible from radio broadcasting."

Shown clockwise from top: Robert Reams of Neural Audio; from left, Mike Canevaro, Hank Kato, Alan Kraemer, Todd Baker and Bruce Bell of SRS Labs; and Olaf Korte and Wolfgang Fiesel of Fraunhofer with partner Frank Foti of Omnia.

NAB Comments on Avatar Report

These excerpts are from the executive summary of comments filed in March.

The National Association of Broadcasters and CTIA-The Wireless Association submit this reply to certain comments filed in response to the FCC's Public Notice seeking comment on the report of Avatar Environmental LLC, regarding migratory bird collisions with communication towers.

In responding to the Avatar Report, the U.S. Fish and Wildlife Service has reaffirmed that additional research is necessary before it can assess the issue of significance. Specifically, USFWS states that: (1) "it is *still impossible* to directly correlate [tower] collisions to impacts on bird populations;" (2) "[w]e acknowledge the need to work with the applicable research entities and the industry to identify the most appropriate approach and mechanism(s) to develop guidance on standard methods and metrics for data collection and monitoring at communications towers;" and (3) "[t]he Service acknowledges that the major focus of aviancommunication tower research is to determine specifically *why* major mortality events occur, and *what can be done to avoid them*."

Much is 'not known'

(NAB and CTIA) concur with the above statements. Without systematic, peer-reviewed research, the commission cannot determine whether communications towers are having a material effect on avian population and therefore, are significantly affecting "the quality of the human environment" — the standard required by the National Environmental Policy Act.

Indeed, in its initial comments, USFWS explicitly stated that "*much is simply not known* about the impacts of communications towers on birds today — even with the databases of many previous studies" and that these previous studies alone "*would be insufficient* for the FCC to change its rules and processes."

Thus, even USFWS, which has taken the lead in advocating regulations, concludes regulation is premature.

Contrary to the claims made by the American Bird Conservancy, Forest Conservation Council, Human Society of the United States and the Defenders of Wildlife ("Avian Groups"), the commission is not violating NEPA. The Report by Land Protection Partners concluding that there is a scientific basis for establishing regulations for communication towers, which the Avian Groups attached to their comments, is fundamentally flawed.

The methodology for determining species-specific mortality rates at communications towers, for example, is based on scant and statistically incompatible scientific research. Once again, the Avian Groups have failed to produce evidence that the comparatively small numbers of birds killed in collisions with communications towers are having *any significant effect* in altering migratory bird populations.

Further, despite Avian Groups' calls for mandatory adoption of the USFWS' voluntary tower siting guidelines, the commission should refrain from doing so.

First, USFWS has recognized that the guidelines have created confusion in the field as to their force-and-effect and that these guidelines were adopted without proper public notice-and-comment. USFWS states that it intends to remedy these defects in the near future. Thus, it would be premature for the commission to utilize these guidelines.

Beyond this inherent flaw, the commission should not rely on these guidelines, which call for the construction of short (under 200 feet), unlit and unguyed towers, where possible, because they are not based on *scientific evidence*.

Moreover, adoption of the guidelines would significantly impair the deployment and service coverage areas for both broadcast and wireless services. The Avian Groups repeatedly claim that: Simply co-locating antennae, keeping towers under 200 feet to avoid lighting where possible, building monopole towers where possible, keeping lighting to the minimum required by the FAA and using white or red strobe lights at no more than 20 pulses a minute *cannot possibly inhibit the provision of efficient and reliable communication services*.

These statements underscore the Avian Groups' continued and steadfast refusal to recognize the basic laws of physics that govern radio frequency signals and service coverage. As NAB has previously demonstrated, even moderate reductions in tower height can lead to dramatic reduction in service coverage area, thus producing a significant harm to consumers without a reasonable basis for regulation.

Premature

(NAB and CTIA) further submit that regulations governing the use of lighting to mitigate avian collisions with towers are entirely premature. (They) concur with Centerpointe Communications that, prior to regulatory changes, additional studies of avian species' biological attraction and responses to lighting must first be conducted. The commission should reject calls for regulating the use of guy wires, which are primarily employed to ensure *public safety*.

Additionally, the commission should refrain from promulgating regulations governing tower siting —terms such as migratory ridges and corridors are so vague that their use would preclude siting in a vast majority of America.

Finally, the commission should reject Avian Groups' unsubstantiated demands for mandatory Environmental Assessments as a licensing or re-licensing requirement. ... Nothing in the Communications Act of 1934, as amended, NEPA, Endangered Species Act or Migratory Bird Treaty Act provides the FCC with the authority to regulate the design or siting of communications towers for the purposes of minimizing speculative and unsubstantiated effects on migratory birds.

Thus, (we) respectfully request that the commission issue a statement finding that no change to the commission's environmental regulations for communication towers is warranted at this time.

USER REPORT

SBS Upgrades FMs With Omnia-6

by Mike Tocco
Chief Engineer
SBS Broadcasting

NEW YORK Here's a user report from an angle you don't often read. While it's true that I installed and initially set up our Omnia-6 processors, my involvement with them has almost ended there. In short, I have little to do with our Omnias. This is not because we "set them and forget them"; rather it's due to the impassioned involvement of WSKQ(FM) Program Director George Mier.

Tocco puts the cover back on the Omnia-6 after the firmware card replacement.

WSKQ is SBS's flagship FM station. No. 1 in the New York metro ratings for several books now, its ratings success coincides with George's affirmative programming advances and several technical improvements for which I'm responsible. One of those upgrades was installing Omnia-6 FM audio processors on WSKQ and WPAT(FM).

George asked that we switch to Omnia processing after hearing the bright, open Omnia sound on some competing stations. We purchased two Omnia-6s, plus one more as a backup. The backup unit has only been used once; it was on-air for a few minutes while we upgraded the DSP software in our main Omnias.

Upon initial installation I assigned unique IP addresses to the processors, and connected them to our LAN. This gave both George Mier and WPAT's PD Tony Luna direct, real-time access to their respective stations' audio processors.

I downloaded and installed Omnia Remote software on their PCs and spent a few minutes with them, learning about the processing adjustment controls and how to save and recall presets. At that point, George and Tony took control and we've never looked back.

Almost two years have elapsed since. A few days ago, George recalled for me his thoughts about Omnia processing and being able to control WSKQ's signature sound.

"You know, I was a little frustrated at first. Spanish Tropical music can be hard to process, and I wasn't getting the 'punch' I wanted. I liked the remote control and Omnia's adjustment flexibility," he said. "We sounded good on the dial, but I knew we could be better."

Omnia had just released a major software enhancement, version 7. So Omnia's Kirk Harnack and I upgraded the processors with the new software late last summer. Version 7 software includes a new dual bass clipper that lets you balance two different types of clipping in the lowest frequencies. It's made a difference for our unique format.

George then had this to say: "This upgrade was what I needed. Tropical music often has different bass than other pop music. It's more string-based; not as much drum and synth. Plus, you have a lot of instruments in the mix — trumpets and other brass, acoustic guitars and lots of vocals.

"You have to be careful that in the processing you don't compress all those instruments together. They must sound authentic. This is New York, so they've got to have a great presence on the dial."

George especially likes that he can customize the Omnia in every band. He doesn't have to compress or limit much to get the sound he wants; he can get it to "cut through" and still sound live at the same time. He tells me that even though WSKQ's loudness keeps up with the New York market, our time-spent-listening has improved because our processing doesn't fatigue our listeners.

If George or Tony have trouble with the settings, I'm here to help. Though my main jobs are to make sure the stations are reliable, have excellent coverage and that the PDs have the tools they need to define the stations' sound.

We're looking forward to broadcasting in HD, probably sometime in 2006. And my Omnia-6s are ready for that, too. The built-in HD processing path is pretty convenient. We may simplify things a bit more by adding the "Diversity Delay" option to our existing Omnia-6s — the "i" option— which puts the "traditionally processed" signal's delay inside the audio processor, rather than looping it through the HD exciter.

I'll conclude by stating the Omnia-6 processors have been and are performing well. As Omnia releases new software — and new hardware — the processors demonstrate their worth as an investment in our broadcast signals.

The Omnia-6 processors range in price from $11,590 for the EX to $12,580 for the EXi. The company offers the "i" upgrade for $990.

For more information, contact Omnia in Cleveland at (216) 241-7225 or visit www.omniaaudio.com.

USER REPORT

Aphex 230 Makes 'Big Radio' Voice

by Barry Victor
Contract Engineer/Owner
The Victor Group

LOS ANGELES I have worked with Michael Reagan for almost 10 years, first at an independent station in San Diego, moving to Premiere Radio in Sherman Oaks, Calif., and now at his own facility in Encino, Calif. During that time I have experimented with a number of microphones and mic processing approaches to help give Michael's voice a bigger "radio" sound.

This has not been easy, as his voice can be thin. He has a habit of working too hard to achieve that bigger sound, which can eventually cause his voice to be strained and become even thinner. In addition, the typical talk show host has lots of material spread across the desk along with several computer monitors. Reading from a monitor or reaching for a paper makes it difficult to work a stationary mic with any consistency.

After trying several different mic options we settled on a high-quality headset mic to give Michael the freedom to move around his desk without worrying about having to work the mic. We combined that with the **Aphex** 1100 mic preamp and the Aphex 661 Expressor, which sounded quite good. But that combination is $3,300 retail (without the mic); and it still did not answer all the processing necessary to improve the sound of Michael's voice.

Donn can help

I am a big fan of Aphex products and Donn Werrbach, the company's chief engineer. When I saw many of its technologies plus some new twists all in one package, I was anxious to try out the 230. I leaned on them pretty hard and was able to get one of the first production units.

The 230 is a combination of a tube mic preamp, Easyrider automatic compressor, Logic Assisted Gate, split band de-esser, Big Bottom, parametric EQ and Aural Exciter. It has an XLR input and five outputs, all of which are active — +4 dBu analog output on XLR; -10 dBV analog output on TRS; digital AES on XLR; S/PDIF on RCA and optical on TOSLINK. It also has an insert I/O on TRS for additional processing and word clock I/O on BNCs.

There is a 1/4-inch TS connector for the cough switch soft mute. The power supply utilizes a switch mode that will work from 80 to 280 VAC at just about any frequency. All of this in a single space 19-inch rack mounted unit.

I was immediately impressed with how open, warm and transparent the unit sounded. The tube mic preamp uses the Aphex-patented Reflected Plate Amplifier technology. With excellent headroom and audio fidelity, it exceeds the performance of most mic preamps found in mic processors or mixing consoles, as well as most of the standalone mic preamps available in the broadcast market.

One of the biggest problems I have found with other mic processors is the clip level of the mic preamps most processors utilize.

Even without further processing, voices appear cleaner and bigger with this mic pre. The phase rotator is properly located in the mic preamp stage. If a particular voice has lots of asymmetry, the phase rotator can be engaged from the front panel, and disengaged if the voice or other source does not have asymmetry.

I often have had to disengage this type of circuit in final processors as it can result in unpleasant artifacts with music and other symmetrical audio sources. In my opinion, the proper location of a phase rotator is in the mic channel and not all voices need to utilize it.

The Easyrider compressor controls levels without pumping, breathing or dulling. It does not choke or pinch off the leading edges of the signal. The release time can be slower for a more open sound or can be sped up for a fatter, more "in your face" sound. The threshold of the compressor is fixed so the way to increase the amount of compression is increase the input gain into the preamp. Once the 230 is properly set up, it is almost impossible to clip or overload itself or any following audio stages.

The Logic Assisted Gate works so well that it seems it is not on —until you realize the normal background noise of the studio is essentially gone. And because it is so effective, the mic can be worked from farther away, thus making it easier for the voice talent to work the mic.

Michael's voice is not very sibilant, so the de-esser is not an important feature for him. Using the 230 on another voice that has sibilance, I found it to be effective in taking the edge off the ess's.

There is a separate section on the front panel for the Big Bottom, Aural Exciter and parametric EQ. The Big Bottom adds greater resonance, deeper lows and bass presence without adding muddiness. The Aural Exciter adds clarity, depth and mid- and high-frequency presence. I use the EQ and Aural Exciter on Michael's voice to add some mid and low bass fullness.

The 230 processes the audio so that downstream limiters are not forced to work hard. I have used other mic processors that can have lots of DC offset, creating pops and clicks on air. I have not heard this at all from the 230.

Consistent presence

Altogether, the unit gives Michael that big radio voice he has been searching for without changing his vocal character. And, most important for him, he can concentrate on what he is saying rather than worrying about how he sounds. Michael now has a consistent, big presence on the air.

Before I had the 230 I had to run unbalanced audio lines in and out of the insert point of the console to do a cough switch, in order not to interrupt the phantom power of the headset mic. The cough switch on the 230 is a simple contact closure to ground and works well without adding noise to the audio.

Because the 230 has multiple simultaneous analog and digital outputs, it is suited for applications such as remotes where the ISDN codec could be fed digitally, directly from the mic preamp. It also can be utilized directly into an off-air telephone-recording device with no extra hardware; or direct into a digital audio workstation. While I have not yet used the digital outputs, it is good to know that I would be able to connect to any system without any additional interfaces.

The 230 incorporates the features of five or six standalone audio devices that would cost many times the price if you were to purchase them separately — and they still would not work as well as this feature-packed, easy-to-interface mic processor.

The Aphex 230 retails for $799.

For more information, contact Aphex in California at (818) 767-2929 or visit www.aphex.com.

TECH UPDATES

500PH Pro Aims at Voices

AIRCorp says its Model 500PH Pro Announcer microphone processor is for the broadcast studio or remote. Its input levels can be remotely controlled to correct levels between announcers. When levels are correct, the EQ can be established with no further adjustment.

The company says the Pro Announcer's compressor/expander combination reduces room and equipment noise, while providing level control and increased loudness for the announcer.

Features include front-panel selection of input level in four ranges, +4 dB to -50 dB; three-section variable boost and cut equalization for setup without increasing low-frequency room rumble and system hiss; symmetry correction (phase rotators), which AIRCorp says offers more talk power with less compression; and Dynamic Control Coupling, to eliminate the "hollow room" flanging effect.

Additional highlights are simultaneous mic-level output and line-level output to feed console and telephone hybrid; and the "popless" insert point for an effects device — this may be operated while the announcer speaks and is remotely controllable.

The company says the de-esser suppresses excessive sibilance without being noticeable on normal material. Servo-balanced outputs eliminate ground loops without being on air. The DB-25 connector extends logic functions for user convenience. An internal 48 V phantom supply is provided.

The 500PH Pro Announcer retails for $799.

For more information, contact AIRCorp in Texas at (972) 304-0455 or visit www.aircorp.biz

SRS CS Technology Encodes 6.1 Channels

SRS Labs' Circle Surround technology is an encode/decode system that allows audio engineers to encode up to 6.1 channels of discrete audio for distribution or broadcast over existing two-channel carriers such as analog and digital radio, streaming media and CDs and VHS tapes. CS was among the companies cited by Radio World's "Cool Stuff" Award panel this year for advocacy of radio surround sound.

CS encoding is backward compatible with playback systems, including mono and stereo formats. Radio listeners who have a CS or other matrix surround decoder installed will hear 5.1 surround sound, and those listening over two-speaker stereo systems will hear the broadcast in enhanced stereo.

For more information, contact SRS Labs in California at (800) 243-2733 or visit www.srslabs.com.

Coming Up in Buyer's Guide

July 6: Consoles, Mixers and Routers
August 3: Codecs & Telco

Wheatstone Vorsis AP3 Suited for HD Radio

Wheatstone says it is returning to its signal processing roots with the Vorsis AP3 single-rack-space digital signal processor.

The AP3 offers analog, digital inputs and outputs; a four-band parametric EQ; a three-band compressor; and tunable filters, in addition to overall automatic gain control, limiting and expansion. Settings can be stored and replayed as password-protected presets. The front panel includes LED ladders for input, output and gain reduction meters. Remote monitoring and operational control is possible using Ethernet-enabled GUI software.

The Quick Save feature stores system settings. The Compare function allows the user to replay recently saved settings.

Vorsis AP3 is suitable for HD Radio. Additional highlights include signal symmetry control, programmable de-esser; phantom power (with protection); and the ability to operate as stereo or two separate mono mic/line channels.

The Vorsis AP3 retails for $2,999.

For more information, contact Wheatstone in North Carolina at (252) 638-7000 or visit www.wheatstone.com.

USER REPORT

Orban Has aacPlus 'Missing Link'

Webcaster BoomerRadio Uses the Encoder to Stream To Standard Servers, HTTP and Quicktime Players

by Gary Blau
Chief Technology Officer
Integrity Media Group Inc.

MIAMI Integrity Media webcaster BoomerRadio.com — Webcast Metrics rated #5, March 2005 — has happily participated in beta testing and ongoing development of Orban's 1010 Opticodec-PC aacPlus streaming encoder.

The driving force behind the Opticodec-PC concept is Orban's Vice President of Product Development Greg Ogonowski, whose vision is to legitimize high-quality streaming audio to the mass market, particularly over the new generations of 3GPP wireless devices beginning to appear.

As Orban's first software-only product, the Opticodec-PC 1010 is quite a departure for a longtime hardware manufacturer like Orban, as well as being the first aacPlus streaming encoder application on the market. This is significant because aacPlus is the long-awaited missing link that can finally make high quality audio streaming to the masses viable.

Stream on

aacPlus is the current state of the art in high efficiency audio codecs, and delivers stunning quality at low bit rates. A product of Coding Technologies, it is part of the MPEG 4 standard, and has been chosen as the high-quality audio standard for 3GPP wireless devices.

There are three versions of Opticodec-PC: the full PE, and the more restricted SE and LE versions. Although Opticodec-PC is intended for live stream encoding only, a new sister product, the Opticodec-FE is now available for direct file encoding.

The PE is sold only in conjunction with the 1100 Optimod-PC audio processor/sound card. It offers all features and allows unlimited multiple instances (up to the capability of the host PC) to be open and running simultaneously at bit rates between 8 and 320 kbps. It also supports 3GPP RTSP/RTP for the new generation of wireless devices Orban demonstrated at NAB2005.

Our experience is that the combo of the 1100 and Opticodec-PC is potent in delivering a consistent, quality product to the listener of these mobile devices in our noisy world.

The new mid-priced $199 SE is compatible with all quality sound cards, as is the LE. However, it is restricted to a maximum of four streams of all bit rates between 8 and 320 kbps.

The $99 LE is restricted to a single stream at bit rates between 8 and 32 kbps.

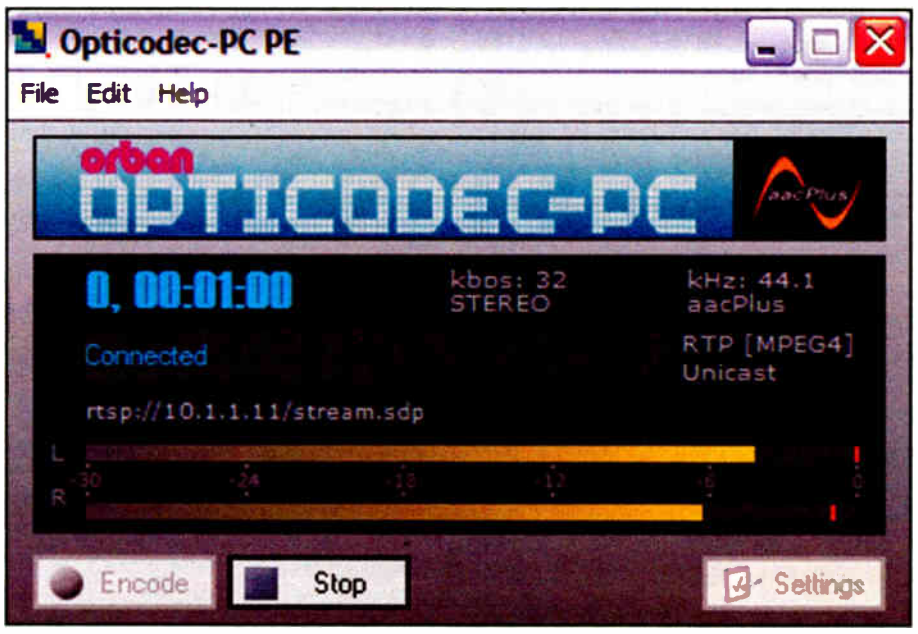
Each installation is security keyed to an individual PC to prevent piracy; there is no hardware dongle.

Opticodec-PC can stream to standard 3GP MPEG-4 RTSP/RTP servers like Darwin and Quicktime, as well as via HTTP with common Shoutcast or Icecast2.servers. It also can stream directly to a Real or Quicktime player using its built in RTSP/RTP server. Other server support is under development.

Media players that support aacPlus include Winamp 5.08 or higher, and Real, as well as any Pocket PC or Smartphone devices with the open source Core Pocket Media Player. More players are scheduled to be available soon, including embedded web page solutions.

Opticodec-PC also encodes standard AAC, which is supported by the players above, as well as Quicktime and iTunes.

The GUI is simple and intuitive, with pull-down menus for making codec, bit rate, sample rate and server-type selections. Port numbers, user names, passwords and other variables are entered into typical text fields. Level metering is excellent, and the display screen during encoding presents all information pertinent to the session, including metadata.



The author says the Opticodec-PC's display screen presents all pertinent session information during encoding, including metadata.

As the company's first software-only product, the Opticodec-PC 1010 is quite a departure for a longtime hardware manufacturer like Orban.

Robust

Particular design attention was given to maintaining a robust connection to the server, and automatically reconnecting if severe packet loss should occur. This is critical for users who must connect via the Internet where routes often change without notice. Our experience over several months has been that it does indeed hold on like a badger to keep the connection going, even over multi-hop coast-to-coast routes.

Another important feature all three versions support is in-stream metadata for title and artist or other displays. Embedding this title data within the audio bit stream, rather than a separate FTP push or similar method, not only keeps the title info in tight synch with the audio, but also keeps data transfer to a minimum.

User selectable configurations for acquiring this metadata from several popular automation playout systems include choices of serial port inputs, Ethernet/TCP, HTTP for OtsDJ and Winamp Title format. Orban is willing to support the metadata output requirements of any playout system in future updates. There remains standards work to be done in this area, particularly for Ethernet, and Orban is closely involved.

Delivering high-quality audio at low bit rates is going to be our future as broadcasters. Cell phones and other wireless devices will become the "radios" of the new century. With aacPlus poised to be the cornerstone, we all should become familiar with it. Now that Opticodec-PC is here, we finally have a professional platform for delivery that is tailored to our needs, stable, easy to use and delivers impressive sounding results.

There are many sample streams on line — including a few from BoomerRadio — where you can hear the future for yourself at Coding Technologies' Tuner2 aacPlus Web site. Visit *www.tuner2.com.*

For more information, including pricing, contact Orban at (480) 403-8300 or visit www.orban.com.

TECH UPDATE

Eventide DSP4000B+ Has Effects Module Software

Eventide says the DSP4000B+ broadcast/production Ultra-Harmonizer is based on its DSP7000 professional audio effects processor, but has its own set of software programs for radio, TV and post-production by sound designer Jay Rose. The company describes the unit as an audio effects department suitable for a "morning zoo" operation, offering sounds such as an airplane captain from the cockpit; employee at a fast-food drive-through window; computer voice; or cellular phone.

The effects are set up and ready for recall. A six-line graphic LCD screen lets the user choose from the effects, which are organized into groups like "Science Fiction Voices," "Commerce and Machines" and "Backgrounds." The effects feature user-adjustable parameters, and the LCD screen explains how the parameters affect the sound.

In addition to saving presets created in the DSP4000B+'s internal memory, the user can store them on a removable PCMCIA memory card for added capacity and protection from use by others.

The DSP4000B+ comes with analog and digital inputs and outputs. The digital I/O provides 24-bit AES/EBU and S/PDIF for a digital signal path, along with simultaneous XLR-type analog inputs and outputs. Audio quality is enabled via 24-bit A/D and D/A converters. Audio bandwidth at the analog connectors is up to 22 kHz, with 44 kHz also available for most presets.

Remote control interfaces include MIDI in/out/through jacks and a serial port. The latter also can be used with the VSIG file program editor, or connected to a PC for available operating system upgrades over the Internet.

The DSP4000B+ includes effects module software, and also features Timesqueeze stereo time compression and expansion. Its Algorithm Construction Kit patch editor function lets users and third-party developers build new effects algorithms by linking modular effects "building blocks," which are presented on the LCD screen.

The DSP4000B+ retails for $3,995.

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

Our client list is secret.

Every day, more than 750 broadcasters rely on TWOx12 twelve-line phone systems to insure their critical talk radio programming. Two advanced digital hybrids deliver the best caller audio possible, thanks to our famous Digital Dynamic EQ. Status Symbols visual call management (a Telos exclusive) helps producers screen calls easily, without guesswork.

Planning a big, consolidated build-out? Consolidate your phones as well with Series 2101, the world's only multi-studio talkshow system. Series 2101 lets you expand your facility's call capacity when needed — allows control of up to 96 callers and 32 studios. Not only that, Series 2101 uses high-quality digital phone lines to deliver caller audio that's next-room clear (and help reduce Telco wiring, too).

At Telos, we're all about choices. Take our Desktop Director (right); it works with TWOx12 and Series 2101 systems, can be expanded to control up to four hybrids or up to 24 lines when used with Series 2101, and has a built-in handset, speakerphone and headset jack. Or, choose the new Call Controller (left) and "bring your own phone" for screening... even works with wireless phonesets.

ONE-x-Six is perhaps the world's most popular auto-nulling multi-line phone system. Also the world's most affordable! Like all Telos talkshow systems, ONE-x-Six integrates with our optional Assistant Producer software to allow fast, intuitive remote screening via LAN or WAN connections.

Naturally, we are obligated to protect the identity of clients who use Telos talkshow systems. We would no doubt get a Stern warning from any user whose name we revealed.

But rather than Rush to superlatives, let us just be Frank'n get to the point. When you're ready for the world's best talkshow system, the answer is Clear; it's as easy as ABC. Whether your station is located in Salem or Susquehanna, Telos has a broadcast phone system just right for you. Why, the possibilities approach Infinity.

In our eyes, reliability is King. After all, if there's a failure, you can Kiss your ratings goodbye. You need your phone system to be a Citadel of Mega reliability. Not to Mix metaphors, but you need something Hot, Lite on the pocketbook, and full of Power. Really, it's Radio One-oh-one.

And unlike gear with tech as dated as an old Bonneville, Telos talkshow systems undergo constant improvement. With us, it's a never-ending Saga of advancement.

Telos. Striving for Greater Media through advanced technology.

(And don't worry... we'll keep your secret.)

Telos

AUDIO | NETWORKS

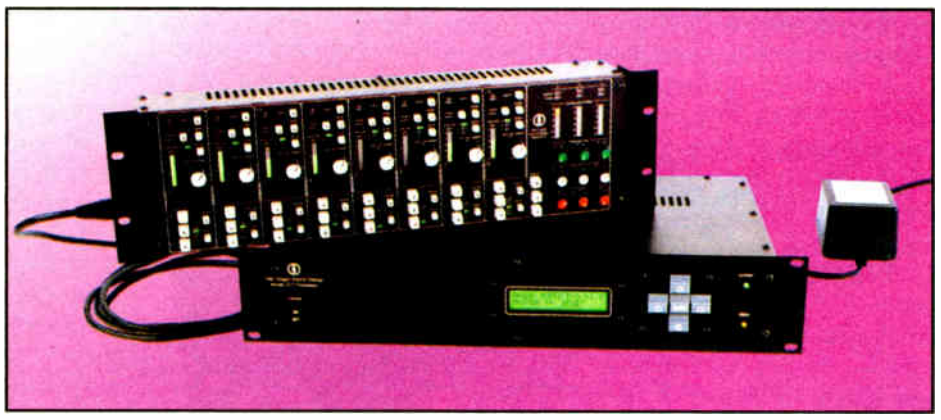
www.Telos-Systems.com

TECH UPDATES

Dan Dugan D-3 Adds AES Digital I/O

The D-3 automatic mixing controller from **Dan Dugan Sound Design** is the same as the company's D-2, but has AES digital audio inputs and outputs for use with digital mixing boards. It uses the same single-cable remote control panel that can be used on the desktop or on a meter bridge.

The automatic mixing controllers are suitable for news panels, talk and game shows and theater. They assist sound mixers in handling multiple mics by quickly fading up the mic where someone is talking and fading the others down. The company says its



systems maintain constant room ambience and do not chop talkers; and reduce studio noise, comb filtering and PA feedback.

The D-3 has eight channels of digital audio input and output. The inputs have sample rate conversion. The unit's internal 48 kHz sampling rate can be synchronized to its own clock, any of the four input pairs, a DARS (AES black) input or word clock input.

Additionally, the D-3 incorporates three of the company's technologies. The Dugan Speech System manages live mics in unscripted talking situations. The Dugan Music System offers downward expansion to help reduce feedback and noise pickup in live music performances. Thresholds are adjusted automatically through continuous monitoring of ambient noise levels. Dugan Limiting provides continuous, stepless NOM master gain control to prevent feedback and ambient noise buildup, when used with either the Music System or manual mic switching.

The D-3 retails for $12,200.

For more information, contact Dan Dugan Sound Design in San Francisco at (415) 821-9776 or visit www.dandugan.com.

AirTools 6200 Uses HomerLink for Cat-5

Symetrix is shipping its AirTools 6200 digital voice processor, intended for on-air and production processing of microphones and line-level signals in radio and television.

The 6200 is programmable and controllable in real time from its front, or from the included Windows software application called 6200 Designer. Communication is handled over USB, Ethernet or serial, RS-232 or RS-485. The unit is addressable over IP and can be configured for a facility's existing LAN for network control.

The unit has dual AES/EBU outputs along with the balanced analog rear-panel outputs. Microphones can be independently assigned to either or both digital outputs, which the company says eliminates the need for splitters when connecting to digital consoles.

Digital input is accomplished using HomerLink, a protocol for transferring AES audio over Cat-5. The rear-panel HomerLink port also makes the 6200 compatible with the Illiad, part of the AirTools Studio Matrix line of audio DSP.

Onboard processing modules include symmetry; high-pass filter; de-esser; four-band parametric EQ; and a shelving filter that can be set to either high or low shelf. The dynamics module includes a downward expander for gating and compression with AGC mode, and a low-pass filter.

The order of these modules can be changed. Parameter settings can be saved to 256 program locations. These locations are equally allocated between mono and stereo programs.

The 6200 Designer application supports an Event Manager, which allows the unit to maintain its own daypart schedule independent of the station's automation package. Time reference is synchronized to TC89, TC90, Network Time Polling or the 6200's internal real-time clock. Programs can be set to change on a daily or weekly basis.

The 6200 retails for $1,749.

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

RDL's FP-PEQ3 Has Three Independent Filters

The FP-PEQ3 three-band parametric equalizer from **Radio Design Labs** is part of the company's Flat-Pak line. It is a single-channel module featuring three identical independent filters, each with separately adjustable Frequency, Boost/Cut amplitude and Bandwidth (BW) parameters. RDL says it is suitable for applications where acoustic notch filtering is needed.

The Frequency filter has three overlapping switch-selectable ranges: 15 Hz-200 Hz, 150 Hz-2 kHz and 1.5 kHz-20 kHz. The Boost/Cut filter provides a 15 dB range, switch-selectable to produce either cut or boost. Setting a given filter's Boost/Cut to minimum removes that filter from the circuit. The BW allows adjustment from 0.04 octave to 1.5 octave.

Balanced and unbalanced inputs and outputs are provided. Unbalanced connections are intended for -10 dBV signals on phono jacks. Unbalanced -10 dBV signals are internally converted to +4 dBu and back. Balanced +4 dBu input and output signals connect through a plug-in terminal block. The input gain control allows the installer to set the module gain between Off and 3 dB greater than the input signal.

The module is normally adjusted for unity gain, but if the Boost mode is used, it is possible to generate excessive signal levels. Overload is avoided by setting the gain using the dual LED meter provided on the FP-PEQ3. The dual-LED output meter follows standard VU ballistics. A green LED illuminates at 15 dB below +4 dBu output.

The unit's Flat-Pak case allows it to be screwed or bolted to cabinets or shelves. Optionally available rack-mounting accessories permit single or multiple Flat-Pak module mounting. Flat-Pak modules are supplied with a power interconnect cable for daisy-chaining multiple modules from a single power supply.

For more information, including pricing, contact Radio Design Labs in Arizona at (928) 443-9391 or visit www.rdlnet.com.

BW DSPeXtra Features Ariane Leveler

U.K.-based **BW Broadcast** said its DSPeXtra expands upon the DSP-X, which offers TCP/IP and serial control, factory and user-defined presets and a front-panel metering and control system.

DSPeXtra incorporates a six-band limiter with distortion control; multiband AGC adopted from TransLanTech Sound's Ariane digital audio leveler; and split processing architecture that makes it suitable for simultaneous FM and digital radio services like IBOC and Internet streaming.

The DSPeXtra is the second result of a collaboration between BW Broadcast and TransLanTech Sound. The companies recently created a technical and marketing support base for BW's American customers at TLT's New York headquarters, and now share technical resources. TLT's Ariane Sequel digital audio leveler debuted in April at NAB.

For more information, including pricing, contact Broadcasters General Store in Florida at (352) 368-5092 or visit www.bgs.cc.

Neural UltraLink Enables Codec Efficiency

Neural Audio says its UltraLink audio conditioning system improves the quality and efficiency of compressed digital audio by using advanced algorithms. These are said to augment the spatial redundancy functions of modern codecs, and remove conditions within music or speech content that cause unwanted artifacts.

The company says its image packing and irrelevancy reduction technologies enable the codec to operate at high efficiency and provide improved audio quality at the receiver. UltraLink also enables bit rate savings in the digital audio stream of up to 30 percent, which frees bandwidth for services such as data transmission and multicasting.

UltraLink's technology allows FM broadcasters to offer high-quality secondary and tertiary channel audio beyond the main HD Radio channel. It works across multiple digital radio standards, including HD Radio, DRM and DAB; and also is suitable for preparing audio for transmission over Internet streams, satellite transmissions and traditional ISDN platforms, where aggressive data reductions also are common.

Additionally, Neural and Harris Broadcast Communications Division say the NeuStar 5225 Mix-Edit Transcoder for surround sound has been expanded into two components: NeuStar 5225 DownMix and 5225 UpMix.

Content produced through the 5225 DownMixer and UpMixer are processor- and exciter-agnostic and backward/forward compatible. They enable the broadcaster to mix, edit, store and broadcast 5.1 content from a stereo infrastructure.

Neural says its "watermark" technology solves analog, digital, lossy, linear, stereo and 5.1 interoperability issues within stereo broadcast or Netcast environments.

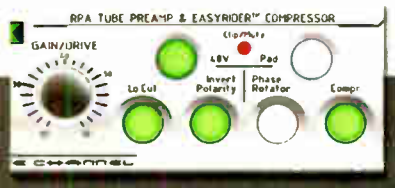
For more information, including pricing, contact Neural Audio in Washington state at (425) 814-3200 or visit www.neuralaudio.com.

Looking to touch your listeners?

APHEX MODEL 230 MASTER VOICE CHANNEL

Introducing the Aphex Model 230 Master Voice Channel, the most powerful processor ever designed specifically for voice.

Voices will be bigger, more present, more intimate, more intelligible and more consistent. Its comprehensive complement of exclusive proprietary features brings these benefits to any voice – from a thundering bombast to a whispering waif – without changing its essential quality.



Every element of the Model 230 is superior to any other voice processor's similar function...

- The RPA™ tube preamplifier provides warmth, image and detail.
- The Easyrider® Compressor controls output levels without pumping or breathing.
- The Logic-Assisted™ Gate won't false trigger or cut off words.
- The Split Band De-esser effectively cuts sibilance without dulling.
- The Big Bottom® and Aural Exciter® add resonance, depth, presence and clarity.
- The parametric EQ takes care of any frequency anomalies with surgical precision.
- Post-processing insert point, -10dBV and +4dBu analog outputs, 24/ 96 digital outputs on AES3, S/PDIF and Optical, word clock I/O, and a cough switch with soft mute allow the Model 230 to be easily interfaced into any system.

So if you *are* looking to touch your listeners, you should be looking at the Aphex Model 230.

www.aphex.com

Genuine APHEX

USER REPORT

WSHR Tops Air Chain With Ariane

by Mark Laura
General Manager/
Chief Engineer
WSHR(FM)

LAKE RONKONKOMA, N.Y. The poor AGC. Most all-in-one audio processors brag about clean clippers, their five or six bands of limiting and their ability to digitally "look ahead" at the waveform and process the audio in just the right way. But what about the AGC? The part of the airchain that "greets the audio at the door" and often compensates for sloppy console operation goes overlooked.

WSHR(FM) is owned by the Sachem Public School District and is located at the North High School. When I started in 2000, the radio station didn't have much in the way of a respectable airchain. Most of the processing equipment was at least 25 years old. The former airchain had a pair of Marti compressor/limiters, and a simple clipper/stereo generator that needed repair. Needless to say, it wasn't up to snuff.

While the goal was not to be the loudest on the dial with our jazz format, we were looking to really clean up what was there. At the time, WSHR played a mix of older jazz with some contemporary offerings, as well as some student programming. As an educational radio station, we had a budget to work with. So a modern, name-brand FM processor was purchased.

It did a good job. We were louder and more consistent than the older airchain. We enjoyed most of the openness you would want from a station with a high TSL.

I was satisfied until I had a demo of the TransLanTech Ariane, and put it in front of the processor.

One of the downfalls of placing your all-in-one box at the transmitter is finding a good AGC to protect the link. In our case, we use fiber to get the audio from the studio to the transmitter, which is located on the other side of the campus. Before the Ariane, I had used a simple Yamaha compressor/limiter to tap down the audio should levels get out of control.

What I was hoping for with the Ariane was something that would transparently process audio, but not cause listener fatigue. I needed to have clean sounding audio with total level control — all without destroying the dynamic range of sound. What I heard was unique, different and a great way to preprocess audio.

Author Mark Laura tweaks the Ariane.

The beauty of stereo jazz recordings is to hear every nuance in the stereo soundstage. While our recently purchased processor had excellent separation stock, the added L+R/L-R matrix processing of the Ariane was the first thing that made me take notice. We not only had separation; we now had depth to the audio, without mono compatibility problems, and without destroying the dynamic integrity of the program audio. On that alone, the unit had merit, but there was more to discover.

The controls out front are basic. The IDR (Instantaneous Dynamic Range) controls help keep the window of processing "in the zone," and allow for more dynamics to pass through. Here is where you have the ability to make the unit more aggressive or very passive.

Even at the most aggressive settings, the Ariane did not exhibit any unnatural artifacts — quite a contrast to past standalone AGCs that claimed they are "inaudible." Other controls on the front include basic gate control, as well as EQ controls and BNC outputs to look at the unit's L+R and L-R performance on a scope.

If you lift the hood, you'll find internal tweaks for crossovers and input sensitivity. While we did play with these controls, it should be noted that the unit arrives with the factory-recommended settings in place. Unless you really want to create something different, it's best to ignore these settings.

After using the Ariane for a week or so, I noticed its rewards while looking at the air processor. Our listeners called to compliment about the great sound our station now had. The Ariane had such a good grasp on the audio, in both level and spectrum control, that sections in the upstream processor were now operating in their sweet spot more often, allowing it to process with even fewer artifacts.

I found that I could even back off that processor and really open up the audio without sacrificing much of any loudness. It was at that point the Ariane became a "must have."

It's now been two years and the Ariane has performed consistently well. While WSHR is still playing jazz, we have since introduced other programs that continue to challenge our audio chain. From jazz to oldies to rock and CHR, everything is thrown at the Ariane. And it does exactly what it's supposed to. Inaudible and accurate level control and tasteful stereo enhancement help to create our winning strategy.

Even with a recent upgrade to the on-air processor's software last fall, the Ariane, at the beginning of the air chain, is the cherry on top.

Other bennies

When considering a device for level protection, the Ariane should be at the top of your list. However, it must be used as more than just a simple AGC. It has the ability to add a unique signature to your audio and create a sound that average off-the-shelf AGCs can't achieve.

For stereo, that means adding extra depth to your soundstage. For mono/talk formats, I've heard it work well balancing the audio from many different sources, including in-studio voice, telephone, POTS/ISDN audio and sporting events with crowd noise.

WSHR is happy with the Ariane. It is well built and engineered, highly recommended for running virtually any format.

The Ariane retails for $3,299.

For more information, contact TransLanTech Sound in New York at (212) 222-0330 or visit www.translantech.com.

TECH UPDATE

Ariane Sequel Has Optional Stereo Matrix

TransLanTech says its Ariane Sequel digital audio leveler follows in the footsteps of its analog sibling, Ariane, in offering gentle crossovers, relay bypass and decibel-accurate gain metering.

Added features for the Sequel include a

fully digital audio path; savable user presets; peak and RMS input and output metering; and output peak protection limiting. Stereo Matrix is now an optional mode, along with Stereo and Independent Dual Mono.

Other highlights include TCP/IP and RS-232 remote control; adjustable sample rate; and headphone output.

The company recommends the Ariane Sequel as a pre-processor for radio program audio for controlled, open on-air sound. It retails for $2,999.

For more information, contact TransLanTech in New York at (212) 222-0330 or visit www.translantech.com.

Audemat-Aztec Offers Multiplex Signal Generators

Audemat-Aztec says its FMX410 Digiplexer is a 5-in-1 multiplex signal generator that includes functions such as a sound processor, stereo encoder and RDS encoder in a 19-inch rack. It enables internal or external synchronization of subcarriers using DSP technology. Also included are DARC encoder and multiplex clipper functions.

Additional highlights include analog and AES/EBU audio inputs, an RS232 serial port, AGC and audio processing and ASCII and UECP protocols.

The company's FMX480 Digiplexer includes the same functions, and may be controlled through its 10BaseT Ethernet port. It also has an embedded Web server. The following network protocols are supported: TCP/IP, Telnet, FTP, HTTP, SNMP, SMTP and MIB integration.

The latest version of the FMX480 integrates an MPX (modulation) power limiter to enable deviation level and MPX conformity. The scrolling PS allows the user to scroll dynamic messages, such as song titles or artist information, and mix these messages with the static call letters. Then, listeners using a basic RDS car receiver without RadioText will be able to read the information. The scrolling is carried by word.

RadioText refers to text transmissions coded in accordance with annex E, primarily addressed to consumer home receivers, which would be equipped with suitable display facilities.

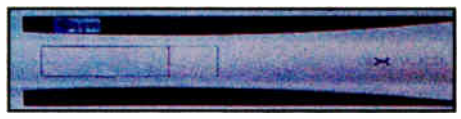
Additionally, an embedded scheduler displays messages based on time and date. The company says this is a useful feature when broadcasting talk shows or news, as the program director can access the embedded scheduler via a web browser and enter the name of guests attending the talk show. Both features will be applied to the PS scrolling and RadioText.

For more information, including pricing, contact Audemat-Aztec in Miami at (305) 249-3110 or visit www.audemat-aztec.com.

Digigram XIP882 Blends IP, Processing

Digigram says its XIP882 combines the functions of four traditional product categories: IP streaming client/servers; audio processors; routers; and codecs.

The product integrates radio automation and IP audio distribution; it uses eXaudi IP streaming, processing and routing technology, which the company says enables integration of automation applications and audio transport over IP networks within a scalable, manageable and integrated system, to streamline the broadcast chain. Digigram calls it an enabling technology device intended to be integrated into systems developed by third-party companies such as pro audio manufacturers, software vendors or



systems integrators.

The XIP882 has eight audio inputs and eight audio outputs in both analog and digital formats. An embedded matrix provides routing capabilities from any input to any output, including physical, file or network IP stream. XIP882 also performs audio processing functions inherited from Digigram's PCX sound cards, such as mixing, time stretching or equalization, which can be dynamically inserted at any point of the signal chain.

Digigram described the underlying network-centric approach of radio infrastructure in a white paper, "Digitalization of Radio Broadcasting — The Next Step," available for download at its Web site.

"eXaudi devices like the XIP882...enable broadcasters and their suppliers to unify their 'digital islands' from the studio up to the transmitter sites, such as radio automation, studio transmitter links, logging, monitoring, content sharing or program localization," said Digigram's product manager for networked audio.

For more information, including pricing, contact Digigram in Virginia at (703) 875-9100 or visit www.digigram.com.

BROADCAST Equipment Exchange

"Broadcast Equipment Exchange" accepts no responsibility for the condition of the equipment listed or for the specifics of transactions made between buyers and sellers.

ACOUSTICS

Want to Sell

ANTENNAS /TOWERS/CABLES

Want to Sell

Jampro JSCP-5, 5 bay antenna with radomes. On the ground and in good condition, $5000, buyer pays shipping. This is a heavy duty antenna useful to 20kw TPO and tuned to 94.1 Mhz. Lee Schafer, KBXL, 1440 S Weideman Ave, Boise ID 83709. 208-377-3790. email: lee@myfamilyradio.com.

AUDIO PRODUCTION

Want to Sell

APT-X Pro 100 audio cards (5 record-playback and 1 playback-only) from Scott Studios AXS 200 system removed from service end of March 2005. $4000 or BO. Utah Public Radio, 8505 Old Main Hill, Logan UT 84322. 435-760-0952 or dandc74@hotmail.com.

AUTOMATION EQUIPMENT

Want to Sell

Broadcast Electronics AudioVault 8.40 Hot AC Library on hard drive, removed from service 9/1/05, $4000/BO. Jerry Evans, KPTL, 1960 Idaho St, Carson City NV 89411. 775-884-8000.

Enco DADpro32 v 4.2m automation system, upgraded in '04. On-air & production unit, removed from service 5/1/05, $3500/BO. Jerry Evans, KPTL, 1960 Idaho St, Carson City NV 89411. 775-884-8000.

Want to Buy

Arrakis Digilinks II & III, especially hard drives. Will take working & non-working digilinks as long as parts are still in good condition. Need mostly III's but will take II's. Lane Goodwin, KWYN, 2758 Hwy 64, POB 789, Wanne AR 72396. 870-238-8141.

COMPLETE FACILITIES

CONSOLES

Want to Buy

Ampex AM-10 mixer in operating condition. Bill Cook, 719-687-6357.

LIMITERS/AUDIO PROCESSING

Want to Sell

Orban 8100A Optimod in excellent condition w/manuals, $1500. Ken Lane, Rolling Plains Bdctg, 1102 North Ave G, Haskell TX 79521. 940-864-2597.

Want to Buy

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's or any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

MICROPHONES

Want to Buy

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

MISCELLANEOUS

Want to Sell

RECORDERS

Want to Sell

Tascam 32, 2 track r-r, excellent condition with manual, $500 +shpg/insurance. Carol Makin, WLIH, POB 97, Wellsboro PA 16901. 570-724-4272 or email: wlih107@quik.com.

REMOTE & MICROWAVE

Want to Sell

Telos Zephyr digital network transceiver, remote panel; ADLRAN (DSU 56/64), 4 years old, like brand new, just used a few months. Radio Payam-E-Afghan, 20944 Sherman Way, Ste 207, Canoga Park CA 91303. 818-253-7295.

STATIONS

Want to Sell

1,000 watt AM station in North Central, NY state. Harris transmitter along with 12.2 acres of property included. Has CP to raise tower height and Main Studio Waiver. Please visit www.bbnradio.org/sale for more information as well as information on five satellators for sale in the Midwest. Contact Mike Raley at mraley@bbnradio.org or call (704) 523-5555.

Want to Buy

AM, FM, CPs, stations broken or not. Will consider all reasonable prices. Looking all over for a small market station with potential. Call Phil, 760-344-5757 or 760-351-6405.

STUDIO EQUIPMENT

Want to Sell

COMPLETE STUDIO EQUIPMENT PACKAGE FOR SALE. From auto-mation to EAS. Like new, only one year old. Details at www.jock2.com.

TAPES/CARTS /REELS/CD's

Want to Buy

Large or small collections of **16" transcriptions or 12" transcriptions, not commercial LPs. Bill Cook, 719-687-6357.**

Looking for San Francisco Bay area radio recordings from the 20s through the 80s. Such as disc jockey shows, top 40 radio shows, talk shows, newscasts, live band remotes, sports recordings, country music radio shows, religious shows, etc., with, if possible, local station ID breaks. Stations like KSFO, KTAB, KFRC, KPO, KNBC, KNBR, KCBS, KGO, KROW, KSAY, KOW, KLX, KLS, KWBR, KDIA, KEWE, KNEW, KOBY, KTIM, KRE. Write to: Ron Tamm, 140 Linde Lane #127, Mill Valley CA 94941 or call 415-383-6216.

Collector is looking for 10" music tapes from Drake Chenault, TM, Century 21, Peters, etc. Must be announced. Please reply to: zenithfan@aol.com.

TEST EQUIPMENT

Want to Buy

Potomac Instruments FIM meter for AM signal strength measurements, A21 or 41 in good condition, hopefully recently calibrated, name your price. Rich Biby, 540-882-4290.

TRANSMITTERS

Want to Sell

McMARTIN BF-5K, 5kW FM. Factory rebuilt in perfect, like new condition, includes new tubes, tested & tuned on your frequency. Guaranteed, fully adjustable from 0 to 5.5 kW. Goodrich Enterprises Inc, 402-493-1886.

Harris Gates One, A+ condition, tuned to 1400, new in August 1999, $8500. Matt Fulmer, Fulmer Bdctg Inc, POB 193, Spartanburg SC 29304. 864-621-6230.

Nautel Solid State FM 5 transmitters (2), approximately 3 years trouble free operation; McMartin FM 3.5, recently factory reconditioned and used as auxiliary. Misc cable & fittings. No exciters with any transmitters listed. All in storage at Denver. Price negotiable. Bob Zellmer, KSIR, 513 Main St, Ft Morgan CO 80701. 480-471-3533.

Rockwell/Collins 831D-2 FM transmitter, 2.5KW, includes original 310Z-2 exciter with brand new PLL oscillator card. Frequency agile. With spare tube, manuals and proofs, $1995. Ron Kocher, WFBO-LP, 45 Pine Hill Ln, Palm Coast FL 32164. 386-437-4304.

RCA BTF-5E2 FM transmitter, tuned to 98.7 Mhz, with BTF-15A exciter, BTS-1B stereo generator, BTX-1B SCA generator, related parts /manuals. Ron Bartlebaugh, WKSU-FM, Kent State University, POB 5190, Kent OH 44242. 330-672-6677 or bartlebaugh@wksu.org.

Consultants

DISTRIBUTOR DIRECTORY

The following distributors serving the broadcast industry would be glad to help you with any of your requirements.

ACTION-GRAM

EQUIPMENT LISTINGS

Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations *only*. All other end users will be charged. This FREE service does not apply to Employment Help Wanted ads or Stations For Sale ads. These are published on a paid basis only. Send your listings to us by filling out the form below. Please be aware that it takes one month for listings to appear. The listings run for two consecutive issues and must be resubmitted in order to run again. Thank you.

Are you currently a subscriber to Radio World?
❑ Yes ❑ No

Please print and include all information:

Signature _____ Date _____

Contact Name _____
Title _____
Company/Station _____
Address _____
City/State _____
Zip Code _____ — _____
Telephone _____

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Broadcast Equipment Exchange on a **paid** basis. Line ad listings & display advertising are available on a per word or per inch basis.

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
_____
Price: _____

***Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.**

Broadcast Equipment Exchange
PO BOX 1214, Falls Church, VA 22041 • Tel: 773-472-2495 • Fax: 773-472-2496

Radio World

5827 Columbia Pike, 3rd Floor Falls Church, VA 22041
PHONE: 773-472-2495 ▪ FAX: 773-472-2496

Classified Advertising Rates Effective January 1, 2005

	1x	6x	13x	26x
1-9 col inch (per inch)	$110	105	100	95
10-19 col inch (per inch)	$95	85	75	65
Distributor Directory	$135	130	125	120
Professional Card	$105	100	95	90
Station/Studio Services	$200	170	145	124
Classified Line Ad	$2/word			
Blind Box Ad	$15 additional			

Call Tina Tharp, at 773-472-2495, to reserve space in the next issue. Use your credit card to pay, we now accept VISA, MASTERCARD and American Express.

www.rwonline.com

TRANSMITTERS Cont.

TUBES & COMPONENTS

EMPLOYMENT

HELP WANTED

RVR USA LLC has the following engineering opportunity available: **Electronic Engineer**, 4 years experience, speaks English, Spanish and Italian, BS with concentration in broadcasting, willing to travel. Mail resume to: RVR USA LLC, 7782 NW 46th St., Miami FL 33166. No Phone Calls, please.

GENERAL MANAGER needed to lead day-to-day operations of radio station group located on the NJ Shore. Ideal candidate has at least five years GM experience. Cluster experience a must, suburban market experience a plus! Must have strong sales and programming background, and some engineering knowledge. Must demonstrate proven track record. Excellent benefits package provided, including 401(k). If you meet these qualifications, please send your resume and compensation requirements to GM, Press Communications, LLC, 1350 Campus Parkway, Suite 106, Neptune NJ 07753, or e-mail to rosev@GRockRadio.com. EOE

POSITIONS WANTED

ABS graduate willing to continue learning and growing in the broadcasting industry. Outward personality, team player who listens and takes advice well. Will relocate. Brad, 405-601-0165.

Attention Program Directors! Looking to make a great investment? Why not invest in me, Renee Garrett. From rock-n-the country to singing the blues, I'm an ABS grad willing to come to you. Renee, 405-605-8654.

Dependable, organized, professional broadcaster seeking employment. Proficient in newscasting, copywriting, commercial productivity and announcing. Leader and team player. Relocating possibility. Kara Bless, 817-645-6417 or primtime@webtv.net.

Radio/On-air talent looking for work at alternative rock station. Vast knowledge of alternative music, and love for the format as well. Matt, 817-514-8319.

Rookie broadcaster looking for the chance of a lifetime. Capable of writing, copy, announcing and digital production. Willing to relocate. Hotshot (yes, that's my real name), 405-604-0211.

Committed, passionate, creative dependable. For sports, news, or DJ with a new twist and willing to go coast to coast. Kevin Lindell, 214-473-9388 or kclindell@netscape.com.

Creative, quick-witted, conversational broadcaster wants to work for you! On-Air, production, news country or classic rock preferred! Will relocate. Paul Townsend "Big Paul T", 214-317-2103 or scole@wyndham.com.

Friendly, eager to work, ISCET certified, Commercial FCC license with radar, NABER Certified two way radio technician, amateur radio extra, seeks CE, asst CE, FT, PT, contract, AM/FM, Cable, TV. Mitchell Rakoff, 110-64 Queens Blvd, PMB# 494, Forest Hills NY 11375-6347 or mitchellrakoff@yahoo.com. 718-969-5224.

Fun, energetic, dedicated, team-player looking for an opportunity to advance in broadcasting. Self-motivated, good voice, production, creative writing, plus quick study. Call Shaniqua Murphy, 214-522-5866; suave51780@yahoo.com.

Hardworking talented sports fanatic who will stop at nothing to make your station unbeatable. Unable to travel at this time. Shelley Draper, 972-318-5060 or shelbrooks@37.com.

New to the exciting world of radio. Im' an outstanding performer and energetic entertainer. I can do it all, from production to on-air. Jerome, 405-670-2192.

Quick-witted personality plus...and willing to relocate. Sassy and conversational. On-Air, production, news, and top 40 preferred. Ready to work. Nikki Anderson, 214-266-5263 or justjay7480@yahoo.com.

Recent ABS grad looking for the right gig (anything). Creative now and only looking to improve. Willing to relocate. Michael, 405-361-3008.

Recent ABS grad wanting to grow and learn more about broadcasting. Outward personality and team player who listens and takes advice well. Will travel. Brad, 405-619-0165.

Smooth, sultry, delivery, razor sharp production and superior copywriting are what I bring. What do you need? Lisa Ashcraft, 214-265-8108 or smashcraft2u@hotmail.com.

Fresh ABS graduate looking for promotions, production, or on-air position. Great voice, with an extensive knowledge of Rock-n-Roll, both classic and alternative. Will travel. Will, 580-748-1011.

◆READER'S FORUM◆

GUEST COMMENTARY

Government, Radio Receivers Don't Mix

Interference in Market Is Inappropriate; Public Alert Receivers Are Best Option

by Dave Wilson

The author is director, technology and standards, for the Consumer Electronics Association in Arlington, Va.

If John Garziglia really wants IBOC digital radio to be successful ("TV 'Must Carry' Offers Lesson for Radio," April 27), he should be looking at the successful strategy of XM and Sirius, not advocating government intervention in the highly competitive free market of consumer electronics.

Terrestrial radio broadcasters ... should follow the lead of XM and Sirius and participate in the development and marketing of IBOC digital radio receivers — not run to the government and ask it to interfere with the free market.

It is inappropriate for the government to interfere with the radio receiver marketplace. The successful launch of satellite radio has come about because XM and Sirius have been directly involved in the development and marketing of receivers for their respective services. There is no reason that terrestrial radio broadcasters cannot do the same for AM, FM or IBOC digital radio. They certainly can afford it.

Profitable publicly traded radio broadcasting companies made nearly $2 billion over the past year. The profits of privately held companies almost certainly pushed the industry's total profits well above $2 billion.

Terrestrial radio broadcasters should use these profits to invest in their future. They should follow the lead of XM and Sirius and participate in the development and marketing of IBOC digital radio receivers. They should not run to the government and ask it to interfere with the free market.

Emergency alerts

Garziglia's argument that all satellite radio receivers should be required by law to meet certain technical standards for local radio reception is just as valid in reverse.

He points to dissemination of emergency information as a justification for his proposal, yet the only emergency messages the FCC requires local broadcasters to carry are national alerts. To effectively disseminate these national alerts, it would make more sense to require all local radio receivers to include satellite tuners.

The truth is, the free market is working well when it comes to ensuring consumers have a means of receiving local emergency messages quickly and efficiently.

In 2003, CEA published a voluntary technical standard for Public Alert receivers. This standard defines performance criteria for devices that receive emergency alerts via the National Oceanic and Atmospheric Administration's NOAA Weather Radio network. A consumer can program a Public Alert receiver to automatically turn on whenever an alert is received for a particular country, city, etc.

And the alerts broadcast by NOAA are not just about weather. They include civil emergencies, Amber Alerts, biological hazards, chemical hazards, law enforcement announcements and other warnings. One of the terrific advantages of a Public Alert receiver is that it works no matter what the consumer is doing — listening to the radio, watching TV, listening to an MP3 player, browsing the Internet, reading a book, etc. It's always listening for local emergency alerts, ready to be activated the instant one is received.

Local emergency alerts are best provided to the consumer by a Public Alert receiver. Most AM/FM stations, through no fault of their own, are not well equipped to provide local alerts. This is because they cover wide areas; the listeners on one edge of their coverage area will tire of hearing alerts for listeners on the opposite edge and vice versa. This makes many AM/FM stations reluctant to broadcast all of the alerts they receive.

Alerting is best done by a transmission network that is always on and broadcasting all alerts for all locations throughout its service area. Consumers typically will not listen to such a network constantly, but rather tune in for periodic updates, or wait for automatic activations of their receivers when an alert is issued for their specific location. This is simply not compatible with what AM/FM broadcasters aim to do — keep as many listeners as possible tuned in for as long as possible throughout the day. But, it's perfectly compatible with the NOAA Weather Radio network and Public Alert receivers.

Terrestrial broadcasters should follow the lead of XM and Sirius. They should actively support the development and marketing of IBOC digital radio receivers, and they should provide compelling new content that will make consumers want these receivers. That's the way to ensure their continued success.

ADVERTISER INDEX

This listing is provided for the convenience of our readers.
Radio World assumes no liability for inaccuracy.

PAGE	ADVERTISER	WEB SITE URL
47	Aphex Systems	www.aphex.com
49	Arrakis	www.arrakis-systems.com
14	ATI	www.atiaudio.com
3	AudioScience	www.audioscience.com
38	Autogram Corporation	www.autogramcorp.com
9	Axia, A Telos Company	www.axiaaudio.com
20	Belar	www.belar.com
24	Broadcast Depot	www.7bd.com
15	Broadcast Electronics	www.bdcast.com
17	Broadcast Electronics	www.bdcast.com
43	Broadcast Electronics	www.bdcast.com
40	Broadcast Warehouse	www.broacastwarehouse.com
23	BSW	www.bswusa.com
4	Burk Technology	www.burk.com
48	Circuit Werkes	www.circuitwerkes.com
7	Comrex	www.comrex.com
28-29	Comrex	www.comrex.com
1	Continental Electronics	www.contelec.com
38	Cortana	www.cortanacorporation.com
35	D&M Professional	www.d-mpro.com
8	Digigram	www.digigram.com
48	Gorman-Redlich Mfg. Co.	www.gorman-redlich.com
41	Grace Broadcast Sales	www.gracebroadcast.com
21	Harris	www.broadcast.harris.com
38	Henry Engineering	www.henryeng.com
26	Inovonics	www.inovon.com
22	Kintronic Labs	www.kintronic.com
16	Linear Acoustic	www.linearacoustic.com
6	Logitek	www.logitekaudio.com
38	Mager Systems	www.magersystems.com
27	Musicam USA	www.musicamusa.com
19	Nautel	www.nautel.com
13	Omnia, a Telos Company	www.omniaaudio.com
30	Omnirax	www.omnirax.com
10	OMT Technologies	www.omt.net
33	Orban	www.orban.com
5	Radio Systems	www.radiosystems.com
25	RCS	www.iselector.com
31	Sabre Communications	www.sabrecom.com
37	Sierra Automated Systems	www.sasaudio.com
18	Sine Systems	www.sinesystems.com
12	Studio Technologies	www.studio-tech.com
45	Telos Systems	www.telos-systems.com
11	Tieline America	www.tieline.com
56	Vorsis	www.vorsis.com
42	Waves	www.waves.com
2	Wheatstone	www.wheatstone.com
55	Wheatstone	www.wheatstone.com

◆READER'S FORUM◆

Cake Walk

I would like to extend an open "thank you" to Clear Channel and AM stations everywhere that opted to reduce their bandwidth. Let me explain.

For years, I have struggled with the whole "loudness" issue with my PDs and managers competing with many others on the AM band. You see, I am one of those old-school guys who plays by the rules. And the rules say you may *not* exceed 125 percent positive peak modulation on the AM broadcast band. I have fought with stations with which I am entrusted in an effort to keep them legal.

This wonderful twist of fate has even given me an idea.

All the while, I have been taking much grief from station personnel as to why *we* were not as loud as *them*. By "them," they usually mean Clear Channel-owned AMs and others that run 150 percent or more positive peak modulation as a rule.

In fact, one corporate-owned station in my market borrowed me to install some audio processing equipment at its transmitter. I was told to run the positive peaks to 150 percent. I refused. (This was not a paying job, but a favor to their engineer.)

The station then sent one of its staff engineers to the site behind me to make the illegal adjustment, saying it was "company policy." Keeping my stations legal was way more important to me than some silly program director loudness competition.

Okay, fast-forward to today. Most of the AM stations in my markets have reduced their bandwidth — except mine. I refuse to diminish the quality of our AM signals.

But suddenly my stations sound so much louder and fuller than our competition. Without breaking any FCC rules, my stations with full 10 kHz bandwidth sound *louder* and *better* than the stations that used to be slightly louder than us because of their illegal operation. Naturally, this has made the station managers pat me on the back for my "great work" and the "improvements" to the stations, when in reality I have done nothing.

This wonderful twist of fate has even given me an idea. The stations in my market of which I am not the chief have reduced their bandwidth, so I am going to go one step further. I am going to install the "green" high-frequency emphasis curve filters in my 9100s, boost the high end in my 9200 processors and take advantage of the wide gap in audio quality my fellow stations have created.

My life is cake now. I can run legally and satisfy the program director's tastes for ultimate loudness over others. And I don't even have to bury our audio deep into the clippers to do it. Feel free to "save" bandwidth and I will graciously use it up. The winner will be the listeners and our advertisers.

Paul Shinn
Stockton, Calif.

Correction

A bio line at the end of "Distorting Group Delay Distortion" (April 13) listed Bob Orban as president of Orban/CRL. He is the vice president/chief engineer. Jay Brentlinger is president.

Overdue Recognition

I felt compelled to write after reading your recent editorial, "A Thank You to Public Radio Engineers" (Feb. 2). This is one of the very rare times in my 20-plus years of public radio engineering that I have witnessed an acknowledgement of our industry contributions.

To me, public radio has always been consumed with achieving the highest level of broadcast audio quality. I value the education provided by Skip Pizzi, Neil Muncy, Jan Andrews, Mike Starling, Jim McEachern and many others employed over the years at the "mother ship" in DC. This group of talent has kept the torch held high on the journey towards broadcast excellence.

This is an exciting time to be a radio engineer, and I'm proud to be a part of the community.

Garrett T. Wood
WJCT(FM-TV-DT)
Jacksonville, Fla.

New Rider, Same Horse

Michael Powell had a helluva tenure. (Are we allowed to say that?) But maybe we ain't seen nuthin' yet.

The commission came under attack after Janet Jackson's Super Bowl debacle. The notorious wardrobe malfunction galvanized indecency intolerance rather than album sales and produced an outcry over broadcast content standards and supposed lack of enforcement. Howard Stern lambasted Powell for allegedly targeting his show as part of an obscenity witch hunt; the two also confronted one another during a radio call-in show. Powell wondered what Walt Disney would think about the racy opening to an ABC "Monday Night Football" segment involving an actress, a football star and a discarded towel.

As long-time readers know, we think many broadcasters have done a poor job of policing themselves on this issue over the years, thus inviting more careful scrutiny from regulators. Far too much questionable material found its way onto the airwaves.

But station owners can be forgiven if they feel whiplashed by the jolting, stop-and-start nature of indecency enforcement.

The Washington Post reported that Powell claimed to have wanted to "avoid indecency altogether" but that he proposed more than $4 million in fines over four years, more than all other former chairmen combined. It's true that the Internet has made it far easier to complain to the FCC; but Powell certainly didn't appear to want to avoid indecency; and under his watch the topic went from too far below the radar to sitting on top of it. He was criticized by some for an arrogant demeanor and described by one detractor as "elitist, inaccessible and incredibly vain about his own ideas" in another Post article.

We didn't find Powell to be so; but his FCC appeared at times more passionate about responding visibly to public fancies of the moment rather than building a careful, well-considered indecency approach that broadcasters and consumers could understand.

Powell's departure and Commissioner Kathleen Abernathy's reported interest in leaving soon have created an opportunity for the Bush administration to give the commission a makeover in the eyes of policymakers and the public.

But that seems unlikely following the appointment of fellow Republican Commissioner Kevin Martin to the chairmanship. Martin is thought to be even tougher on indecency violations; indeed, on several indecency settlements, he argued with his peers that higher fines were justified than what was imposed.

Martin wrote in late 2003 about the FCC's "important role in protecting Americans, particularly children, from indecent programming," saying then that "the commission is not doing all it should in this area. We may be interpreting the statute too narrowly." He called for more stringent enforcement and a policy of counting each indecent utterance in a broadcast program as a separate violation. He also has his sights on making satellite and cable options family-friendly, which some observers take to mean an increased government involvement in programming on pay services.

Along with other commissioners, Martin ignored reports that complaints filed from the Parents Television Council account for 98 percent of the FCC's grievances. But if 159 written complaints received by the FCC after the 2003 "Married by America" train wreck, for example, were identical and produced by an "automated complaint factory" (the Post reported the actual number of complaints from that program was three), that instance cannot be used to prove a powerful public desire for further vigilance.

What's ahead? Martin will probably be tougher on indecency than Powell; but he didn't really say much as a commissioner, often echoing the thoughts of Powell and Abernathy. All the more reason that his early actions as chairman will be scrutinized.

We feel that broadcasters have heard Powell's message and taken considerable steps to improve on indecency; but others do not. L. Brent Bozell, president of the Parents Television Council, says the FCC "has been delinquent in its stewardship of the public airwaves. This irresponsibility must stop, and with the leadership of Chairman Martin, we are confident it will."

Broadcasters beware.

— RW

Radio World
Vol. 29, No. 14 June 8, 2005
Telephone: (703) 998-7600 • Business Fax: (703) 998-2966 • Editorial Fax: (703) 820-3245
E-mail: radioworld@imaspub.com • Web site: www.rwonline.com

NEXT ISSUE OF RADIO WORLD JUNE 22, 2005

For address changes, send current and new address to RW a month in advance at P.O. Box 1214, Falls Church, VA 22041. Unsolicited manuscripts are welcomed for review: send to the attention of the appropriate editor.

Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by IMAS Publishing (USA), Inc., P.O. Box 1214, Falls Church, VA 22041. Phone: (703) 998-7600, Fax: (703) 998-2966. Periodicals postage rates are paid at Falls Church, VA 22046 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 1214, Falls Church, VA 22041. REPRINTS: Reprints of all articles in this issue are available. Call or write Emmily Wilson, P.O. Box 1214, Falls Church, VA 22041; (703) 998-7600; Fax: (703) 998-2966.

The Wheatstone GENERATION-5 has the POWER and FEATURES Stations Demand the MOST

LOTS More!

Our Generation-5 provides your operators with a straightforward traditional control surface coupled with all the benefits of digital technology. It gives you the flexibility of system-wide source, mix and destination control (any signal any*where*), a powerful mix-minus section and a complete event store, name and recall system. One wire from this surface can control THOUSANDS of wires in your technical operations center.

And while the G-5 *feels* like an analog console, its DSP-based mixing engine keeps your digital sources digital while converting analog sources to switched digital, eliminating crosstalk and noise. It can furnish remote and telcom functionality on any input fader without fear of feedback—a real plus in back-to-back daily operations. Its built-in graphic displays keep operators on top of things with just a glance. And since the entire system is software based, you can accommodate any format with a press of a button.

Like all our Generation Series consoles, the G-5 has complete failsafe options available, such as automatic fail-over DSP and CPU cards and redundant power supplies. We can even provide scheduling software and studio mounted satellite cages that can be configured to mix independently from your main routing system.

*At **WHEATSTONE** we've built and sold over a thousand digital audio consoles.* The G-5 is a culmination of all that experience. *Benefit from our expertise — choose **WHEATSTONE**!*

Wheatstone

600 Industrial Drive, New Bern, North Carolina 28562
252-638-7000 / www.wheatstone.com / sales@wheatstone.com

How Would You Like Your SOUND?

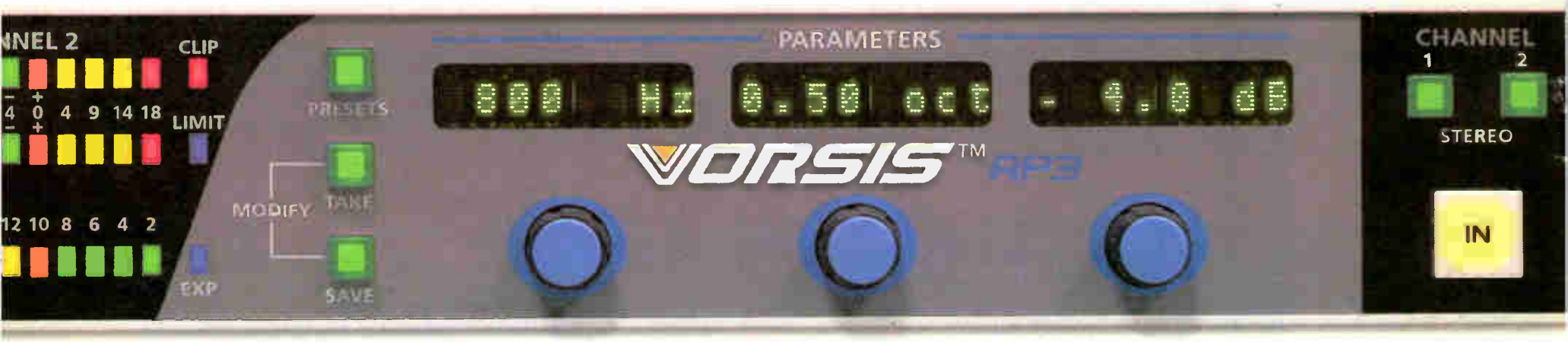
HOW DO YOU WANT IT in MIAMI? How about NEW YORK? Should Chicago be the same as Houston? What about Boulder versus LA?

YOU GET THE POINT: today's market sound is dynamic; formats and personalities can change on a dime. Keeping up with what the competition's doing can be a fulltime job.

Our VORSIS™ AP3 processor incorporates multi-band compression, parametric EQ, high/low pass and notch filters, expansion, de-esser, AGC and a host of system and output settings that let it perform as a dual-channel mic processor OR a stereo signal processor—perfect for in-house rack use or that final HD radio signature sound shaper.

And you don't have to fly from city to city (or room to room) to stay on top—VORSIS™ ethernet protocol lets you control all settings right from your laptop—anywhere there's an internet connection.

VORSIS™— Get the POWER!



www.vorsis.com / tel 252-638-7000 / sales@vorsis.com