Tech Outlook Is Challenging Too
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Radio World
$2.50 The Newspaper for Radio Managers and Engineers March 25, 2009

For Cooney, It's About Return on The Dollar

Beasley's Top Engineer Talks Cap Ex, HD Radio

NAPLES, Fla. When Beasley's cap-ex 2009 budget contracted, its technical priorities shifted temporarily. Mike Cooney, who has been vice president of engineering and chief technology officer of Beasley Broadcast Group for about a year and a half, is rolling with the changes.

Cooney finds himself spending a lot of time these days renegotiating vendor contracts to save money and looking for other ways to manage technical operations more economically at Beasley's 44 facilities. He's also spending more time on the Web and everything that goes with it.

Like many broadcasters, Beasley is steering its 2009 capital towards projects that will bring in revenue more quickly rather than those with a longer-term ROI.

See COONEY, page 6 ▶

Hard Times, New Opportunities

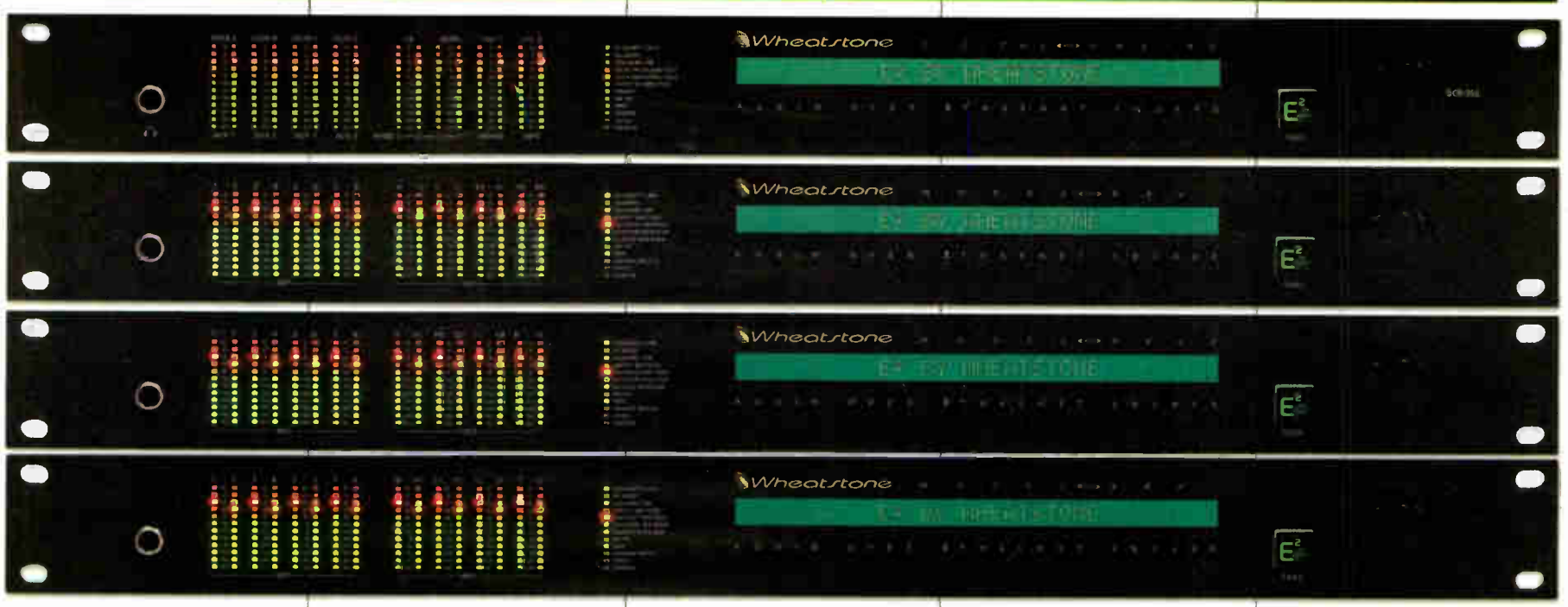
Don't let anyone kid you: The economy is the top story for radio engineers, too. Challenged to attract attendees in a tough market, Broadcast Engineering Conference organizers have assembled an agenda for the 2009 NAB Show that is heavy on real-world case studies, hoping to benefit engineers — who actually have to figure out how to make all that "content come to life."

Coverage starts on Page 18

NewBay Media

THE POWER OF THE SQUARE

AUDIO-OVER-IP ROUTING. SOME TECHNICAL STUFF.



WHEATSTONE and E²...

Wheatstone is world-famous for consoles and networked audio routing – tried-and-true technology that has become broadcast's de facto standard. With the emergence of Audio-over-IP as a viable transmission medium, and knowing that existing solutions are cumbersome at best, Wheatstone has turned its attention and resources to developing a superior set of tools that are as efficient as they are effective.

GIGABIT ETHERNET

Wheatstone chose Gigabit Ethernet (1000BASE-T) because quite frankly, 100BASE-T just can't simultaneously handle the large number of audio channels prevalent today in large broadcast plants without the very real risk of audio not being available when you need it.

E² SQUARES

Three SQUAREs are access points in and out of the network, the fourth is a digital mix engine.

EASE OF SETUP

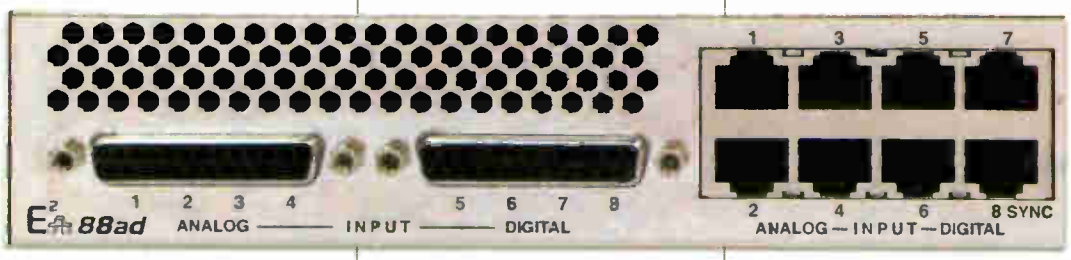
E-SQUARE setup is easy, intuitive, and takes only a few minutes until you're on the air. The front panel setup wizard in each SQUARE gets you up and running in moments. Extensive front panel metering and status indicators provide quick confirmation that all is well. E-SQUARE's web interface and E² Navigator GUI let you further customize your system, locally or remotely, with input and output names, logic associations, routing and much more.

88e E² MIX ENGINE SQUARE

Every nerve center needs a brain. The 88e is it, handling all of the mixes from Wheatstone Evolution Series Console Control Surfaces and the Wheatstone Glass-E Virtual Console Control Surface, a PC-based GUI. The 88e SQUARE houses all DSP power for an individual control surface and distributes the four stereo PGM, four stereo AUX SEND, per-channel MIX-MINUS, monitor outputs and other bus signals to the network. Once on the network, they are available as sources and outputs anywhere. This creates an extremely flexible system, where program outputs from one surface can be a source on any other surface; for example a news mixer's program bus as a source on the air studio surface. While the MIX ENGINE SQUARE doesn't house audio I/O, it does include 12 universal logic ports.

HIGHLIGHTS

- SQUAREs are linkable units that communicate via a single CAT5E/6 over Gigabit/1000BASE-T protocol — Gigabit protocol means all audio everywhere with extremely low latency
- SQUAREs interface seamlessly with Wheatstone's Evolution Series Console Control Surfaces, the Glass-E Virtual Console Control Surface, most of the popular automation systems, and streaming audio
- Install the WHEAT-IP driver on automation system computers to eliminate the expensive sound card and replace tons of audio and control wiring with a single CAT5E/6 cable
- Each SQUARE includes two 8x2 virtual utility mixers that can be used for a wide range of applications
- Front panel headphone jack with source select and level control to monitor any system source
- Silent — no fans — can safely be located in a studio with live mics
- Flexible GPI logic — 12 universal logic ports, programmable as inputs or outputs
- SNMP messaging for alerts
- Silence detection on each output that can trigger alarms or make a routing change



Introducing E-SQUARE Audio-over-IP routing and mixing. Wheatstone's goal was to design a system that is extraordinarily easy to implement without the need for super-complicated network engineering, and where the user doesn't need to be concerned about setting network parameters and priorities to assure that those signals that are most critical are available.

Here we give a brief overview of E-SQUARE, and a few considerations that went into Wheatstone's design of a second-generation AoIP system for broadcasters.

Each of the I/O SQUAREs handles 16 audio channels in and out, plus logic (GPIO). One model is all analog, one all digital, and one is half of each. The relatively small channel count of each I/O SQUARE allows you to conveniently locate them close to your equipment: in your TOC racks and in the control room or studio furniture.

Each of the SQUAREs and each Wheatstone console control surface connects to the network with a single CAT5E/6 cable.

There's also WHEAT-IP, a software "SQUARE" that you install on a Windows® machine — automation computer, news workstation, or a PD/GM's desk computer — to control, play and record audio on and off the network without a sound card, also with just one CAT5E/6 cable.

RELIABILITY

Keeping you on the air is foremost in the design of E-SQUARE. It's completely self-contained — no PC is required to perform any of the system functions, including routing, mixing, salvos, and logic control. The PC is needed only for configuration changes.

Each SQUARE carries a complete map of the entire connected network in its onboard CPU flash RAM — this allows SQUAREs to be quickly and easily replaced in a network. Assign an ID # to a SQUARE and connect it to the network — it will query the other connected SQUAREs and import all the necessary configuration settings.

E² I/O SQUARES

Each 88 I/O SQUARE provides connectivity for 16 input channels, 16 output channels (switchable 8 stereo, 16 mono, or any combination), and 12 universal logic (GPIO) ports programmable as inputs or outputs, routable throughout the system.

88a ANALOG I/O SQUARE
16 analog in/out

88d AES DIGITAL I/O SQUARE
8 AES in/out

88ad ANALOG & DIGITAL I/O SQUARE
8 analog in/out, 4 AES in/out

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NEWSWATCH

Nielsen: Cell-Only Group Uses More Radio

NEW YORK In mid-April, Nielsen will be nearing the end of its first eight-week diary survey in 51 small and medium-sized markets. The results will be released in August.

In a pilot survey conducted in Lexington, Ky., Nielsen recently highlighted its findings regarding a demographic that has been the subject of much debate: consumers who have only cell phones and no landlines at home.

Nielsen found that more than 20 percent of people age 12 and over in Lexington use only cell phones. These consumers, it said, listen to "substantially" more radio than homes with landlines.

Using address-based sampling for sample recruiting, Nielsen says it found cell-phone-only homes logged nearly 23 hours of radio listening per week compared to just over 19 hours for the total sample. In addition, this group listens to 3.5 radio stations compared to less than 3 stations among the total sample; has an average-quarter-hour total radio rating of 17.3 percent vs. 14.3 percent rating for the total sample; and skews younger, primarily between the ages of 18 and 34.

The Lexington pilot was conducted in December 2008 and included 588 people from 336 households.

By using address-based sampling, Nielsen said it was able to include "a more representative sample than other recruitment systems." Nielsen uses a so-called "sticker" diary with pre-printed station call letters for a market. It claims the stickers "created no discernable bias."

Executives for Cumulus and Clear Channel, who remain Arbitron customers for PPM and larger diary markets not covered by Nielsen, praised the Nielsen Kentucky results.

Arbitron has moved up its timetable to include cell-only households in its diary samples, planning to incorporate those in 151 diary markets in the spring survey and to all markets by fall.

New Arbitron President Michael Skarzynski told reporters and analysts in February he apologized to both broadcasters, saying the company had "dropped the ball" in smaller diary markets and vowing to win back their business.

News Roundup

FEMA: The Federal Emergency Management Agency wants comments about the open standards process for the Emergency Alert System and the coming upgrade to the Common Alerting Protocol. This is the next step in a process to upgrading emergency alerts to a next-gen public warning system. The goal is to allow the president and authorized officials to send alerts using television, radio, wireless and wired telephone, e-mail and other technologies. Through May 2, emergency management stakeholders may submit comments online about the EAS CAP standardization process through the Organization for the Advancement of Structured Information Standards and its Emergency Management Technical Committee (*http://tinyurl.com/d7s2gx*).

LPFM: A bill has been reintroduced in Congress to drop third-adjacent channel protections for full-power FMs and FM translators and boosters to allow more LPFMs on the dial. Rep. Mike Doyle, D-Pa., introduced H.R. 1147. Third-adjacent protection for full-power noncom FMs that broadcast radio reading services on their subcarriers is retained in The Local Community Radio Act of 2009. Regarding the needs of FM translators vs. LPFMs, the bill states that when licensing FM translators, the FCC will ensure "that licenses are available to both FM translator stations and low-power FM stations; and that such decisions are made based on the needs of the local community."

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KCST Takes a Lower Profile

Oregon Station Installs the First Permanent KinStar Antenna

In January the first KinStar antenna was put into service at KCST(AM) in Florence, Ore.

You may recall that our "Cool Stuff" judges gave special recognition to the design in 2003 with a "Cool Concept" Award. The antenna was conceived by Star-H Corp., particularly Dr. James Breakall, professor of electrical engineering at Penn State University, and developed for market by Kintronic Labs.

It was type-accepted by the Federal Communications Commission in late 2005 for full-time omnidirectional operation in the AM band.

Let's get low

Kintronic President Tom King says the system is timely for AM nondirectional stations.

"More and more communities and neighborhoods across America are growing tired of the proliferation of cellular telephone towers, resulting in the establishment of revised local zoning laws for new structures that reflect a lowering of the maximum allowable height."

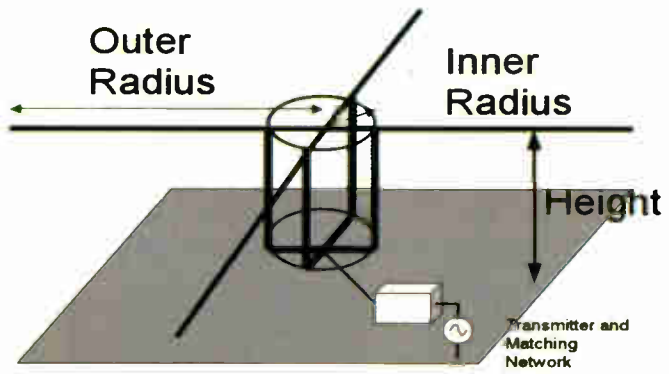


Fig. 1: The KinStar antenna final design configuration, using lumped element matching and with top and bottom of vertical radiating wires connected together. Antenna wires are insulated from ground and supports.

KCST operates on 1250 kHz with 900 watts daytime power and 37 watts at night. King said station owner Jon Thompson needed to replace his 57.89 meter tower. His contract engineer, R. Sparks Scott, recommended that he consider the low-profile KinStar.

"Following further investigation with his consulting engineer, Bob McClanathan, P.E., he decided to install at a location 1.3 miles northeast of his old tower site," King told me in a written summary of the project prepared for Radio World.

"With a local zoning height restriction of 72 feet, the KinStar at his frequency of 1250 kHz would have a maximum height above the ground of 70 feet, which eliminated any legal zoning issues." Thompson also liked that there would be no tower painting involved.

The antenna design that was licensed by the FCC as a top-loaded antenna is shown in Fig. 1. "The KCST KinStar was designed in accordance with the scaled electrical dimensions that were defined by the experimental antenna that was operated under FCC experimental license WS2XTR for operation on 1680 kHz," King continued.

"With an electrical height of 63 feet and top loading of 134 feet, the KCST KinStar operating on 1250 kHz was installed with five 85-foot wooden utility

See KINSTAR, page 10 ▶

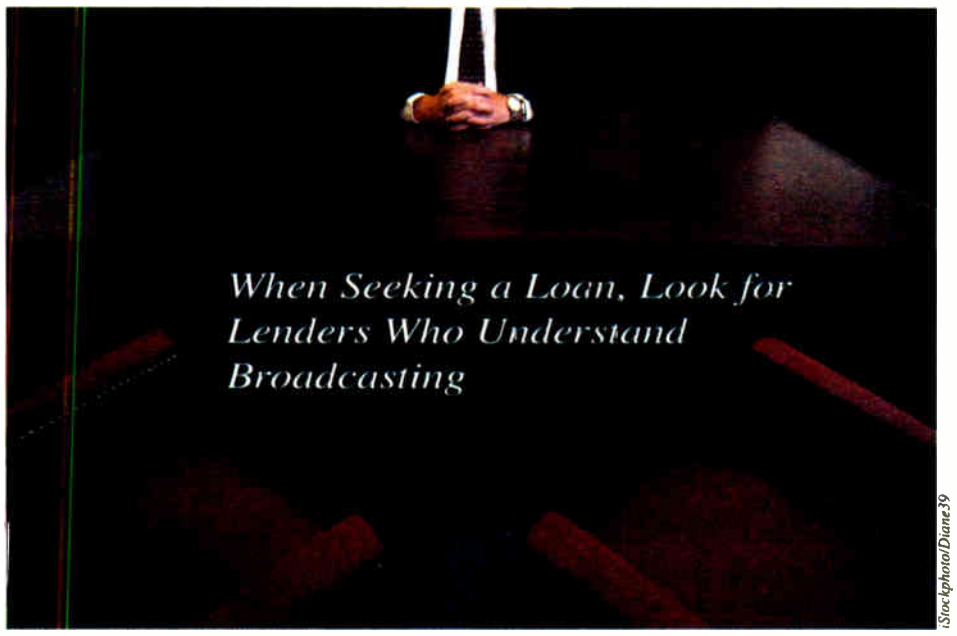
From the Editor

Paul J. McLane

Fig: 2: This is the feedpoint of the KCST antenna, showing three of the four insulated vertical elements with the associated commoning ring and the Kintronic Labs Model LTU-1B-1600 antenna matching unit.

Fig. 3: You've heard of tower farms; this is a phone pole farm. A view of the KCST KinStar antenna, with the center feed at the left, three of the five support poles shown, and the transmitter building on the right with the STL dish installed on the pole closest to the transmitter building.

Financing a Station in Difficult Times



iStockphoto/Diane39

by Erwin G. Krasnow and John Wells King

Even in these economic times, there are several ways to secure your loan if you are looking to finance a radio station.

Factors that contribute to the current financing drought in broadcasting — for example, radio is not an inventory-based business, and those new to the industry have little to no cash flow — begin with a piece of paper.

Once upon a time it was printed on bond and was imprinted with a seal, but no more. Nowadays the document — an FCC license to broadcast — is no more distinctive than any other ordinary xerographic output.

Yet that paper has always been the single most valuable "asset" of a broadcast business. As a consequence, lenders who are considering media loans may well worry that they cannot be protected if the station's business were to flounder.

Not to worry. While it is true that the FCC prohibits taking a security interest in the actual license, there are other ways to secure your loan. You just need to be aware of what special steps to take to assure that the lender obtains value from your FCC licenses.

Here's our short list of action items for you to consider.

- Seek out lenders who understand broadcasting and do not need to be educated about FCC policies concerning security interests in FCC licenses. If the lender with whom you have an established banking relationship would benefit from seasoned insight into broadcast lending, consider arranging a short course with a knowledgeable source such as a broadcast broker or communications counsel.

- Where your station's cash flow is solid, look for cash-flow lenders who will be focused on the value of your business as a going concern. Even if they take collateral, the most realistic broadcast lenders recognize that the collateral serves primarily as leverage, not as a direct source of payment. By contrast, because the FCC license typically constitutes most of the value of the business, finance companies and other asset-based lenders usually are a poor fit for broadcasters.

- Be sure that the definition of collateral in the loan documents includes the "proceeds on the sale" of the license. The FCC and the courts have recognized that a lender can have a security interest in the proceeds of the sale of a station and its license, just not a direct security interest in the license itself. The rationale for such a distinction is that a security interest in the proceeds of the debtor's license would not give the creditor control over the license itself. Without the license, the liquidation value of the collateral would be only a fraction of the station's value. If the station is sold as a going concern, however, the lender's chances of recouping the debt go up commensurately.

- Include a proviso in the loan documents that if and when the communications laws permit a security interest in an FCC license, then a security interest is granted in any and all FCC licenses. The FCC has acknowledged that this conditional language is acceptable in radio station deals.

- If your company is a corporation or a limited liability company, you might provide additional security for the loan by agreeing to a pledge of the stock or your LLC units. Indeed, many broadcast lenders require that the borrower set up a separate "license subsidiary," namely, a company that holds as its only asset the FCC license of the station. The lender and the broadcaster then enter into an agreement whereby the stock or LLC interest of the licensed subsidiary is pledged to the lender. Understand, however, that the lender may not exercise the voting rights until the FCC has approved the new holder of the station's licenses. The requirement for prior FCC approval should be recited in the pledge agreement.

- Advise the lender that it is free to secure all the other facets of the business that it normally would for a non-broadcast station loan, such as obtaining a security interest in the equipment, a mortgage on any real property, personal guarantees from the principals, guaranties from affiliated companies, collateral assignment of insurance policies, assignment of accounts receivable in the event of a default, and restrictions on payment of dividends and payments to affiliates.

- Educate the lender about the unique positive aspects of radio. Radio is the only medium, electronic or otherwise, that is truly flexible. It requires only the ear's attention to be fully appreciated. The technology is mature and ubiquitous, yet radio has always successfully changed with the times. It can be contained in a small environment and transported (and heard) virtually anywhere — in a car, in a headset, or near a swimming pool. Radio is Internet-savvy and has made its way to the iPhone and other portable entertainment and communications devices. It is a distinctively "user-friendly" medium that gives advertisers the speed, flexibility and immediacy needed to compete in a media-saturated marketplace. Radio is a service business with a relatively high level of fixed costs compared to variable costs — virtually no inventories or materials are required to create the programming service provided. There continues to be an active trading market in the sale and purchase of radio stations.

Because the FCC license typically constitutes most of the value of the business, finance companies and other asset-based lenders usually are a poor fit for broadcasters.

We live in a world of optimists, who see the glass as half full, and pessimists, who see the glass as half empty. According to the sage Woody Allen, the realist views the glass as completely full, with half water, half air.

We might say that a pessimist views the FCC ban on security interests in licenses as yet another sign of lien (pardon the pun) times. The optimist wears rose-colored glasses in a world that is less than rosy.

But the realist — that's you, dear reader — takes a pragmatic approach and follows the action steps recommended in this article.

Erwin G. Krasnow and John Wells King are owners in the Washington office of Garvey Schubert Barer. They represent broadcasters in regulatory matters and commercial transactions and can be reached at ekrasnow@gsblaw.com *and* jking@gsblaw.com.

Cooney

▶ Continued from page 1

As an example, Cooney is heading a project in Miami to move two stations from leased space to a building it owns that houses a third station.

Beasley was an early adopter of HD Radio but it has delayed some of its conversions until the economy turns around. It also has turned off some of its digital AM signals at night in response to interference concerns.

Cooney, 46, manages the staffs of the Beasley engineering and IT departments, and recently was given management of the interactive department as well. Some 10 department managers report to him, and he manages station engineers directly. He will be visible at the upcoming NAB Show; the South Dakota native is on the technical committee of the Broadcast Traffic Consortium of which Beasley is a member and is chairing a session of the Broadcast Engineering Conference, which he serves as a committee member.

Cooney spoke with Radio World News Editor/Washington Bureau Chief Leslie Stimson about ways to save money in this economy, Beasley's hopes for the data possibilities in HD Radio, the potential power increase and the state of AM digital.

***RW:** You recently became responsible for the Interactive department. What does that entail?*

Cooney: Beasley is active in interactive, basically the Web department, streaming and everything that goes along with it. That's probably the greatest growth area in radio. It makes up a significant amount of our revenue and a significant part of our growth.

***RW:** Does that involve designing your Web site so people want to more spend time on it?*

Cooney: It really is about having compelling content to drive your listeners to your Web site and keeping them there. In the past, someone would go to a Web site and see an artist. They would leave the site and Google the artist; now, these Web sites are built to be everything, where you don't have to leave it.

A search engine is tied to the site. It will have music and video, just about anything you can imagine, and it interfaces with your Facebook and MySpace page. ... It interfaces with everything and tends to be where the future is going in a lot of ways.

***RW:** How do you spend your day?*

Cooney: Currently a huge part of my day is in bid negotiations with vendors and companies for different services. I spend a lot of time looking at contracts and reviewing tower leases and contracts and vendor agreements. The other part of my job is supporting our local engineering staff with their capital needs or questions.

***RW:** How many engineers does Beasley have?*

Cooney: I have a tremendous engineering staff in terms of quality. Quantity is not what we'd like in some markets; but with the way things are right now we've tried to do it with minimal engineering in some of them. Some [of the 11] markets have as few as one engineer and we have some that have up to five. ...

***RW:** What were your main technical goals coming into the job and what do you still hope to accomplish, given the tough economic climate?*

Cooney: When I came to the company [in the fall of 2007] we were in the middle of doing HD conversions, and our IT infrastructure was not what it should be for a company of our size. So one of the first things I did was hire a new IT manager, John Brown, and we started looking at rebuilding that infrastructure; and we've done some of that.

As budgets became tighter we backed down some of our HD conversions in the small markets and started putting money more in things that have a quicker return on investment for the capital money. In Miami we're consolidating into one studio building where we had two. We're moving into a building we own. The project will pay for itself in practically less than a year.

Mike Cooney

***RW:** Consolidating studios cuts your operating costs...*

Cooney: We have three stations in Miami. Two — WPOW(FM) and WQAM(AM) — were in one building that we leased and one — WKIS(FM) — is in another building that we own. It was a tight fit but we decided to move everybody into the single building. There's no rent, so it saved us $30,000 a month without much effort.

Those are the kind of easy decisions on spending capital money. We've done a few other things like that to streamline the process.

***RW:** I guess a lot of your goals have changed since you came to the company.*

Cooney: Yes, they really have. And I'm sure we will go back to what we were doing. Another big part of my goals and what's changed is working to find the best contract and services. We're — myself and my team managers — we're spending a lot of time negotiating recently streaming contracts, Internet contracts, cellphone contracts. We've saved a significant amount of dollars in negotiating these contracts, even with existing contracts.

***RW:** Going to your IT and phone vendors and asking if there's anything they can do for you?*

Cooney: A lot of the [non-broadcast] vendors have become aggressive recently to where they're willing to buy out other parts of your contracts with other vendors to get your business because, everybody, I guess, is in the same situation radio's in. It's very lean in every market.

***RW:** How do equipment purchase decisions work at Beasley?*

Cooney: One of my biggest jobs normally is to manage the capital budget process and initiate it. Basically the way it works is the local chief engineer will come to me or the general manager and say 'We'd like this.' And I ask the local markets to give me quotes on the equipment from their favorite vendors, and then I review them, approve them and send it back to them as purchased.

On the really big projects ... I'm involved in getting quotes and negotiating with the manufacturers and then I, typically, help manage those projects.

***RW:** Do you have preferred vendors for certain equipment categories?*

Cooney: Over the years we've developed relationships with several vendors ... The only automation system we use in the country is the Broadcast Electronics AudioVault system. We do that for simplicity and for a lot of reasons, compatibility issues. That's one of the few that we do that on. Everything else is on a competitive basis. We bid it out to each manufacturer. ... We have different markets where everyone has kind of their own favorite guy they like dealing with. I don't mandate any of that. All I care is that they get the best price; I typically ask them to get two or three quotes.

***RW:** How many of your 27 FMs and 17 AMs are transmitting in digital?*

Cooney: We have 14 out of 27 FMs converted and multicasting; and 13 AMs are converted to HD.

We converted a large percentage of our AMs right from the start. Every one of our big-market stations in Miami, Boca Raton, Fort Myers, Philadelphia, Las

See COONEY, page 8 ▶

Corporate Profile

Beasley was founded in 1961 by George G. Beasley; its executive offices are in Naples, Fla. It owns or operates 44 radio stations (27 FM and 17 AM) in 11 large- and mid-size markets.

BEASLEY BROADCAST GROUP, INC.

Nearly 41 percent are in the top 50 markets such as Philadelphia, Miami-Fort Lauderdale, Las Vegas, West Palm Beach, Boston and Atlanta. The remaining stations primarily are in fast-growing regional centers like coastal North Carolina, northeast Georgia and southwest Florida, where Beasley operates large clusters.

Beasley's three largest clusters are in Philadelphia, Miami and Las Vegas. The company has three completed mid-size market clusters: Fayetteville, Greenville-New Bern and Augusta and two AM-only clusters: Boston and Atlanta.

Source: BBGI Web site

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Photo: Jonathan Tichler/Metropolitan Opera

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Cooney

▶ Continued from page 6

Vegas — almost all of our big markets are converted and even some of the small. ...

We have one AM left to convert and four others where it probably doesn't make fiscal sense to convert or the antenna is not capable. We have 12 FMs left to convert but only two are in top 50 markets. We've probably converted about 68 percent of our stations.

We were one of the frontrunners in the beginning and did a lot of conversions early on. If it wasn't for the economics right now I think we would have completed them all this year, but we've delayed them a little now to put the capital money in other places.

***RW:** When the economy improves you'll convert whatever you can next?*
Cooney: Yes, it's not at all a permanent, "We're not going to do this anymore." It's just a delay.

***RW:** How would iBiquity handle the licensing agreement?*
Cooney: They've worked with several broadcasters to say, "We understand and we'll give you an extra year, some extra time." I know they've been working with various broadcasters on that.

***RW:** Beasley's one of the groups that supports an FM digital power increase. Are you running any of your stations on high power now on an experimental basis?*
Cooney: Actually, I was looking at applying. We're going to build a big HD facility in Wilmington, Del. [WJBR(FM)]. I had wanted to have that one be a high-power station with experimental authority. We may very well still do that at the end of this year.

Cooney is shown in 2002 as DOE and director of IT for Entercom's Kansas City cluster. He and Ken Wolf, right, are at Richland Tower during construction of a new 1,158-foot tower. They sit on a section of the 10-bay ERI master FM antenna.

We're trying to decide whether we'll use that money for other things, or whether we'll build that this year. We would really like to get a few on even if it's only one or two and just see ... how good of an effect it is. ...

Two key things, to me, have to happen: We've got to have HD Radio in cars, standard; and we've got to have the power increase. It doesn't have to be 10 percent but it's got to be more than 1 percent power. Even a 5 percent increase would make a huge difference, and 10 all the better. I think we may come up with some kind of a variance in between. I'm sure it won't necessarily be a carte blanche upgrade of all power. ...

***RW:** What's going on with your traffic, the Broadcast Traffic Consortium rollout?*
Cooney: We're [The BTC] just actually working on launching the digital [data]. I'm not sure how much can be released but I can tell you that ours ... will all be transmitting the HD traffic information within probably [by the end of March]. We've got two out of four that come to mind on, and the other two will be done real soon.

***RW:** How is that rollout coming?*
Cooney: The BTC has a number of FMs transmitting Navteq traffic data over their analog RDS, using data fed from the Broadcast Traffic Consortium, of which we're a member. A number of digital stations are also transmitting the traffic data using HD Radio technology.

We've had some issues with software vendors and manufacturers. IBiquity had to write some software and other things had to be done. That's coming along much better now, it's a streamlined process and we're rolling out stations pretty quickly. We've got a diverse group of stations and people. ...

The BTC works with Navteq and there's some revenue-sharing. ... Eventually there will be ad-supported devices such as your GPS in your car that will ... have ads on it that each us then share in the revenue. It goes beyond what it does now.

***RW:** What about your digital AMs?*
Cooney: Before I got here, Beasley converted a lot of our AMs, probably more than most groups in the country. I came from Entercom, and we, at that point, hadn't converted any AMs. They waited. Beasley did a lot of them — 13. ... There's some issues to work through on AM HD, in my opinion. I'm hoping we can because it's really worthwhile as far as the sound difference.

***RW:** Issues ...*
Cooney: In getting it to have a wide enough bandwidth so it sounds like FM but yet not such a wide bandwidth that you don't interfere with your neighbor.

We have actually turned off most of our AM HD signals at night, and big signals especially, because we got complaints that we were causing interference to other broadcasters. To be good broadcasters, we agreed to turn them off at night. A lot of broadcasters are doing that until we can figure out a plan to all make it work well together.

***RW:** You got complaints from other stations saying, "You're stepping on us."*
Cooney: Yes, something to that effect. And we had the same thing happen, I'm trying to remember where. We, of course, talked to them and they were willing, in the same way, to help us out. ...

***RW:** Is that an issue that you guys are working with iBiquity on?*
Cooney: Honestly no, but I think as a group, there's plenty of people out there working on it and talking about it and how to address it. This is just my personal opinion.

***RW:** I've been wondering what's been going on with the AMs. I remember talking to Citadel about a year ago and Cox — at the time, and again more recently — about this. For both groups, their AM digital remains off until there's a solution. I haven't seen a solution yet.*
Cooney: In my personal opinion, it's something iBiquity itself is going to have to address, along with the power increase, which we're all helping to push on the FM side.

***RW:** Now, when you turn on a station in HD Radio, are listeners noticing?*
Cooney: Yes, they are. In the beginning we couldn't even get these receivers ourselves, but now they definitely are. WQAM(AM) in Miami is an example. When our HD is off, they call and complain about it.

***RW:** Do they notice if multicast channels are off?*
Cooney: Yes. In Miami, Philly and Fort Myers we have some big listenership on some of those.

***RW:** On another topic, are your stations experiencing metal theft?*
Cooney: We've had some, but it hasn't been that bad. It's been nuisance-type stuff. We've had some tower grounds stolen and they might have been worth about $5 in copper and they've cost us several hundred dollars or a thousand dollars sometimes even to have a tower crew come out and brace things back under the tower. We've put in some alarm systems, some security systems in places and because these sites are all so remote it's challenging to deal with.

***RW:** Some broadcasters recommend installing cameras to see who's stealing your stuff and have that hooked up to an alarm.*

See COONEY, page 10 ▶

Can do.

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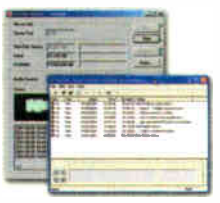

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Cooney

▶ Continued from page 8

Cooney: I came from Entercom in Kansas City. My past staff there is still dealing with this. They had one site that was broken into five times and a lot of stuff stolen. After about the second time they put in cameras.

They actually had really good pictures of thieves stealing from them every time. Honestly, cameras don't really work because the thieves know the cameras are there. They also know the city they're in, typically, and they either know their way out so they've got a given amount of time to get in and steal the stuff.

So they'd come in, they'd wear a mask or pull a hat down low and they'd steal everything and they'd drag it off and they were there for up to an hour at times at the site — on camera the whole time.

RW: With a mask on.

Cooney: Yes, and the way they finally stopped it is they put on much better doors, really heavy steel-plated doors so they were stopped from getting in the building. The second part that helped even more is they put in a siren system. That seemed to scare them off. They'd actually try to break in, the alarm would go off and then they'd run.

They did put in a system that tied it to the police, but the police in that particular city had better things to do, so their response time was an hour or two, and [thieves] knew this so they had plenty of time to rob them.

We've tried some different innovative things and I won't reveal some of our secrets, but I think cameras are a waste of money for the most part. ...

RW: Have you noticed any change or increase since the economy worsened?

Cooney: We had a period of it when copper prices were at their peak several months ago, and we haven't had one since. I don't know if that's a coincidence or not. The other thing that has happened is a lot of states, counties and cities were putting in legislation, changes that required scrap yards to ... if you came in and sold copper, you had to have a driver's license with a photo and they took down information on you and what you sold. They've just started implementing this in a lot of states, and when that was implemented, we noticed a lot of it stopped in those cities.

RW: How did you get into broadcast engineering? You studied electrical engineering at South Dakota State University.

Cooney: Yes, and ... [in 1984] I was hired by the University of South Dakota to be a transmitter engineer at a manned site for South Dakota Public broadcasting. I got a lot of experience for little money for several years and then I did contract work for other broadcasters.

Eventually I was offered a job as a corporate chief engineer when I was 25 years old. The corporate position was out of Lincoln, Neb. They built a group of radio stations while I was there. The company at that time was called Radio One which ... became Three Eagles Communications. ... It had stations throughout the Midwest. I had about 500 miles I covered.

RW: And you were at Entercom before this job?

Cooney: I was recruited and moved to Kansas City about 15 years ago, and I worked for [audiovisual integrator] Video Masters, where I traveled all over the world and built radio and television stations for about five years off and on. I was also working for a military contractor during the first and second Gulf wars, building portable radio and television transmitters. At that point I was recruited by Entercom in Kansas City and I worked for them for eight years before I was recruited to come to Beasley. I was director of engineering and IT for the Kansas City cluster. ...

RW: Any funny engineering stories to share?

Cooney: In Kansas City we had beautiful houses all around our facility. We built a new AM and we were less than 100 feet from some of these houses. We went out and eliminated interference. We had to go out and visit these people ... about 300 to 400 houses over a year. ...

One lady called me ... and said every night she'd come home, start dinner and turn on the stove. It was brand new. It would cook for a little while and then turn off. It wouldn't turn back on. It would change temperatures and things ... I went over to look at it.

When we changed patterns of our directional right at sunset in the winter [was] when she'd get home from work. When our power changed patterns, we'd turn her stove off.

I said, "You probably need to get a stove that doesn't have as much electronic circuitry in it." She said, "It's the only taupe-colored stove I could find, so I'm not getting rid of my stove."

I tore her stove apart and had to put filtering inside her stove to fix it.

In that same block, I was called over to a lady's house. ... I was in her bathroom and there was music coming out of her sink. I said, "I'll see what I can do to stop it." She said, "I don't want you to stop it, I just wanted to show it to you to make sure that I wasn't nuts."

Another one down the street had music came out of their heating duct. It was a classical station so they didn't mind it too much.

KinStar

▶ Continued from page 4

poles and standard pole line hardware and cable in one and a half days by a utility company out of Portland."

The anchors were screw anchors buried in the soil using a hydraulically-driven auger; no concrete was required. A 120-radial quarter wave ground system was installed following the antenna installation.

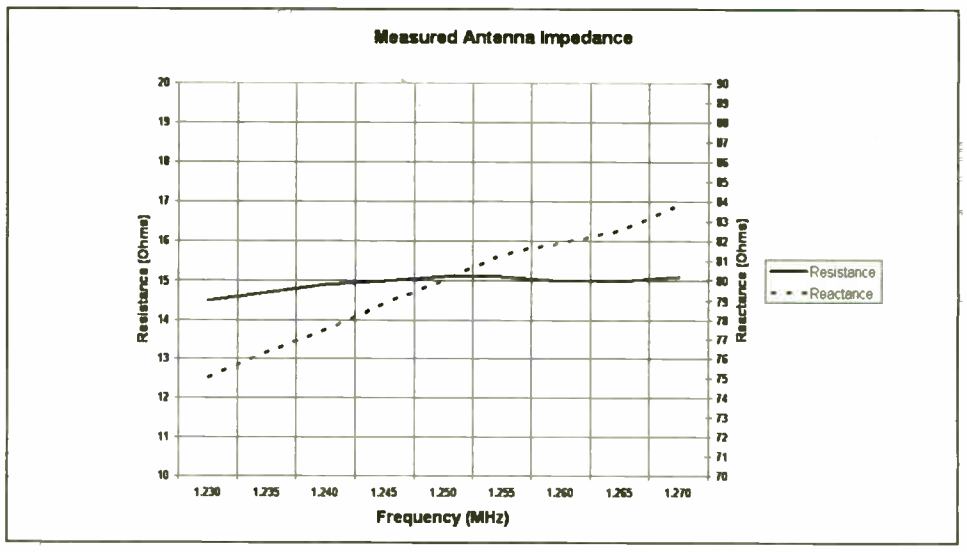

Fig. 4: KCST KinStar antenna drive impedance measured at the output J-plug of the antenna matching network by Bob McClanathan, P.E.

A photo of the feed point at the base of the center pole of the KinStar antenna is shown in Fig. 2. An overall view of the KCST KinStar antenna is shown in Fig. 3.

"With the height of the KinStar pole supports falling below the average height of trees in the nearby forest, the antenna blends into the background, rendering it invisible to the passersby on the coastal highway," King said.

"As a result, the KinStar is clearly an environmentally friendly antenna technology." This is a theme the developers are emphasizing. Witness the title of their NAB presentation: "The Inaugural Installation of the First KinStar AM 'Green' Antenna."

Bandwidth

Another advantage of the KinStar antenna, King said, is the wide audio bandwidth that it offers in comparison to the typically narrow band characteristics of electrically short AM antennas.

He points to Fig. 4, which illustrates the small change in resistance and reactance of the KCST KinStar measured over the 1250 +/- 15 kHz band.

"The inherent audio bandwidth performance of the KinStar is evidenced by the less than 2 ohm variation in R and the less than 10 ohm variation in X over the 30 kHz bandwidth of a typical HD Radio channel," he said.

King quoted McClanathan saying he was impressed with the quality of the antenna construction and its performance.

"The impedance at 1250 kHz is Z=15.1 + j80.0 ohms and is flatter than a pancake +/- 20 kHz. Would be excellent for IBOC but fortunately KCST is not going there," McClanathan told King. "I met a neighbor near the antenna site who is very pleased with the unobtrusive and nearly invisible appearance of this antenna."

Attendees of the upcoming NAB Show can learn more about the KinStar installation in a Tuesday presentation. As usual, the folks who organize the Broadcast Engineering Conference have done an exceptional job of preparing an agenda that is well worth exploring.

Radio World's advance look at the technical sessions of NAB is featured in this issue.

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How Back Feed Might ConFUSE You

by John Bisset

Engineer Stu Tell writes about a lesson he learned regarding open fuses. This was perhaps 20 years ago — but the lesson is just as good today.

He was asked to look at an old Gates 20H3 that suddenly wouldn't make full power, though the plate voltage was fine. That transmitter didn't have a lot of interstage metering; so after checking many things, he changed out the drivers. Nothing seemed to solve the problem.

Stu decided to check the three-phase power voltage to the small cartridge fuses that fed the screen supply. Measuring phase to phase, there was voltage to both the line and the load sides of the fuses. OK here.

Eventually Stu gave up and decided to let the group CE fix the problem. Unfortunately, he'd trusted Stu's diagnostic skills a little too much, and now spent much time looking into other things.

Eventually he pulled the three cartridge fuses for the screen supply and ohmed them out. You guessed it: One of the fuses was open.

The chief was not very happy with Stu, nor was Stu pleased with himself. Later, when they looked at the schematic, they saw the reason Stu had thought he'd seen 240 V across the load sides of the screen supply fuses. The open fuse leg was getting back feed from the primary windings of the screen supply plate transformer!

Stu writes that had he bothered to just power the box down, pull the fuses out and check them with an ohmmeter, he would have saved a lot of time and trouble.

About this same time, Stu was trying to figure out why a 240 V single-phase blower motor wasn't working. At the time, he had a bad habit of looking at 240 V by checking for 120 V from each leg to neutral. Wrong!

He finally checked for 240 V into the line side of the fuses and noticed the meter read 0 volts on the load side. Sure enough, if you checked from line to neutral on the open side of the fuse, you would see 120 V on either side due to back feed from the motor windings.

The lesson was learned the hard way: If you are checking for 240, measure it like 240. And, might I add, use an analog voltmeter.

Stu Tell can be reached at *stutell@mchsi.com.*

Fig. 1: Rich Hill used an old beacon assembly to drive home a point to his air talent

★ ★ ★

Decorating your reception area at the station? Citadel's Rich Hill found a very old tower beacon in a garage at WIOV(FM). The red filter glass inside was broken but the beacon assembly itself was intact. The tower had been replaced in the late 1990s.

The station operations manager told Rich he should leave a burned out tower light bulb to show the staff. He flipped when Rich brought in the entire beacon assembly, seen in Fig. 2. They *are* big, up close and personal. What a fun way to remind jocks to check the tower lights!

Rich Hill can be reached at *rich.hill@citcomm.com.*

★ ★ ★

Radio America's Alan Peterson writes that Len Watson's laser-pointer idea for aiming a satellite dish (Feb. 1) is a pretty sharp one — and a huge improvement over a tip he suggested a good 14 or so years ago.

Al was maintaining a satellite dish that had a tendency to go astray in high winds. To make matters worse, the dish was on the roof of the stations' building in Harrisburg, Pa.

Waterproof lasers were not as inexpensive or as readily available then, but Alan did spot a water tower down the street with a red beacon light. A short piece of pipe was attached to the dish and used as a "rifle sight," with the water tower's red light as the target. As long as he could see the light in the pipe, the dish was aimed properly.

Alan Peterson is assistant chief engineer at the Radio America Network in Washington.

★ ★ ★

What are the Web sites that you just can't live without? Kuala Lumpur's Paul Sagi sends in the following sites:

www.epanorama.net — A compendium of technical information. Some quick-and-easy circuits, and calculator tools for inductance, capacitance and Ohm's Law.

www.faradnet.com— A capacitor resource. Everything from capacitor discussion forums to catalogs from capacitor manufacturers can be found at this site. There's a FaradNet bulletin board, which is a popular spot to have your questions answered by experts.

Got a favorite site? Share it with your fellow broadcast engineers. E-mail the information to me at *johnbisset@myfairpoint.net.*

Paul Sagi can be reached at *pksagi92@gmail.com.*

★ ★ ★

Radio broadcasting seems to be the springboard for most everyone in the entertainment industry. That is true for Randy West of "The Price Is Right Live." He has been an announcer on television game shows since 1990,

See PRICE, page 14 ▶

Price

▶ Continued from page 12

including as a substitute host on "The Price Is Right." That experience led to work on the Las Vegas iteration.

Randy's roots stretch deep into radio, where polished delivery is king. Randy makes it look so easy, but then he had a great mentor, TV's Johnny Olson. They met in 1971; Johnny provided guidance and support during Randy's early years of broadcasting. When Olson died in 1985, the family entrusted his mementos, awards and scripts to Randy, who now is in the process of writing a book on Olson's career, and has a featured tribute on his site *www.tvrandywest.com*.

Tickets for "The Price Is Right Live" are $49.50. The show is presented at Bally's Jubilee Theater nearly every day. Reservations are recommended. If you have some time between sessions and the exhibit hall, see the live version of television's longest-running game show. Check the schedule as some of these afternoon shows are sold out.

Fig. 2: Enjoy an afternoon of fun at 'The Price Is Right Live' at Bally's Jubilee Theatre.

Who knows — Randy may be calling your name to "Come on down!"

John Bisset has worked as a chief engineer and contract engineer for nearly 40 years. He is now handling international sales for Europe and Southern Africa for Nautel. He was SBE's Educator of the Year for 2006. Reach him at johnbisset@myfairpoint.net. *Faxed submissions can be sent to (603) 472-4944.*

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

Who's Buying What

Technet Systems Group completed work on the new digital broadcast facility for **New Hampshire Public Radio**.

The company's Steve Vanni said Technet was the systems integrator for the project.

Several months earlier Technet completed a new turnkey FM transmitter building including design, site work, construction and transfer of existing equipment and transmission lines for NHPR's main site in Concord N.H. ...

Racks at New Hampshire Public Radio

WQCS(FM), a public radio station at Indian River State College in Ft. Pierce, Fla., took delivery of a **Wheatstone** Evolution Console/Router system including three 16 fader E6 Control Surfaces and associated ESAT router frames connected to a central audio-over-IP equipped Bridge Router System. The system will be capable of interfacing with the station's Dalet automation system over IP while using traditional analog and AES connections to other devices. The chief engineer is Randy Murdock. ...

Harris reported a large transmitter order from **Saudi Arabia's Ministry of Culture and Information**, or MOCI. The job is part of ongoing modernization of Saudi TV and Radio's transmitter infrastructure, and includes both radio and TV products. The Saudi MOCI chose 21 AM radio transmitters, including 3DX digital solid-state transmitters; 40 FM radio transmitters, including the ZX range of low-power transmitters; and 36 TV transmitters, including Atlas digital solid-state air-cooled transmitters, Harris stated. Systems integrator First Gulf Company is the contractor.

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Online Sources Earn Their Keep

Revenues From Online Advertising Were Radio's Only Bright Spot in 2008

The Radio Advertising Bureau recently released its numbers for 2008 radio revenues. Unsurprisingly, they were not good: down about 9 percent overall for the year.

Clearly the general economy was a factor, with fourth-quarter revenues down 11 percent from the same period the previous year. But this means that the rest of 2008 was almost as bad, indicating that radio's problems run deeper than the current financial crisis. In fact, the turn toward shrinkage began back in 2007, which showed an overall 2 percent drop from the previous year.

Nevertheless, the 2008 decline would have been into double digits overall if not for substantial growth in radio's Internet-based advertising revenues, which were up 7 percent for the year. (They were even up 1 percent in the fourth quarter.)

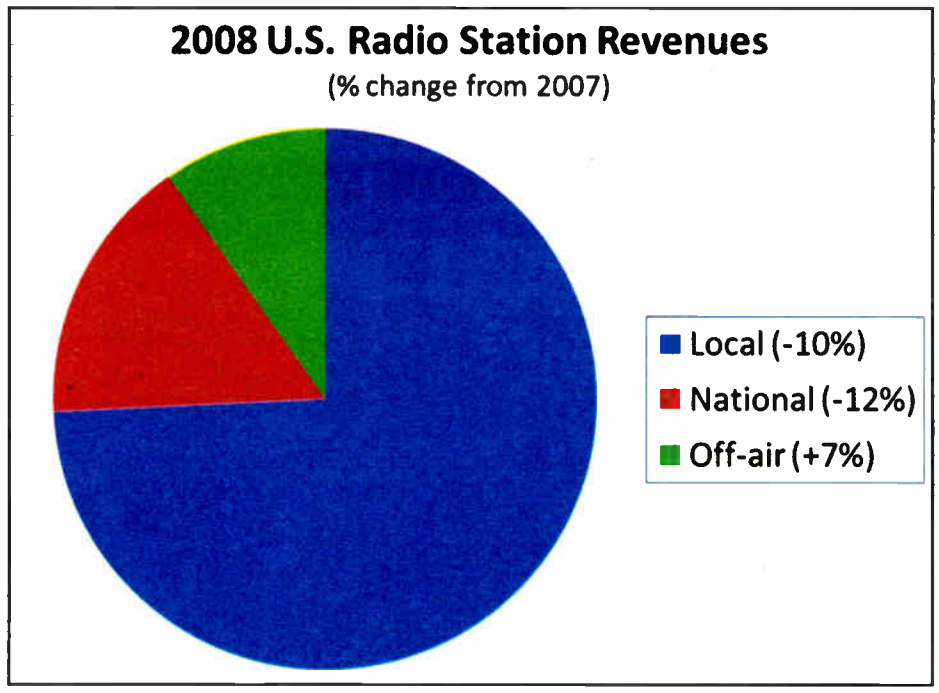
Compared to what

Savvy observers will look at these numbers and respond that it's always easy to show relative growth when a new trend first emerges and the absolute returns are still low.

In fact, this revenue sector is still new enough that RAB and others are still trying to decide what to call it (see RW's editorial "A Poor Choice of Words," March 1). RAB had called it "non-spot" revenue when such reporting started in 2004, but now refers to it as "off-air."

But a closer look here reveals that even the absolute returns — not just percentage growth — are impressive for this sector, with online sales now accounting for an amount that is greater than 10 percent of radio stations' traditional revenues. (RAB's data for 2008 shows that off-air revenues totaled $1.79 billion, with stations' "on-air" revenues — local plus national spot sales — accounting for an estimated $16.5 billion during the period.)

By any measure, this online revenue represents a considerable chunk of change. Crossing into double-digit territory by this analysis only breaks through an arbitrary and conceptual boundary, of course, but it is a good indicator that online is no longer a marginal component of the whole. The growth in this sector is even more welcome when other sources are heading the other direction.



The proportion of radio revenues coming from online advertising sources continues to grow, while traditional sources declined at double-digit rates last year. Source: Radio Advertising Bureau/Miller, Kaplan, Arase & Co.

RAB expects the positive trend in off-air revenue to continue in 2009, economic crisis notwithstanding, with this year's total forecast to approach $2 billion.

To be clear, this revenue is not just coming from stations' Internet radio (streaming audio) advertising, but includes *all* of stations' online advertising, including banner ads on station Web sites and the like. It will be useful in the future for stations to have this particular breakdown specified, to better understand the dynamics of this brave new business world.

This knowledge is particularly important because the cost-per-listener-hour is also very different between on-air and online radio. Having this data could be advantageous to stations as they develop new inventories and apply economies of scale to optimally cultivate their still-emerging online services.

Additional investment in the online space will likely be required, and given current trends, this is well warranted for maximizing stations' survival prospects.

As revenues from this sector grow, however, it will become critically important to ensure that as much as possible falls to the bottom line. Traditional radio sets a pretty high bar for profitability, so stations will want to press their online services to that level or beyond.

Any port in a storm

It's worth remembering that traditional revenue streams still bring home the bulk of the bacon for stations, so expectations should not be recalibrated hastily.

The Big Picture

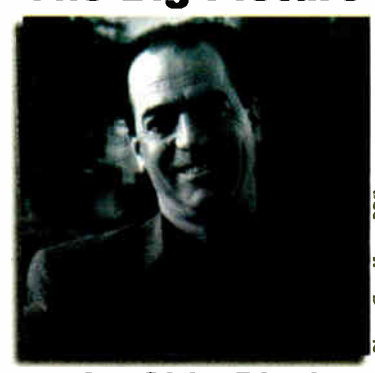


Photo: Gary Hayes, BBC

by Skip Pizzi

Yet while there's still a long way to go, the trend is plainly shifting, and it appears that the giant crossfade has already begun.

Rather than fearing this trend, broadcasters should embrace the opportunity to reverse (or at least moderate) an otherwise dismal picture. It's also likely that online revenues will continue to account for a growing percentage of station revenues, but it's less probable that the crossfade will proceed all the way through. It is far more plausible that the shift will slow and stop somewhere in the middle, as stasis is achieved between on-air and online returns at stations.

Having timely data that accurately describe the arc of this transition in a timely fashion will therefore be extremely beneficial. This is new ground for broadcasters, and having the best possible maps and navigators on hand is essential.

What *is* already clear, however, is that old notions like "online is a fringe feature," "it's just a fad" or "this environment cannot be monetized by broadcasters" have been disproven.

If you can't make new technology trends fit your business model, make your business model fit the technology. Online is a new-found fertile ground for broadcasters, and they should rush to stake their claims there with all due speed.

Skip Pizzi is contributing editor of Radio World.

MARKET PLACE

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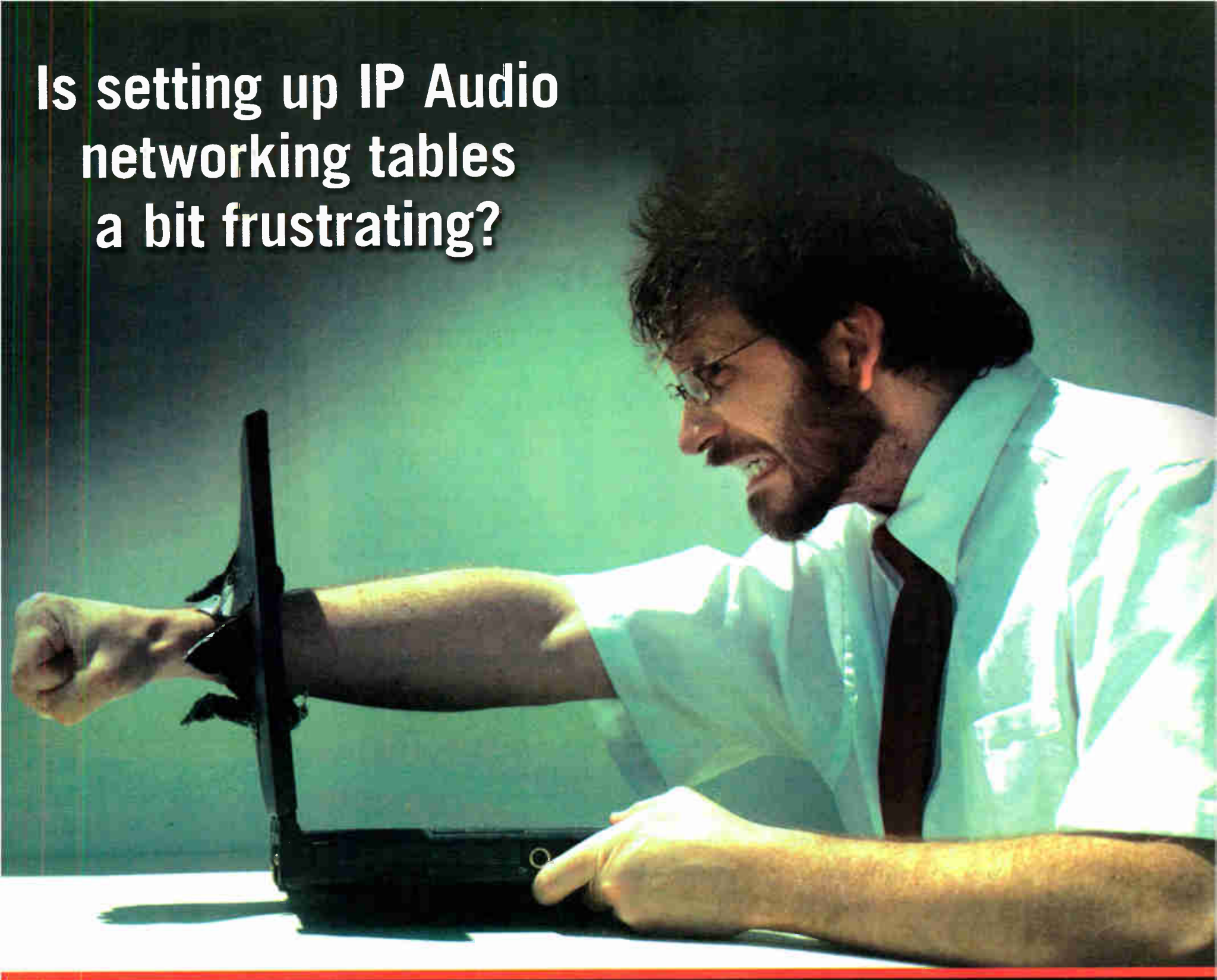

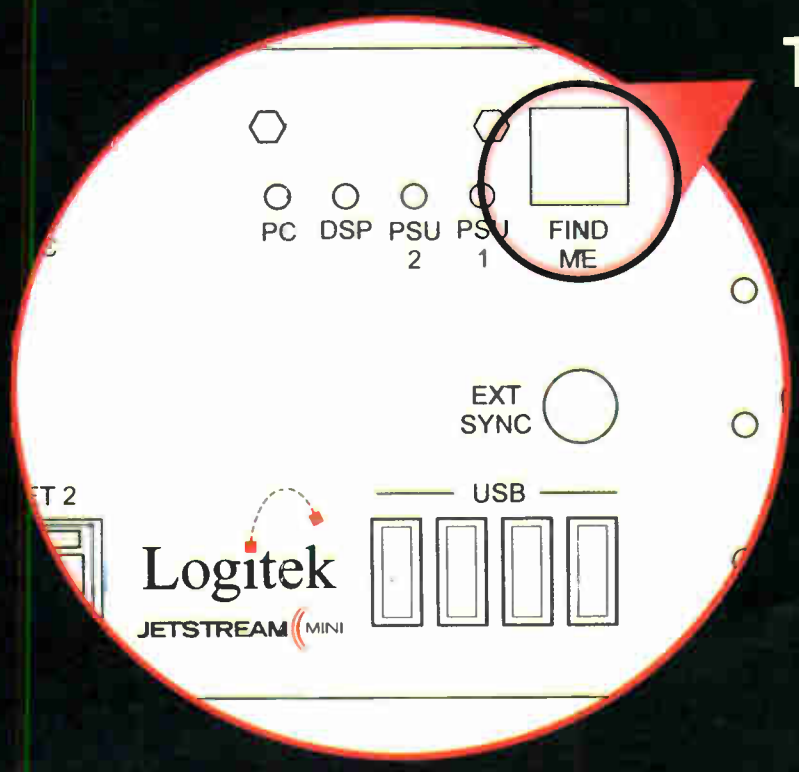

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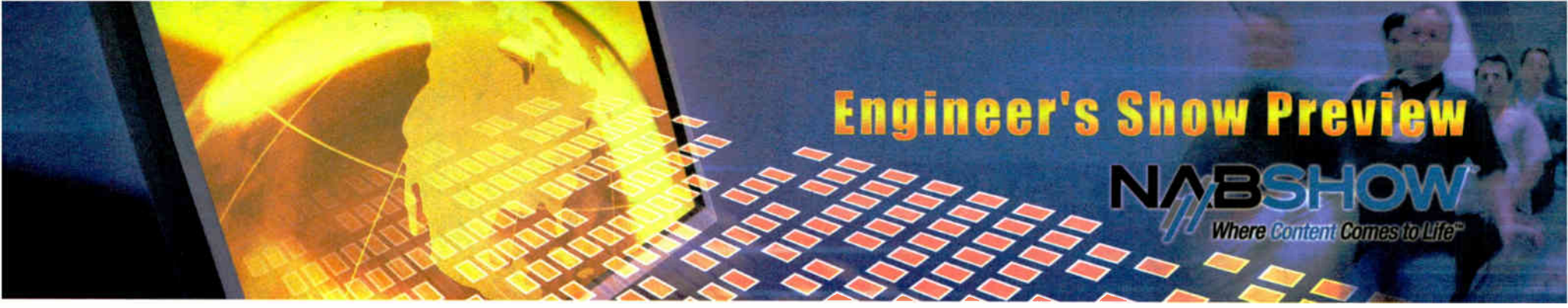


Here's What's on Their Minds

Engineers Focus on Digital Power Increase, Economy and Burdens of Day-to-Day Workload

by Tom Vernon

Progress with the HD Radio transition, new equipment purchases, growing revenue streams from new media and "going green" are frequent topics of conversation among engineers right now. All of this takes place against the backdrop of a worsening economic climate, which affects all of the above.

With spring comes anticipation of the NAB Show. It also is a suitable time to take stock of the state of the broadcast industry.

We spoke with several engineers to get a sense of what's on their minds before the big show in Las Vegas.

HD Radio

Despite the current economic challenges, HD Radio and multicasting continue to be hot topics, especially with the proposal to allow voluntary increases in the HD signal strength.

I think the power increase needs to be mandatory, and it needs to happen sooner rather than later.

— Paul Shulins

Paul Shulins, director of technical operations for Greater Media's Boston operations, thinks that a voluntary HD Radio power increase isn't good enough.

"I think the power increase needs to be mandatory, and it needs to happen sooner rather than later. Every HD Radio that is sold is a potential public relations disaster. People buy a new radio and expect to be able to pick up their favorite station at least as well as they could with their old radio.

"The physics just dictate that the –20 dBc level is not nearly enough to replicate the analog coverage, especially for Class A FMs. This is a change that needs to be universally accepted and implemented as soon as possible. The future of our industry in many ways will be determined by our ability to take radio to the next level."

Shulins will be a presenter in a session of the Broadcast Engineering Conference, though he perceives that many other Greater Media engineers won't be at the show due to economic conditions.

Tim Portzline, DOE for Clear Channel Harrisburg, said of HD Radio, "It definitely makes a lot of sense for FM, but not for AM. It's annoying to hear HD signals bleeding over analog AM signals." Clear Channel Harrisburg has five of its six FMs broadcasting HD Radio, with one multicasting. Portzline and his engineering assistant will sit out the show this year.

Broadcasters in Canada have a different set of issues regarding HD Radio. Laverne Siemens, DOE of Golden West Radio in Altona, Manitoba, states, "It is a concern to us due to the potential interference to our analog stations, as many of them are close to the 49th parallel. Few, if any, Canadian stations are jumping aboard the IBOC approach to HD Radio."

Siemens will attend NAB and expects to spend time on the show floor, but he also looks forward to hearing keynoter Malcom Gladwell speak.

Steve Davis, senior vice president, engineering & capital management for Clear Channel, agrees with Shulins about HD Radio power.

"We support the HD power increase. I believe it is vitally important for radio to make the transition to digital, not just for the higher quality and multipath immunity, but also for the increased content opportunities that come with multicasting. This is the only way for radio to remain relevant in today's digital world."

Davis will be at NAB and will present a paper, "National VSAT Safety Net," describing Clear Channel's system to link studio and transmitter sites for emergencies. Clear Channel also will be giving a paper on disaster recovery for radio stations. He adds that other Clear Channel engineering leaders will be at NAB but that decisions to send engineering staffs are made at the local market level.

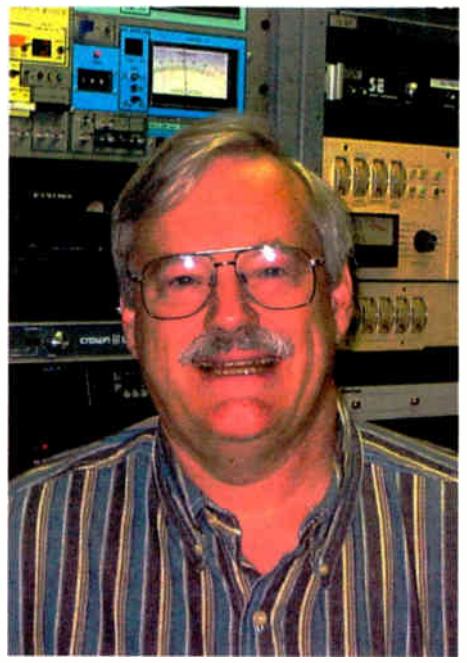
Biggest challenges

Some of the most important challenges facing broadcast engineers today also provide the greatest opportunities, as Shulins explains.

"We need to make sure that our technical product is as good as it can be by using all our talent and experience in the most efficient way possible. Be it managing staff or making smarter spending decisions, the superior engineer has a great opportunity to demonstrate some clever talents and contribute to radio's economic recovery."

Jim Keen, chief engineer of WMUB (FM), Miami University in Oxford, Ohio, says day-to-day operations themselves are among an engineer's biggest burdens. "The mandate to do more with less causes a lot of strain. You spend most of your time putting out fires, and less time doing maintenance and the sort of long-term planning that is necessary."

Siemens adds, "The challenge is to build studio and transmitter sites that are cost-effective but are done so to be dependable, have redundancy and can be remotely administered."



Jim Keen. 'You spend most of your time putting out fires.' He and his department were affected dramatically by a change in programming plans.

Davis sees an ongoing test for staff to maintain job skills in a changing environment. "The challenge for engineers is learning IT and networking skills as they begin to deal increasingly with routers, switchers in the deployment of HD Radio importers, exporters, etc. Also, as staffs get smaller but more crucial to operations, time management and multitasking skills are becoming crucial."

Today's economic challenges seem to have affected all aspects of the broadcast industry. The impact was especially felt by Jim Keen. His position, along with that of six full-time and three part-time staff, will be eliminated on June 30, as the university announced plans to drop all local programming and use the station to rebroadcast Cincinnati Public Radio.

All respondents noted the economy

See CONCERNS, page 20 ▶

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Concerns

▶ Continued from page 18

has had a direct impact on the decision of who, if anyone, to send to the NAB Show. Policy in some groups is that only those presenting papers will have their expenses paid. Others are willing to give engineers time off to attend the show, but they must pay their own expenses.

Broadcast engineering consultants are not immune. R. Morgan Burrow Jr. said that he won't be coming.

"Many of my clients do not expect to attend due to bleak revenue projections and the need to allocate their time generating revenue. Many stations are cancelling or postponing projects for 2009. This in turn makes it hard on us consultants."

Shopping for equipment

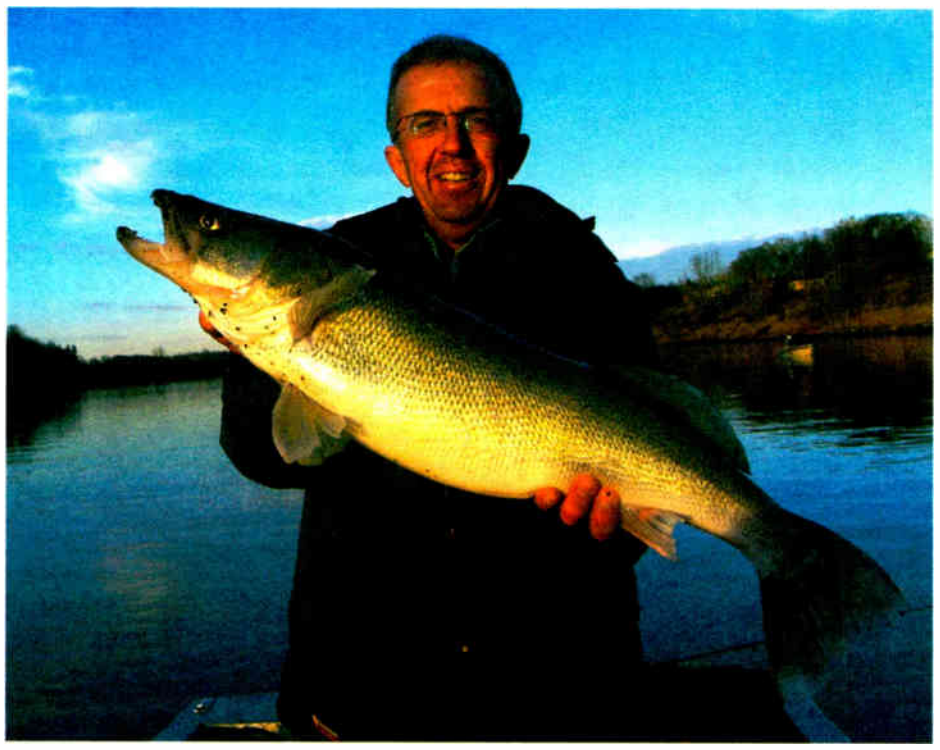
While money is tight, some engineers and companies will be shopping for new equipment at NAB.

Shulins is one of many who said he had not heard back from the corporate office on specific capital funding for 2009, but adds, "Our company is absolutely committed to provide the most reliable and high-quality product to our customers, and we will invest whatever funds are necessary to keep our operations in compliance and reliable."

Siemens of Golden West said, "We are applying for four to six more stations in the next 12 months, and are trying to develop a cookie-cutter approach to small FM radio stations that we can drop into smaller markets while keeping costs in line. We also have a major AM/FM site move in our future and are planning equipment needs for that."

Davis said Clear Channel has awarded bids for many items but notes, "There still remains equipment to buy and spec, and there are always unforeseen emergencies that arise. Our current projects include integrating newly acquired stations into our clusters, replacing towers that are structurally unsound, installing V-SAT satellite terminals, upgrading our facility control systems and building new studio facilities in some markets."

As he reflected on equipment, Davis offered some criticism for manufacturers. "Quality control could be improved. We receive far more equipment that doesn't work 'out of the box' than we used to. Manufacturers have always been good about doing exchanges, but it seems to be increasingly common as more computer-type hardware finds its way into broadcast equipment."



Laverne Siemens. 'We come from a culture that has been thinking green for decades.' He is shown with a trophy-sized walleye on the Red River north of Winnipeg, Manitoba.

Green movement

Once thought of as something of a fringe movement, "going green" is becoming mainstream and affects broadcasters through energy and recycling efforts in the office, energy generation through wind and solar power and green programming efforts.

Shulins said many Greater Media stations are making investments in clean energy proportional to their carbon footprint, and that this enhances their image as responsible members of the community.

Others like Siemens note that being green is nothing new: "We come from a culture that has been thinking green for decades, always looking for ways to reduce our electrical draw. We light only some towers in a multi-tower array (which is legal in Canada) and even run our 50 kW site at reduced power. Equipment from dismantled sites is reused at new ones. These moves are both green and reduce our operating costs."

Portzline notes that Clear Channel's Harrisburg operations are moving towards a "paperless office," glass and paper are separated and the stations use a recycler to dispose of computer monitors at the end of their life.

Meanwhile, most stations seem to have worked out the operational and technical bugs with online media, including streaming audio with different formats, podcasting and blogs. The challenge for many is nurturing them into positive revenue streams.

Shulins notes that Greater Media Boston is streaming its analog/HD1 and HD2 programs on the Web, as well as for some mobile platforms like the iPhone. "Monetizing the non-traditional media options available to broadcasters is something we are looking at and participating in."

"We are very proactive on the online side of things," said Siemens. "We have an entire division dedicated to the development of community portals. Golden West has 30 stations and 10 Internet portals across western Canada. We have dedicated sales teams to the selling of online ads."

Keen notes that WMUB has six streams, including MP3, Windows media and Real player in addition to podcasting. He adds that the station has started to receive pledges from online listeners, and that the audience is growing with overseas students and alumni.

SURE BETS

Finger Food

Whether it's your ultimate Las Vegas destination for the evening or a pit stop on your way to dinner, a tapas restaurant like Firefly Bistro on Paradise is a nice spot for large groups looking to de-badge and relax.

The small plates of tapas-style eating are conducive to good conversation because guests are merely noshing on one-bite snacks, not tackling a 10 oz. porterhouse.

Firefly Bistro boasts such tongue teasers as mozzarella stuffed red peppers; ham and cheese croquetas; filet mignon sliders; and crispy, flavorful puntillitas, which are battered and fried baby squid that can often be too chewy.

And while happy hour may be a bit early for NABers to take advantage of half price drinks (Monday–Thursday 3–6, Fridays 3–5), the bar at Firefly does not disappoint: Between the fresh, hip atmosphere and a drink menu that includes house-made berry-infused vodka; house-specialty sangria that marinates for three days; and pitchers of mojitos for only $28, Firefly offers the perfect remedy to soothe those aching, blistered feet.

And if you only eat one dessert during your whole stay in Las Vegas, make it Firefly Bistro's chocolate tres leches cake. If you're not too stuffed from their gelato trio, that is.

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"Sure Bets" throughout this section are compiled for Radio World by Kelly Brooks

HERE FOR THE LONG HAUL

1976 **SCMS** founded by Bob Cauthen

1992 First fixed IBOC reception

1995 First live hd multi channel broadcast WFAE

March 2007 FCC approves hd system

June 2007 **SCMS** purchased the assets of the Harris Broadcast Center

2008 **SCMS** contracted with Google to be a U.S. reseller for their automation systems and Bird Electronics to be their U.S. stocking distributor for broadcast

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Latin America: 1-760-650-1427

SATURDAY

Ennes Addresses Digital Transitions

Here's a Look at the SBE Schedule of Events During the 2009 NAB Show

by Fred Baumgartner and John Poray

Baumgartner is co-chair of the SBE Ennes Workshop. Poray is executive director of the SBE.

When planning was completed in the fall for the Ennes Workshop, the opening program at the 2009 NAB Broadcast Engineering Conference, it was full speed ahead to complete the full-power DTV transition in February.

For TV broadcasters, the recent change in transition dates to June is resulting in a variety of adjustments and some concerns. For radio broadcasters, the HD Radio power increase is a key issue.

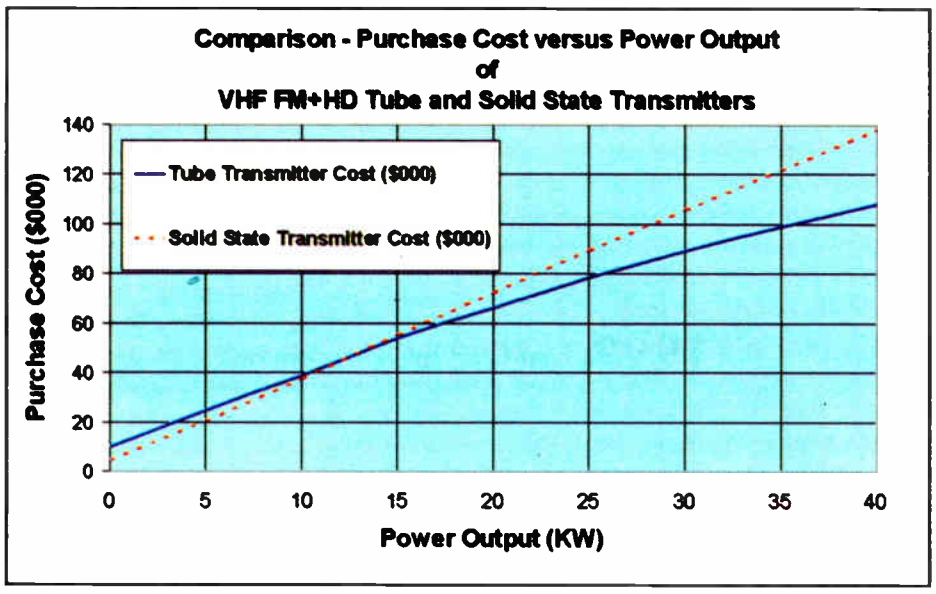
Both of these topics and more will be covered during the Ennes Workshop at the 2009 NAB Show.

On the Saturday before the NAB convention floor opens, April 18, the Las Vegas Convention Center hosts the all-day 2009 Ennes Workshop, "Continuing the Digital Transition," presented by the Society of Broadcast Engineers.

Every year, some 500 broadcast engineers gather for the Ennes program, designed to bring the information most needed in a compact program. As is our tradition, the workshop begins with a tutorial. Donald Vanderweit of Agilent Technologies presents a review of digital transmission technology. Don's early-bird tutorial will cover the basics: methods of digital modulation, measurements and impairments.

Mike Starling, vice president and chief technology officer for NPR and executive director of NPR Labs, with Steve Densmore, broadcast technology manager at iBiquity Digital Corp., will present essential information on the additional technical analyses that have been conducted by NPR Labs and iBiquity. The two will also discuss their perspectives on the industry's work towards a consensus recommendation for FCC action on a managed HD Radio power increase authorization and the latest developments and important new features of the HD Radio system.

Are there occasions when tubes are the preferred RF amplification device? Geoff Mendenhall of Harris says while it would seem that the role of tubes in new transmitter designs would continue to diminish, in the case of FM+HD, a novel use of power tubes might best answer the needs of efficiency and cost of operation.



A cost comparison graphic from the presentation by Geoff Mendenhall of Harris.

TV transition

Only nine months ago, Bill Meintel of Meintel, Sgrignoli & Wallace discussed a number of issues that could have come together to create the "perfect storm" leading to a TV transition catastrophe. Bill will look back and see how each of these issues played out on the first "transition day" and what has transpired since.

He will offer his perspective on the current state of the transition. Will it come to a successful conclusion or will there still be more work to be done? Finally, what comes next? For example, despite the recent fanfare over the end of full-power analog television transmission, many low-power television stations and translators will continue to transmit analog signals for the foreseeable future.

Jay Adrick of Harris and Wayne Bretl of Zenith will present an overview of the ATSC Mobile/Handheld system and describe what it will mean for those stations that choose to broadcast the service. They will cover a description of the service, the types of consumer devices that the service will reach, the business models that broadcasters might develop and the technical considerations for deployment of the service.

An in-depth look will be made at the M/H Physical Layer, the equipment necessary to broadcast ATSC M/H and the possible changes that the system will require for the transmission plant in order to optimize mobile service. Also, the current status of the ATSC Candidate Standard will be reviewed along with a view of what lies ahead as the technology rolls towards a commercial launch.

Rich Schwartz of Axcera considers that the current DTV coverage areas were allocated based on a single-transmitter architecture, which is predicted to provide minimum specified field strength to 50 percent of the locations within each coverage area, 90 percent of the time. Terrain features can produce shadowed areas, or coverage gaps, where signal strength is lower than required for reliable reception. Both the analog sunset and the desire to employ ATSC M/H mobile services have highlighted the extent of coverage gaps for many broadcasters.

Rich's paper will describe how an on-channel DTV network functions, define the associated terminology, provide guidance in determining when this type of deployment is applicable and give an overview of the systems engineering necessary to design such networks.

Dennis Wallace of Meintel, Sgrignoli & Wallace addresses the findings of field and laboratory tests regarding DTV reception and in particular planning factors for indoor DTV reception. The "Value of Power" for DTV broadcasters will be discussed as well as important considerations for the post-transition DTV transmission facility.

Kerry Cozad from Dielectric covers the choices that a data provider — the broadcaster — and data user — the viewer — have when it comes to optimizing the performance of the antenna systems. Kerry will discuss what is available and trends for the near future in antenna designs and he will review antennas for full-power DTV transmitter installations and antenna considerations for mobile/handheld, single-frequency networks and translators.

More SBE events

The NAB Broadcast Engineering Conference continues through Thursday with dozens of sessions of interest to radio and television engineers. SBE is pleased to be NAB's organizing partner for the BEC for the 15th consecutive year. The NAB BEC planning committee is chaired by SBE member Joseph Snelson, CPBE, 8-VSB of Meredith Broadcast Group.

To attend the NAB BEC (which includes the Ennes Workshop), you must have a full 2009 NAB Show registration.

During the week of the show, the SBE will hold a number of meetings and events open to broadcast engineers and others interested in society activities.

The regular spring meeting of the national SBE Board of Directors will take place on Sunday, April 19 from 8:30 a.m. to noon in the Las Vegas Hilton Hotel. Most of the meeting will be open to the public, subject to seating capacity.

On Monday, April 20 from 2 to 4 p.m., the SBE will host a moderated discussion for those interested in the latest developments of the Emergency Alert System, the CAP Protocol and related emergency communications issues. The event will take place in the Las Vegas Hilton and is open to anyone.

The spring SBE Membership Meeting will take place on Tuesday, April 21 from 5 to 6 p.m. in the Las Vegas Convention Center, South Hall, second floor meeting rooms. The first 100 SBE members present will receive a souvenir door prize and one person in attendance will win a camcorder. During the Membership Meeting, the SBE will recognize volunteer chapter certification chairmen who have served in that capacity for 1, 5, 10, 15, 20 years. Non-members are welcome to attend the SBE Membership Meeting. Full-conference credentials are not required for admittance.

The SBE will exhibit at the 2009 NAB Show as well, with hours on Sunday from 2 p.m. to 4 p.m., Monday through Wednesday from 9 a.m. to 6 p.m. and Thursday from 9 a.m. to 4 p.m. The SBE Booth number is L-27 and will be located on the second floor concourse of the LVCC South Hall, just around the corner from the NAB Broadcast Engineering Conference session rooms.

SURE BETS

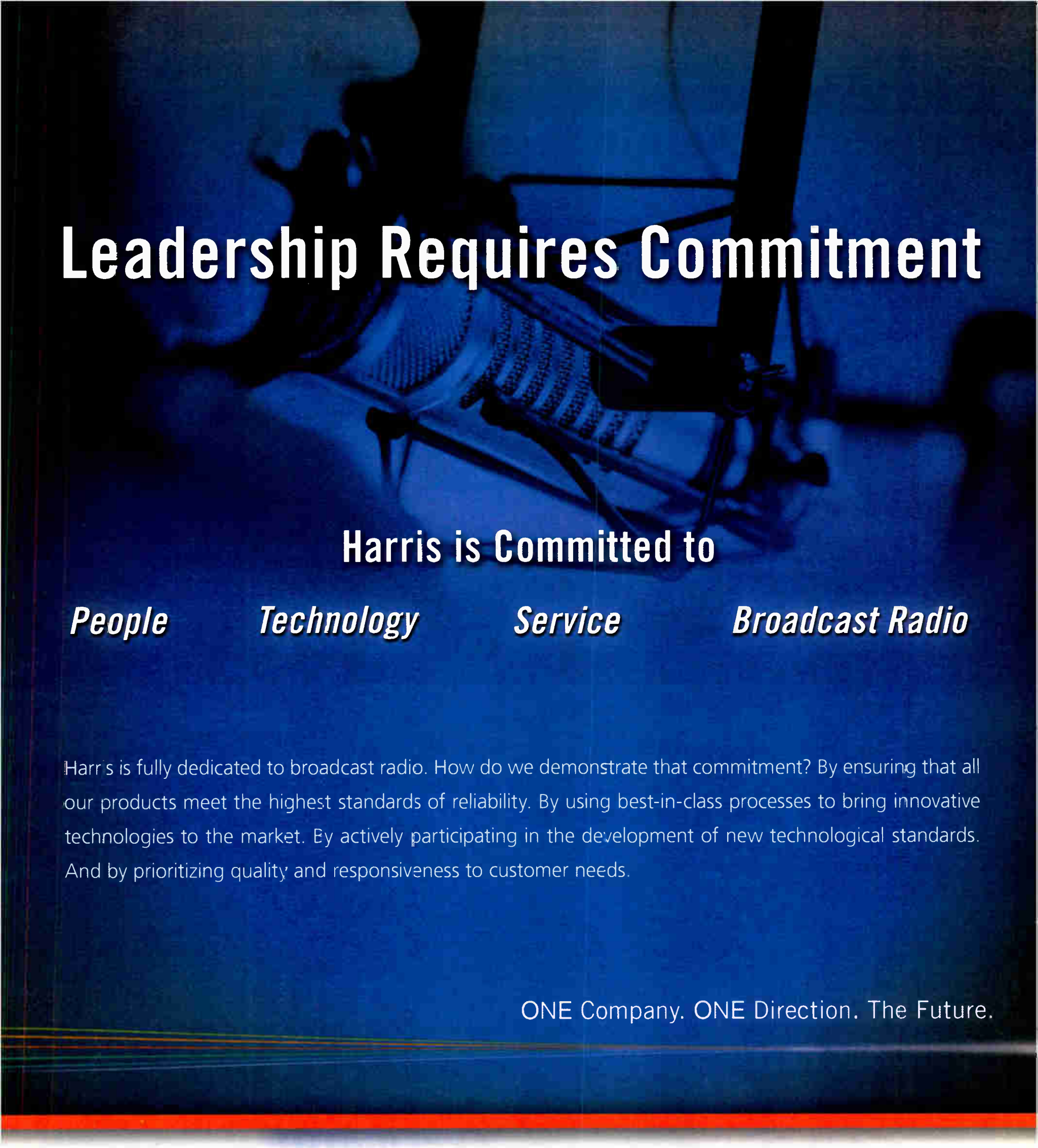
Be Sure to Tip Your Bar Wench

It's 5:30 p.m. and ready to relax but not necessarily to hole up in your room and succumb to "Everybody Loves Raymond" reruns. There's talk of walking over to the Hilton but while you're feeling gregarious, you're thinking you'd rather place both hands flat down on a teppan grill than watch that chef dude flick a greasy shrimp into his hat for the umpteenth time. Huzzah! The Excalibur may have what you're looking for with its Tournament of Kings dinner.

It's nice to have options for group dinners other than Benihana and that Brazilian steakhouse place. Trade your suits and ties for chain link merriment and lose yourself in the admitted cheesiness of medieval sport reenactment. The interactive nature of the show makes it a great place for groups (you're "assigned" a team to root for upon arrival — instant camaraderie). And though you won't find mead on tap, the Tournament of Kings does a pretty faithful rendition of a medieval times jousting competition, with real horses, dancing maidens and enough pyrotechnics and violence that there are warnings for very young children.

One caveat (or bonus, depending on how you feel about cutlery): You eat with your hands. So, while it's a great place for a few laughs with friends or colleagues to celebrate the end of a grueling week, it may not be the best place to take that potential big-time client. Also, tickets might be a bit steep for the typical showgoer at around $60 (not including dinner). But hey, this is Vegas.

Excalibur's Tournament of Kings Dinner
Show times 6 and 8:30 p.m. nightly except Tuesdays.
For reservations call (702) 597-7600 or visit *www.excalibur.com*



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SUNDAY

HD Radio Double Session

Focus Is on Power Increase and Single-Frequency Networks

by Tom Ray

As opposed to many other technologies on display at this year's NAB Show, HD Radio technology is, at least relatively, an infant. And compared with more mature technologies, HD Radio technology is in a constant state of development as proponents work to make the technology perform better and give the listener a better experience.

If you have an HD Radio station or are looking at the possibility at installing digital transmission equipment, the Sunday radio sessions at the Broadcast Engineering Conference will be of interest.

There are so many improvements and implementation issues to discuss that conference organizers have scheduled both morning and afternoon sessions.

Dom Bordonaro, chief engineer of Cox Radio Connecticut, is the chairperson/moderator.

"The Sunday sessions are all about HD Radio and include several papers that discuss the next hot topics: the 10 dB power increase and single-frequency networks. Both of these subjects address the desire to extend HD Radio coverage for both the main channel and the secondary channels."

The sessions kick off with *"On-Channel Repeater Implementation for HD Radio Coverage Improvement"* by Richard Redmond of Harris Corp.

European digital radio facilities use a network of low-power repeaters and "gap filler" transmitters to increase and smooth out coverage. "The gap filler takes the main signal off the air, manipulates it digitally and retransmits on the same channel," says Redmond. "The concept is that we would apply some of this same technology to HD Radio to provide a low-power repeater of the digital side bands to improve performance, and reduce the cost of implementation."

IBOC HD Radio is being tested in Brazil.

Ronald Barbosa of ABERT, the Brazilian Association of Broadcasting, along with Scott Stull of iBiquity Digital Corp., will present a paper on the testing Brazil has done with HD Radio, including a report on the performance of the digital system and the digital signal's compatibility with existing analog signals. It will be interesting to get the perspective from the Brazilian broadcasters on HD Radio.

Their presentation is titled, aptly, *"Report From Brazilian Association of Broadcasting About the Tests Results in AM and FM Stations That Use the IBOC Standard."*

There is, of course, a proposal before the FCC to allow a power increase of the HD Radio sidebands of FM stations from its present level of –20 dBc to –10 dBc.

Secific challenges are involved in implementing FM HD Radio at the –10 dBc level, and tube transmitters are an alternative to implementing this power increase, in addition to solid-state models. Geoff Mendenhall of Harris will talk about *"High-Power, Common Amplification of FM + HD Radio Transmissions with Elevated Sideband Levels."*

"The proposed 10 dB increase in HD Radio sideband levels presents a linearity challenge to common amplification of FM and HD Radio signals through a single transmitter," says Mendenhall.

"This paper explains the application of new, high-power, RF amplifier and power supply technologies to elevated HD Radio sideband transmission."

Perhaps you have an FM HD Radio station that depends on a repeater, translator or synchronous transmitter to fill in a few holes in the main station's coverage area. If you maintain these facilities, you know —particularly in the case of synchronous transmitters — that it is extremely important that the signals are in perfect synchronization. This is even more critical with an HD Radio signal.

"FM + IBOC Broadcast Systems Architecture Considerations for Single-Frequency Networks," presented by Philipp Schmid of Nautel, will answer many questions of how to accomplish the goal of synchronization of the HD Radio transmitters.

Broadcast Engineering Conference

Sunday Morning April 19:
HD Radio Implementation and Improvements, Part I

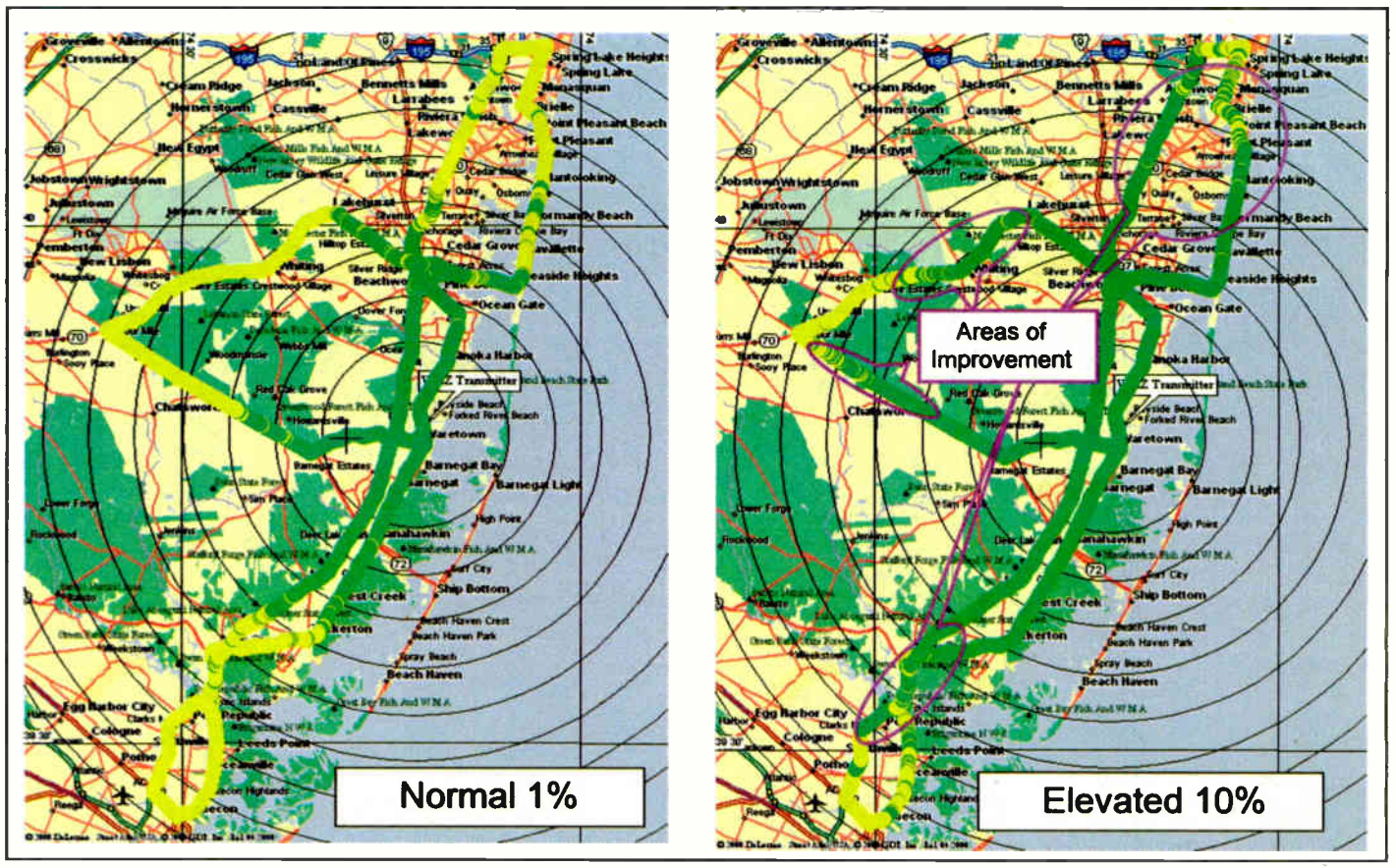
Sunday Afternoon April 19:
HD Radio Implementation and Improvements, Part II

Good afternoon

George Pletea of 2M Prima Telecom SRL will present *"HD Radio Broadcasting in Romania."*

Many attendees find it enlightening to learn about the broadcasting regulations in other countries; Pletea's paper will report on the regulatory differences between Romania and the United States and the results of Romania's HD Radio

See SUNDAY, page 27 ▶



From a presentation about an FM digital power increase by Jeff Detweiler of iBiquity Digital.

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MONDAY

Getting the Data Right

Sessions Also Explore Microcasting, IP Audio and VLAN Segmentation

by Bob Kovacs

The Radio Engineering Forum on Monday will be all about data and how it works in every aspect of radio broadcasting.

The sound coming out the speaker may be analog, but just about everything else in the audio chain is now digital, and some of those technologies are shifting even as others settle in for the long haul.

The technologies you need to watch will be the subject of a two-part Radio Engineering Forum presented as part of the Broadcast Engineering Conference.

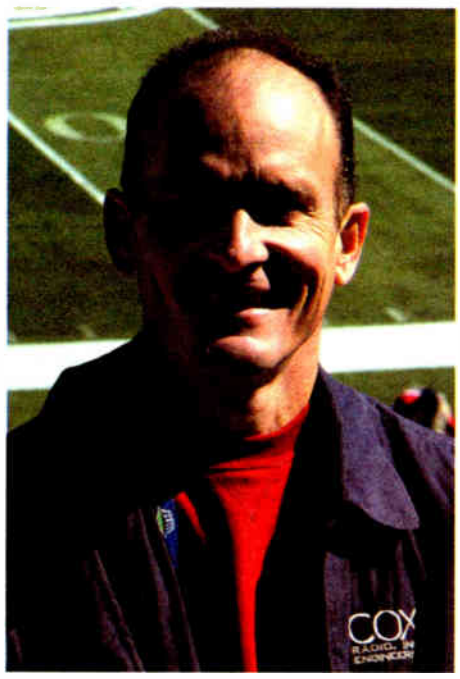
The morning session is moderated by Mike Cooney, vice president of engineering and CTO for Beasley Broadcast Group (profiled on page 1).

"Two sessions are tailored more towards broadcast engineers interested in managing an IT network as it relates to data management and segmentation," Cooney said. "The third session is a real-world report on the data bandwidth capabilities and limitations on the HD signal."

Don't compromise

Each day, Internet connectivity becomes both faster and more widely available. The first morning presentation will be *"Internet Deployment of IP Audio Without Compromises."*

Presented by Rolf Taylor, an applications support engineer for APT, this session looks at the increasing use of IP audio for a variety of radio tasks, including remote broadcast and STL backup. Taylor will explore the meaning of Quality of Service (QoS), as well as the compromises that can and can't be made with respect to IP audio. Taylor also plans to cover metropolitan Ethernet links and the first wide-scale North American deployment of MPLS virtual network links for IP audio distribution.



Roswell Clark of Cox Radio Tampa. 'Consumers have come to expect data associated with audio, and radio must meet that need.

As stations gain experience with HD Radio, clever broadcasters will find new ways to use the signal to generate revenue. The first step in this process is to understand just how much data capacity is available to HD Radio broadcasters, which is the subject of the next presentation.

Titled *"Data Delivery Capacity Over FM"* and presented by Roswell Clark, director of technical operations for Cox Radio Tampa, the next session looks at quantifying the street-level data capability of HD Radio.

"Data is to radio as audio is to TV," Clark said. "Consumers have come to expect data associated with audio, and radio must meet that need and expand it into areas not directly related to the audio channel."

Nothing is static, so you can be sure that manufacturers and engineers will strive to squeeze the last bit of data out of this potentially valuable broadcasting resource.

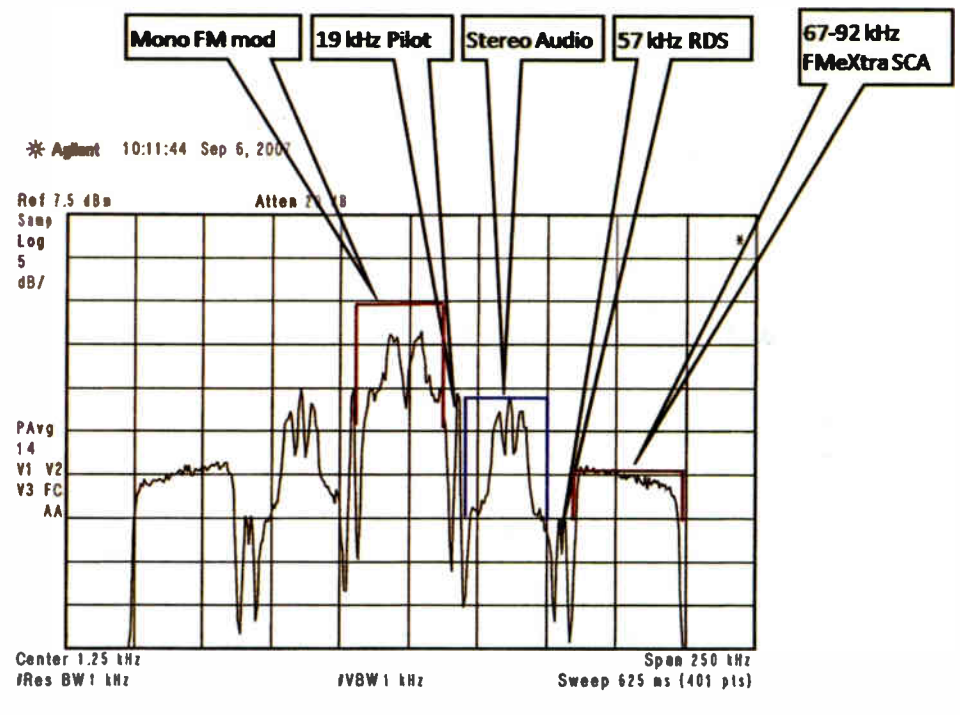
"Refinements in data compression techniques and efficiency will open up the ability to carry many more services inside existing channels," Clark said.

Broadcast Engineering Conference

Monday Morning April 20:
Radio Engineering Forum Part I

Monday Afternoon April 20:
Radio Engineering Forum Part II

The final morning session will be *"Virtual LAN (VLAN) Segmentation for Radio Broadcasters: What Your Network Administrator Needs to Know."* Presented by Paul Shulins, director of technical operations for Greater Media Boston, this presentation will focus on how segmented and routed IP networks can better ensure that real-time audio gets priority over less time-sensitive data. He's joined by George Waters, president of information tech company GWANDA.



Demodulated Composite Baseband

HD Extended Hybrid Mode: HD1/HD2/HD3, 48/48/24kbps
RBDS injection 4.5%
Analog SCA: None
FM Extra: 67 &92 KHz SCA Spectrum. 61-99kHz bandwidth; Two 20kbps, 32kHz audio channels; Injection 20%

Baseband Measurement: BB12
Associated RF Spectrum Measurement: RF20, RF21

An image from Roz Clark's presentation.

Data is certainly the key word for this session and a gut-level feel for data and its distribution is needed to compete in today's radio economy. The Radio Engineering Forum will address data management techniques to keep a station competitive.

Break out of the ghetto

The forum continues Monday afternoon with sessions dedicated to various aspects of digital broadcasting. They are moderated by Jeffrey Smith, supervisor of broadcast/studio systems for Clear Channel Radio-New York City.

"In today's job market, an engineer who does not have an understanding of new technologies will not survive," Smith said. "This session, along with all of the BEC sessions, help give the engineer the tools they need to succeed."

The first afternoon presentation will be *"Leveraging Standard IP Protocols for Audio Sharing,"* delivered by Tag Borland, president of Logitek Electronic Systems.

See MONDAY, page 28 ▶

Sunday

▶ Continued from page 24

testing. Part of the testing there was to discover the affects of its specific geography on the HD Radio signal.

If you have looked into the power level increase proposal before the commission, you would know that it may be possible, depending on many factors, that some FM HD Radio stations would not be able to implement the full –10 dBc sideband levels, but instead would wind up with a level between –20 dBc and –10 dBc.

"FM Radio Reception in the D.C. Market for Various IBOC Power Levels," presented by Sid Shumate of BIA Financial Network, will explore the effects of increased HD Radio sideband power at various levels on not only HD Radio stations, but also on adjacent stations.

One of the challenges some engineers have encountered with HD Radio installations is how to transport the HD Radio data stream from the studio to the transmitter.

Many stations utilize 950 MHz RF links as studio-to-transmitter links. The fact that these links generally are unidirectional and have rather limited bandwidth restrictions make keeping the HD data synchronized difficult and challenging.

Bob Band and Keyur Parikh of Harris will explore these topics and describe the next generation of 950 MHz RF links in *"Optimizing Analog + HD Radio Transport Over an Existing 950 MHz STL Channel."*

If you do the math on HD Radio combining, you find that there are real challenges with implementing the possible FM HD Radio sideband power increased to –10 dBc, particularly with system efficiency.

"The 10 dB IBOC injection levels for digital radio have rendered some combining schemes impractical," says Myron Fanton of Electronics Research Inc.

"Lossy systems are too inefficient for the power increase and several new options are discussed, including channel combiners and filters." His paper is *"IBOC Combining Schemes for 10 dB Injection."*

Additional consideration must be given to meeting the emissions mask, as an increase to –10 dBc may result in increased IM products and spectral regrowth.

Along the same line, Henry Downs and Peter Matthews of Mega Industries will discuss one of the vexing issues when implementing an FM HD Radio station. If you're going on the air at –20 dBc now, what do you do later if an increase to –10 dBc is granted? Throw out your combining system?

"Field-Reconfigurable HD Radio Combiner Provides a Path Forward" will address this situation and what can be done about it, particularly if you have limited space.

As we move deeper into the embedded exporter platform for HD Radio system architecture, we discover that it may be possible to control and create content from many different locations, both local and remote, over IP networks.

Timothy Anderson of Harris will present *"Content Management and Control of HD Radio Networks via HD Protocol,"* which will discuss many possibilities of that protocol.

The final paper of the day, *"FM Digital Radio Power Increase — An Update,"* will be presented by Jeff Detweiler of iBiquity Digital Corp. He will discuss aspects of the proposed increase of the FM HD Radio sidebands to –10 dBc.

He will also be covering the dos and don'ts of the new HD Radio platform, 4.X, which supports the DSP implementation of the embedded exporter. New feature sets and stability improvements of the DSP will be discussed as this technology moves forward.

Thomas R. Ray III, CPBE, is VP/corporate director of engineering for Buckley Broadcasting/WOR Radio, New York.

SURE BETS

A-Bomb Experience

When your eyes begin to glass over from the overstimulation of the Las Vegas Strip, treat them to some amazing photography at the Atomic Testing Museum.

More than mushroom cloud images, the museum chronicles the history of the Nevada Test Site through first-person narratives, artifacts and classic memorabilia from the "marketing" of atomic energy, such as Kix Cereal's Atomic Bomb Ring and the "easy and exciting" Atomic Energy Labs for the kids.

We hear the most popular feature is the Ground Zero Theater, "where we simulate the experience of watching a nuclear test like they did 50 years ago at the test site." Open 9 a.m. to 5 p.m. except Sunday, when it opens at 1 p.m. Admission $9–$12.

Atomic Testing Museum
755 E. Flamingo Road
(702) 794-5147
www.atomictestingmuseum.org

Courtesy Atomic Testing Museum

TUESDAY

New Technologies for Radio

Carrier Control Algorithms, SDR and Man-Made Noise Floors Are Among the Topics

by Tom Osenkowsky

A myriad of diverse topics can only begin to address the changes in technology that affect broadcasters. From man-made noise to advances in content management and transmitter energy conservation, the Tuesday morning sessions offer insight to the ever-evolving field of radio broadcast engineering.

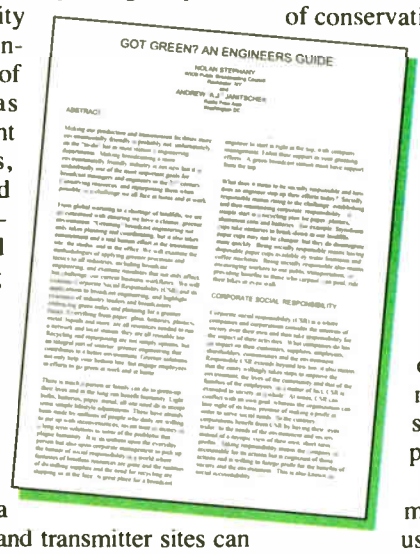
Milford Smith, VP of engineering for Greater Media Inc., chairs this group of sessions, which explore the progress in various technologies that affect all radio broadcasters.

"Energy Conservation in AM Broadcast Transmitters Using Carrier Control Algorithms" — While newer model AM transmitters offer high overall efficiency, an additional energy conserving method involves a technology long employed outside the United States, especially on transmitters with powers in excess of 100 kW.

"Since the majority of carrier and/or sideband power transmits little or no information, employing carrier control algorithms can result in possible energy cost savings in the range of 10 to 50 percent with some trade-off in audio quality or coverage," claims Tim Hardy of Nautel.

He will explore this technology, which is new to engineers in North America. Electric costs have continued to rise with engineers and designers looking for new ways to reduce consumption and maximize savings.

"Got Green? An Engineer's Guide" — When we think of "green," most of us define it as recycling and using recycled materials at home. Expanding this process to the broadcast facility using corporate social responsibility can result in a considerable amount of materials such as paper, plastic, light bulbs, batteries, glass, liquids and metals being repurposed or recycled instead of ending up in a landfill. Using car pools, public transportation or bicycles helps save our environment. Drafting and implementing a plan at the studio and transmitter sites can result in a cleaner, greener environment.


GOT GREEN? AN ENGINEERS GUIDE

NOLAN STEPHANY
WXXI Public Broadcasting Council
Rochester, NY

and

ANDREW "A.J." JANITSCHEK*
Radio Free Asia
Washington DC

ABSTRACT

Such a plan must start at the top management level and filter down to every employee. With the shortage of landfills, mandating recycling such as using both sides of a sheet of paper to using energy-efficient lighting and environmental systems every employee can contribute to a cleaner, greener environment.

Technologies broadcast engineers can use in this effort are examined by Nolan Stephany of WXXI Public Broadcasting Council and Andrew Janitschek of Radio Free Asia. How a facility can earn the Energy Star and save on energy costs is a strong incentive to start now. In 2008 Radio World launched a *Green Radio* series which examined actual examples of conservation in action.

"The Application of Software-Defined Radio Technology to Multi-Standard Waveform Generation for Television and Radio" — Tradition makes one think of hardware when addressing the topic of radio receiver design. With the multiple of waveforms employed by broadcasters, manufacturers have turned to software defined radio (SDR) platforms.

This approach provides the maximum flexibility by the use of software framework in combination with a hardware composition. Broadcasters formerly employed analog audio processors with hardware controls (pots) for parameters such as audio levels, timing, ratio, etc. Digital-based processors employ software to accomplish these same adjustments. The benefits are repeatability of adjustments and the ability to accommodate new technologies and enhancements by software upgrades opposed to hardware replacement.

Kevin Berndsen of Harris Corp. addresses the advantages and implementations of the software framework, as technologies borrowed from computing and server domains provide flexibility in receiver design that keeps pace with evolving transmissions waveforms.

"Using the Resource Description Framework (RDF) to Simplify Content Management" — Content management is becoming ever more important in today's broadcast station. Most stations have a presence on the World Wide Web. This can be a page with streaming audio, podcasts, news and features, contests, links to advertisers and interactive content.

Managing and organizing these various delivery systems can be simplified by the use of Resource Development Framework (RDF), a computer language for representing information about data

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Broadcast Engineering Conference

Tuesday Morning April 21: New Technologies for Radio

Tuesday Afternoon April 21: Antenna Solutions and Case Studies for Radio

Monday

▶ Continued from page 26

With different audio console manufacturers taking slightly different approaches to implementing IP protocol, Borland argues, a network from one manufacturer is a ghetto in which there is usually no communication with networks from the competition. Users are increasingly demanding interoperability, and this paper will describe the protocols now in use and how they compare with each other.

Frank Foti, president of Omnia Audio, takes over with the next presentation, *"Cleaner... Yet Still Loud!"* Decades of improvements in broadcast audio processing have led to stations that are loud, often at the expense of quality. Foti will examine the effects of distortion, particularly intermodulation distortion, created by aggressive audio processing. Audio demonstrations will give an A/B comparison to see which processing techniques yield the most sparkling audio.

Are you thinking of using IP links for remotes or an STL? Up next is *"20 Things You Should Know Before Migrating Your Audio Links to IP,"* presented by Thomas Knuchel, sales engineer for APT. This will be an overview of 20 significant issues involved with implementing an audio-over-IP link. If you have questions about migrating to IP and using the public Internet, this is a place to start looking for answers.

Many stations are operating with first-generation digital equipment that is 10 to 15 years old, and finding that support for aging digital technology is increasingly scarce and expensive. *"Next-Generation Radio Networks"* addresses the question of whether you should update or replace this older equipment. Presented by Frank Peters Sengers, managing director of International Datacasting Corp., this discussion will address the questions of how and when to replace aging digital systems.

Next up is *"MicroCasting: Applying Automation With Customization to Radio Station Affiliates,"* presented by Kamy Merithew, vice president of marketing for Wegener. As some broadcasters build centralized scheduling and automation systems, individual stations may want specific local content, a feature known as "microcasting." This presentation will discuss how new networking architectures push the benefits of centralized automation down to the local level, making microcasting more flexible.

Anyone who has done a remote with a POTS line or RF link understands the promise of remotes via IP audio. The next presentation, *"Send a High-Quality Audio Feed From Anywhere"* by Andrew Janitschek, director of program and operations support for Radio Free Asia, will discuss how remotes can be done from virtually anywhere in the world at low or no cost. Janitschek will present a real-life case study of how RFA sends and receives audio from affiliates around the globe.

Competition is everything

Radio is a competitive business and ratings are what the competition is all about. The afternoon's moderator, Jeffrey Smith, noted that understanding the latest rating technology will help in the fight for every last rating point.

Jeffrey Smith of Clear Channel. 'It is more important than ever to understand how to monitor [PPM] to make sure that your station gets all the credit in the ratings it deserves.'

"With the Arbitron PPM system being launched in more markets and replacing diaries, it is more important than ever to understand how to monitor it to make sure that your station gets all the credit in the ratings it deserves."

The next presentation will examine the Arbitron PPM system and how it reports the stations that a listener hears. Delivered by Dwight Douglas, vice president of marketing for RCS and Media Monitors, this topic is titled *"Understanding and Using PPM Technology."* Knowing how an audience reacts to content creates a unique tool to program to the needs of the listener.

This will be followed by a second presentation on the PPM system, *"Practical Strategies for Effective Remote PPM Monitoring."* Delivered by Stephen Dinkel, director of North American Sales for Burk Technology, this will discuss the nuts and bolts of PPM technology, including detecting failures, corrective actions and accurately reporting in the presence of a failure.

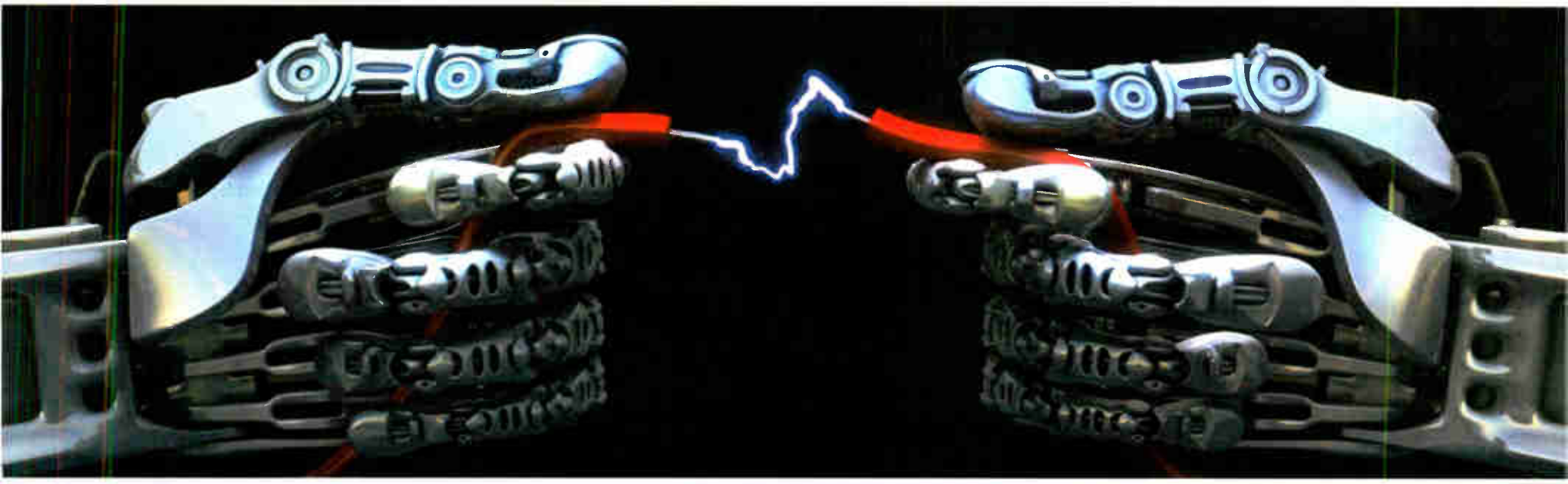
The final presentation of the afternoon will be *"Tests of Digital Radio Broadcasting Potential to Cover a Large Area (Alaska) With Shortwave Signals,"* by Donald Messer, an independent radio engineering consultant. Last year, as RW has reported, the FCC issued an experimental license to test the possibility of covering 500,000 square miles of Alaska with a single digitally modulated HF transmitter. This presentation will discuss the test plan, including the antenna, test methods and data evaluation.

Although the radio that we grew up with is still out there, it's clear that changes in the air are now on the ground and growing sturdy roots. Jeffrey Smith, the moderator, notes that "different" doesn't necessarily mean that what you learned a few years ago is now obsolete.

"Radio is still about the sound of the product you deliver," Smith said. "What is different today is most of that audio is delivered over a data stream. It doesn't make the audio any less important, it just adds to the big picture."

Automation

Simple • Powerful • Redundant



Not since Axia audio-over-IP was introduced to the broadcast industry have we at BGS been so excited! It is with great enthusiasm we'd like to invite you to take a look at the new Op-X Radio Automation delivery system for any single or multi-station cluster. Op-X works seamlessly with Axia IP-Audio networks or as a stand-alone system.

*"The merging of traffic and music logs takes a mere :30 seconds, making it among the easiest I have ever worked with. Once you get used to your adjustable personal color scheme, everything is pretty easy to follow. The best part about this system is the LACK of "dead-air" or "hangups" during automation. PD's will breathe a sigh of relief at this. Another thing that stands out is the absolute ease with which you can build your personal hot keys for each air talent. If you organize your show properly ahead of time and know where you are going, this system will make your show much easier and let you concentrate on *sounding good* on the air. "*

~ Jim Franklin, Program Director
WVBO, Appleton/Oshkosh - Wisconsin

"Finally, an automation system that keeps in mind that not every jock is also a computer whiz. This system is easy to operate from the word go.....
yet offers all the bells and whistles that help make your station sound great. The clock builder option makes interfacing with satellite shows very easy.
Plus, it has the best voice-tracking capabilities available."

~ Matt Scurry, Operations Manager
WWFN/WHLZ, Florence - SC

"A fast paced station needs a system that can keep up and is easy to use. Op-X gives us the tools we need to deliver the sound Houstonians have come to expect from KRBE."

~ Leslie Whittle, Program Director
KRBE, Houston - TX

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BGS

Op-X RADIO AUTOMATION

BSI

AXIA A TELOS COMPANY

Tuesday

▶ Continued from page 28

resources on the Web. Content or Digital Asset Management can be tedious in a multistation or cluster environment. By implementing the Semantic Web approach, computers will be able to furnish people information that will be thorough and on target of their needs. This approach can also be applied to the broadcast station by managing libraries and other sources of information to be presented to the listener/viewer.

David Baden, the chief technical officer of Radio Free Asia, and Ronald Reck of Rrecktek will demonstrate how to manage content effectively. As an example for the need of content management, Radio Free Asia broadcasts 35 hours per day in 11 languages seven days per week on air and Internet.

"Implications of Increasing Man-Made Noise Floor Levels on Radio Broadcasting" — Most broadcasters strive to provide the strongest and highest quality audio to their listeners. The effect of raising the noise floor is decreasing coverage. Man-made noise comes from many sources: AC power lines, light dimmers, microwave ovens, touch-operated lamps, high-speed digital circuitry in computers, and microprocessor controlled devices can increase the noise floor dramatically. Microprocessor clocks operate in the range of several kilohertz to hundreds of megahertz, which can affect AM and FM reception.

Nautel Director of Sales Charles Kelly is slated to examine sources of noise and studies conducted in India and other areas. He'll show an example of a Class A FM station's coverage reduced by 71 percent by a 16 dB increase in noise floor, and address remedial options.

"Same Basket, Different Eggs" — Broadcasting live events for terrestrial radio used to be simple. An RPU or phone line was employed to relay audio from the event to the studio. New technologies such as HD Radio, Internet, cellphone and other devices require care in how the product is ultimately received by the listener.

Alex Kosiorek, director of recording services for the Cleveland Institute of Music, examines various technologies that are employed to quality content in this presentation.

"Producing content for delivery to today's receiving devices requires care. One major concern is cascaded digital algorithms. With digital technologies employed in several steps in the transmission and editing path, degradation can result," he says.

Processing for different codecs, ensuring consumer devices do not experience digital level overload, and simplifying the process will be discussed in detail.

"What you can do on the front end to obtain quality at the back end is the goal." In today's era of surround sound, content delivery to cellphones as well as over-the-air and Internet requires a strong bond and sharing of experiences between the broadcast engineer and IT specialist.

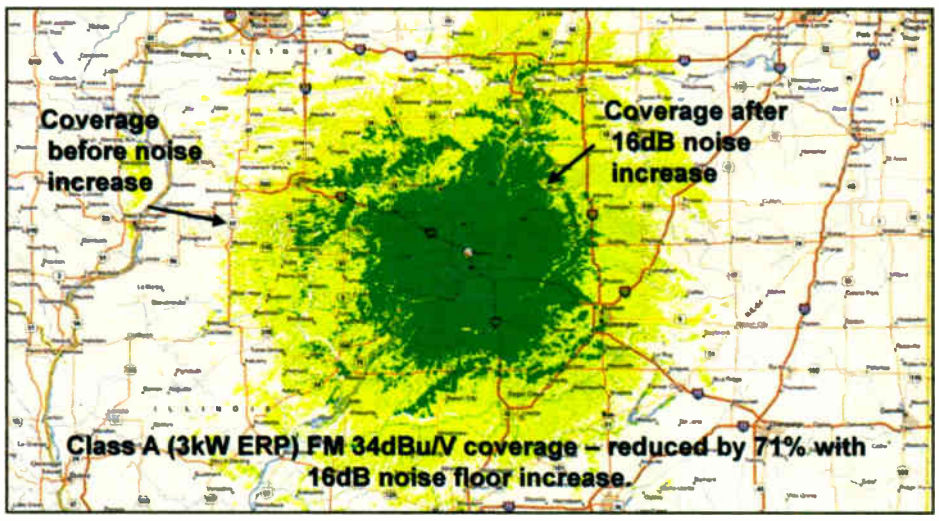
The real world

The afternoon sessions, "Antenna Solutions and Case Studies for Radio," aim to provide an engineer with experiences from those directly involved, said session chair Andy Laird, VP and chief technology officer for Journal Broadcast Group.

"Experience is one of the best learning tools, and the professionals relating theirs will enable those in the audience who face similar challenges to be well informed on how to resolve them in a timely and seamless manner."

"An AM Directional Antenna and HD Radio" — Tom Ray of Buckley Radio, an RW contributor, will describe the directional antenna recently installed at WOR(AM) in New York.

"While a three-tower dogleg array may not seem complex, the antenna system contains traps and complex detuning (including detuning skirts) because of the other AM directionals in the immediate vicinity of the WOR array," NAB states in the summary. Ray will discuss the performance of the antenna system and compromises that had to be made to make the system work on budget.



This image from Chuck Kelly's presentation shows decreased coverage area for a Class A FM station with a 17 dB noise floor increase.

"The National Radio Systems Committee IBOC RF Mask Measurement Guideline, NRSC G201" — David Maxson, managing partner of Broadcast Signal Lab, relates his experiences on the committee's Digital Radio Broadcasting Subcommittee IBOC Standards Development Working Group recommendation to adopt the latest revision of the NRSC-5 standard, NRSC-5-B.

"It became apparent that there was a need for a 'gold standard,' so to speak, on conducting measurements of IBOC signals," Maxson said.

"Since measurements are more about implementation of IBOC than about how to make an IBOC signal, NRSC DRB decided that instead of a standard, it would be best to develop a best practices guideline for measuring IBOC signals.

"This presentation will provide broadcast engineers with the background on the collective knowledge and experience that went into the creation of NRSC G-201, a comprehensive guideline for transmitter tests and measuring the actual quality of the transmitted IBOC waveform, using metrics of the digital signal constellations, such as Modulation Error Ratio, or MER."

Myron Fanton of ERI will discuss the case study of a multi-station combined analog/digital antenna on a building top. Shown, a worker (lower right) prepares the structure for another bay.

"Real-World Installation of AM HD Radio" — Installing AM IBOC is not as simple as plug-and-play. Ray Klotz, president and CEO of Sierra Multimedia Inc., relates his experiences of such an installation at KFAQ(AM), Tulsa, Okla., a nondirectional day, three-tower directional night antenna system.

The towers have 7 foot square faces and the phasing/coupling system is of 1988 vintage. Klotz will talk about preparation prior to the project, the installation itself and post-installation measurements to prove proper operation; he'll also talk about antenna system requirements as well as transmitter and field measurements.

"The lesson learned here can be stated in one sentence: If you are going to

See TUESDAY, page 31 ▶

Kintronic will discuss the first installation of its low-profile KinStar antenna at KCST(AM) in Florence, Ore.

Tuesday

▶ Continued from page 30

install AM IBOC, do your homework and pay attention!"

Two experiences in the installation were spectrum analyzer input overload resulting in the display of spectral regrowth that, in fact, was not present in the field and differences between the factory adjustments and those required in the field.

"HD Radio Implementation Case Study: Dual-Polarized Master Antenna" — With the possible increase in FM IBOC power, many antennas and/or transmission lines may not be capable of safely accommodating the higher levels. This is especially true of multi-station installations.

One case study of a multi-station combined building-top analog/digital antenna is discussed here. Myron Fanton, chief engineer of RF technology for Electronics Research Inc., presents details of the dual-input antenna. He'll talk about special requirements of low downward radiation and radome enclosure. He offers the new development of antenna combining using dual polarized antennas to achieve 10 dB injection as an economical option for the increased IBOC power, and presents an examination of the antenna design, installation and operation.

"Easing the Transition to AM IBOC: Tools and Techniques to Help the Broadcaster" — In AM IBOC installations the engineer has two goals: Achieve good receiver lock while maintaining spectral regrowth within FCC limits.

Research Engineer Brian Walker of Nautel says, "I will discuss the challenges in achieving spectral compliance with AM IBOC, and what can be done to help solve them. A modern AM transmitter can incorporate several tools for the broadcaster. For troubleshooting, an integrated spectrum analyzer and real-time impedance measurement can help with tracking down problems with the antenna without needing to go off the air."

Design implementation of precorrection in the transmitter and optimization of the load are important ingredients in transmission of the optimum signal quality.

"Assuming the load has been adjusted to be as symmetrical and ideal as possible, the transmitter must adjust for its own distortions and any remaining imperfections in the load. Amplitude and phase distortions in the power amplifiers can be characterized and removed by using precorrection. The frequency response of the transmitter when loaded by the antenna can be measured and flattened with adaptive filtering to prevent any mixing distortions," he said.

"High-Level IBOC Combining Using Filters" — One of the methods employed to transmit FM IBOC is high-level combining. Myat's Director of Filter Products Derek Small compares traditional techniques to the lossy directional filter approach. Differing filter responses are employed to adjust the analog and digital path response throughout the system. Factors such as efficiency, loss and delay variations are examined with their effects on the signal shown.

"The Inaugural Installation of the First KinStar AM 'Green' Antenna" — AM broadcasters are often faced with restrictions on tower height. These may be for aesthetic or aeronautic reasons.

A solution to this problem is offered by Tom King, president of Kintronic Labs Inc. The low-profile KinStar antenna has a height of 75 feet at 1000 kHz. The first KinStar installation at KCST(AM) in Florence, Ore., will be shown. This installation employed wooden utility poles and no concrete, qualifying it as a "green" installation in a forest background (see page 4).

The FCC has adopted simplified application procedures for nondirectional KinStar antennas. They have been shown to exhibit broadband characteristics and coverage comparable to taller quarter wave radiators. The KinStar was developed by Star-H Corp. and is manufactured by Kintronic Labs.

WEDNESDAY

Towers & Transmission Systems

Sessions Also Look at AM Modeling and Issues of Disaster Preparedness

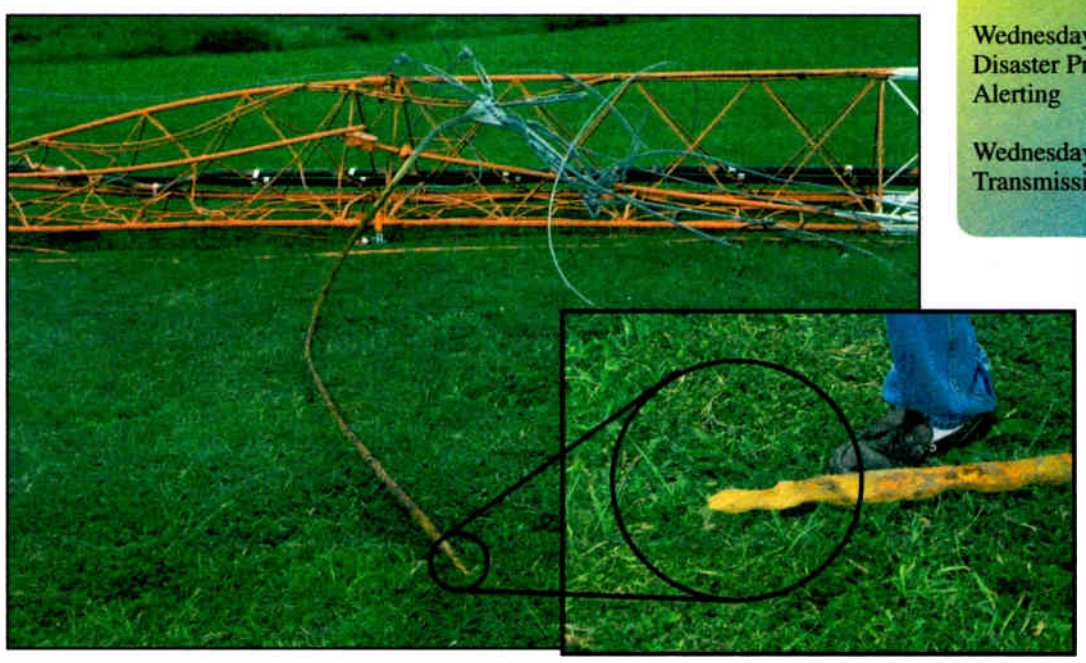
by James G. Withers

Broadcast Engineering Conference

Wednesday Morning, April 22: New AM Technical Rules

Wednesday Morning April 22: Disaster Preparedness and Public Alerting

Wednesday April 22: Towers and Transmission Systems Parts I & II



Tower failure due to anchor rod corrosion. ERI's David Davies writes: 'Seldom does an investigator find the culprit of a crime still attached to the victim. This is a picture portraying a collapsed tower with the failed guy wire anchor shafts still attached. This steel failure occurred approximately 12 feet from the ground surface and was not detected in several tower inspections. The majority of the brownish stain on the anchor shaft is clinging dirt and the corrosion was almost entirely limited to the area of interface between the steel shaft entered the buried concrete anchor. Hence, the common inspection procedure of a shallow excavation of the anchor shaft didn't reveal the problem.'

The Broadcast Engineering Conference at the NAB is a yearly opportunity for broadcast engineers of all types to gather and hear pertinent presentations on challenges and changes in the technical arena. There is a wealth of information being disseminated at the Wednesday sessions, which address recent changes in AM technical rules, disaster preparedness and alerting, and issues involving towers and transmission systems.

MoM

Cris Alexander, familiar to readers as DOE of Crawford Broadcasting and columnist in Radio World and RW Engineering Extra, chairs a two-hour morning session on new AM technical rules. These went into effect in February, and according to Alexander, some stations are taking advantage of the changes now.

"The rules now permit moment method computer modeling of certain AM directional arrays in lieu of traditional proof-of-performance electric field measurements," he said, "and already a number of 'model proofs' have been filed and program test authorities have been issued."

One of the main goals of this session is to acquaint AM broadcasters with the significance of the changes and how they apply to individual stations.

To that end, the session starts with a paper by Benjamin Dawson, P.E., partner at Hatfield & Dawson Consulting Engineers, *"Modeling AM Arrays,"* and continues on a related topic as Ronald Rackley, P.E., partner at du Treil, Lundin and Rackley Inc., presents *"Measurements for AM Modeling."*

Both of these sessions are "must-sees" for AM engineers, Alexander believes.

"Computer modeling," he said, "represents an excellent alternative to the often open-ended traditional tune-up and proof process for eligible stations." Dawson and Rackley will explain how a computer model that is calibrated against base impedance matrix measurements will provide a set of operating parameters to which an array can be adjusted on a carefully calibrated sampling system.

What this means for the average AM station with a directional antenna is a quicker, more reliable measurement.

"This new model-proofing process is a close-ended, fixed-cost option that will have a station operating with the correct pattern more quickly and for less money."

John Warner, VP of AM engineering for Clear Channel Communications, brings the real world into the conference hall when he will describe a case study of WKOX(AM) in Newton, Mass. According to Alexander, Warner filed the first "model proof" under the new rules and within a few days received program test authority from the FCC.

Warner will detail the process and potential pitfalls of using the moment modeling method as part of his station's proof.

Alexander then plans to open the session to questions, as he moderates an interactive panel discussion of moment-method computer modeling of AM arrays with several experts.

Beyond EAS

Although most of us hope we never face a Hurricane Katrina or worse (if that is possible), Wednesday morning's *"Disaster Preparedness and Public Alerting"* offers some timely and informative discussions on just how your station can survive such an episode, moderated by Clay Freinwald, RF systems engineer for Entercom.

The session begins with *"Access to Emergency and Non-Emergency Broadcast Information for People With Disabilities."*

According to Freinwald, this addresses a report and order from the commission regarding its proposed update of EAS rules.

"The R&O amounts to the FCC asking for comments on what the industry proposes to do to make EAS warnings accessible," he said, adding that "there is not a firm resolution yet, and changes will no doubt be made." Still, he said, this presentation will address the issues that will be considered by the FCC.

The presenters are Geoff Freed and Marcia Brooks of the Carl and Ruth Shapiro Family National Center for Accessible Media at WGBH. The center has developed prototype solutions to enable local television stations to send messages, warnings and alerts that meet the communication needs of people with disabilities.

Gil Garcia will address *"Disaster Planning for Radio Stations."*

Freinwald said that Garcia will bring specific information to the audience based on his position as disaster response coordinator for Clear Channel Radio. He says there are countless things that can be overlooked prior to an actual emergency.

"For instance," he mused, "What do you do when you need to start up the emergency generator and discover someone has stolen the diesel fuel?"

Also from Clear Channel Radio, Steve Davis, senior vice president of engineering and capital management, will discuss how the company has built a second layer of station interconnectivity using Very Small Aperture Terminal Data satellite channels. Creating a *"National VSAT Safety Net"* would go a long way toward ensuring that emergencies that are national in scope would not disrupt the national broadcasting infrastructure, he feels.

The industry's reliance on various means of interconnection of separated sites brings a downside, Davis argues — namely, what happens when we lose those connections. Disasters bring disruptions to WAN connectivity, which affect e-mail, databases, streaming, audio interchange and more. They cause loss of audio to one or more tower sites, typically because a land line and/or STL have failed, and loss of control of a tower site.

Clear Channel Radio decided to build an infrastructure to provide a second layer of connectivity. It installed a Ku band VSAT IP-based satellite network with built-in audio streaming capability, which the engineers call the SaTL, for Satellite STL.

Davis is followed by the presentation *"One-Seg Technologies for Emergency Warning Services Based on Digital Terrestrial Television Broadcasting — Emergency Warning Broadcasting and Earthquake Early Warning."* This is by Kenichi Murayama, principal research engineer for NHK in Japan. One-Seg is a mobile, handheld TV service based on digital terrestrial television broadcasting in that country.

Although the title is a bit intimidating, Freinwald says radio too has an interest in exploring the ability to disseminate emergency information using the extra data carrying capability of DTV systems. "These technologies tend to overlap and there is an amazing amount of what I like to call cross-pollination. It is just a question of being able to recognize it."

Radio broadcasters have the same capability within the FM IBOC stream, he asserts, so the topic should be investigated thoroughly.

Along those lines, the session *"Emergency Preparedness: Essential Elements for Business Continuity When Disasters Strike"* will be presented by Mitch Weinraub, executive director, products and services of Comcast Media Center, but again, is applicable to radio.

"Emergency preparedness is the same across every segment of broadcasting," Freinwald said. "At the end of the day, when a disaster strikes, eventually station managers have to ask the question, 'What am I doing to keep cash flow going while this situation plays out?'" This session will address the specifics of that topic, from data protection through sales and programming continuity.

The final part of this session deals with power: *"Predictable, Certain and Green — Ensuring Reliable Power and Green Systems at TV Facilities and Transmitter Sites"* with Gary Rackow of Active Power Inc. and Julian Rachman of DFW Consulting Group.

Backup power at many stations amounts to a few UPS units connected to a couple of PCs. But how are those tested, and more important, what happens to your operation if the power stays down for an extended period of time? There are solutions, and Freinwald says they apply across the board to mission-critical broadcast operations.

Rackow will show how those solutions can be reliable and at the same time environmentally friendly.

"This is another example of the 'cross-pollination' aspect of our business," Freinwald said. "Power protection at cable headends obviously also applies to TV and radio. A lot of this technology is generic, in the fact that it is applicable across platforms, but we don't take advantage of that."

Protect the investment

Starting at 11 a.m. and running through 6 p.m. (with a two-hour break for lunch and returning BlackBerry messages), John Lyons, vice president and

See WEDNESDAY, page 33 ▶

Wednesday

▶ Continued from page 32

director of broadcast communications for The Durst Organization, is moderating a two-part session on Towers and Transmission Systems.

"The session is designed to give engineers a better understanding of how to safeguard and maintain towers and overall transmission systems, because after all," he continued, "that part of the broadcast plant represents a sizable capital investment that needs to be protected."

The session begins with *"Guy Anchor Rod Corrosion: Probability, Self-Inspection, Detection and Prevention"* with David Davies of ERI, who says tower collapse due to galvanic corrosion and subsequent foundation failure was last year's second leading contributing cause of tower disasters.

This topic, Lyons said, is mundane but absolutely essential for engineers to understand.

"Specific instances of tower failures have been documented and will be discussed," he said. As well, he said detailed information will be presented on how to recognize and deal with this unseen, but occasionally catastrophic, phenomenon.

Tim Holt of Bird Electronics continues along the same vein with *"High-Power Radio Frequency Loads and Attenuators for Broadcast Applications."*

Failure modes of RF loads have changed with the initiation of digital broadcasting, and Holt will discuss the changes in design that have taken place to address these potential failures. Preventive maintenance routines are also important and will be discussed, Lyons said.

"All of the presentations of this extended session focus on the need of facilities engineers to recognize and deal with potential failures in the transmission area of broadcast stations."

Part II of this session in the afternoon includes several presentations that deal with the topic of digital television. One of these, however, is of interest to radio engineers. Danial Fallon of ERI presents *"Peak Power Ratings for Transmission Line Carrying Multi-Channel OFDM Broadcasts."* This presentation addresses the unique characteristics of Orthogonal Frequency Domain Modulation, used not only in certain TV transmissions but also in the FM IBOC arena.

"OFDM modulation has a large peak-to-average power ratio," according to Fallon's abstract. "When several channels are combined together to feed a broadband antenna, the transmission line may experience extremely high voltages.

"The traditional way of calculating peak powers is to find the peak voltage of each channel and then add the voltages. This approach is valid for CW operation but due to the pulsed nature of OFDM peaks it tends to oversize the line for multi-channel OFDM ensembles."

His paper reviews peak power handling calculations and the process for arc-formation in air. It looks at the statistics and duration of OFDM peak events. The similarities and differences with 8-VSB are noted. It then introduces a peak power handling calculation relevant for short pulses. "Several specific examples of line size selection for multi-channel broadcasts are presented."

Later, John Pinks of Nautel presents a paper, *"Improved Lightning Protection for Radio Transmitter Stations."* Lyons says that the destructive nature of lightning cannot be overemphasized.

"It has always been there, and always will be," he said, "and towers are nothing more than big lightning rods so it has to be dealt with." Pinks discusses the anatomy of lightning energy and offers a methodology to remediate its effects by careful attention to the physical layout of the site. He also addresses ancillary damage that is caused by nearby strikes that can induce large currents in equipment and cable runs.

Don Doty, president of Stainless Inc., will present *"New Consensus Standards for Construction Rigging and Protocol."* Doty has been in the tower and tower rigging business for decades and has taken note of several high-profile accidents that have occurred during rigging and constructing operations.

"The industry really needs a comprehensive set of standards that can be applied to these operations," he said. The National Association of Tower Erectors (NATE) and The Telecommunications Industry Association, part of the American National Standards Institute (ANSI), collaborated on such a project. The new standard addresses tower erection, maintenance, modification, antenna replacement and other important protocols.

"It really amounts to an industry agreed upon 'best practices' standard and we are very anxious to get engineers' reactions to it at the show."

Also Wednesday, Myron Fanton of ERI will address *"RF Measurement Techniques for Broadcast Engineers."* He notes that with so many areas in which engineers must be proficient, RF technology may be a lower priority.

"The discussion details the measuring and troubleshooting of transmission systems, elbows, tuners, transmission lines, and antennas," according to the abstract. He'll also talk about the Vector Network Analyzer equipment used to perform measurements, outlining modern techniques for system measurements. Fanton will discuss a large RF system example and talk about system reflections and troubleshooting sources of large reflections.

Exhibit Hours

Monday April 20	9 a.m.–6 p.m.
Tuesday April 21	9 a.m.–6 p.m.
Wednesday April 22	9 a.m.–6 p.m.
Thursday April 23	9 a.m.–2 p.m.

This section contains a selection of exhibitors of interest to radio attendees at the 2009 NAB Show. Highlights are paid for by exhibitors; information is from the companies. Check on-site program for changes, late registrants and a full list of exhibitors.

Booths preceded by the letter N are in the North Hall of the Las Vegas Convention Center. C indicates Central Hall, SL is South Lower, SU is South Upper, OE is Outdoor Equipment, MR is Meeting Room, L is Lobby. Booths preceded by R are RTNDA booths at the Las Vegas Hilton.

25-Seven Systems **N7322**
Intro: Program Delay Manager reinvents the profanity delay, providing Axia connectivity, PD Alert e-mails with time-stamped audio clips of every dump event, easy Web configuration and our audio compression/expansion.
Also: Audio Time Manager (ATM).

360 Systems **N4120**
Intro: Instant Replay² is an audio clip player, giving creative producers access to their own custom audio library. Now with Ethernet networking for leveraging internet and e-mail for on-the-fly updates to their stored sound clip library.

Abacast Inc. **C1744**
Intro: Flash P2P — Abacast Flash-based Peer-Assisted Delivery is an efficient option when using Abacast's Live video streaming solutions. Abacast has taken the security and control of unicast technology and combined it with the efficiency of peer-to-peer delivery to produce a secure, stable, resilient network that uses up to 80 percent less bandwidth, provides higher quality connections, and enables publishers to serve their customers the highest quality Flash content.

AccuWeather Inc. **C8318**

Acoustical Solutions **C5722**

Active Power Inc. **C844**

ADC **N3400**

Adobe Systems **SL3320**

AEA Technology **N8614**
Featured: Hand-held RF test instruments, vector impedance analyzers and "step" time domain reflectometers (TDRs). Economical RF and cable testing solutions. The VIA Echo series analyzers are the smallest, lightest network analyzers, spectrum analyzer, power meter & FDR with a 4 MHz to 2.5 GHz range in a rugged package.

AEQ International **N5429**
Intro: Titan BC 2000 D Router/Concentrator is a high-speed, high-capacity (5,120 x 5,120 audio channels) digital audio router and concentrator designed to serve as the audio switching "core" in critical systems. It is equipped with five bi-directional optical fiber ports that use "non-blocking" architecture. Each port is capable of connecting up to 1,024 channels. The control system is based upon TCP/IP architecture. Communication with its two controller boards working in "cluster mode" provides control interface access via a single virtual IP. Also new: Opera Analog On Air Console for medium to large radio stations. *Also:* AM-04 In-Rack Audio Monitor is suitable for monitoring audio in control VTR rooms, remove vans, radio and television studios and multimedia systems.

AETA Audio Systems **N7910**
Intro: Scoopy+ integrated portable audio codec includes a 3G/GSM module and a pentaband integrated antenna. It leaves the possibility to use an Express Card slot and USB for extension module 3G/3G+ cards, WiMax, etc. Network interfaces: Ethernet / IP 10/ 100 Base T IP/ SIP, -POTS (PSTN). Connection with INMARSAT BGAN terminal is possible without a laptop. *Also:* Scoop 4+ — Compact 1U design, silent and low power consumption (no fan). Compatible with SIP phone. Dual mono codec mode available for two independent links over leased lines or ISDN, remote control and supervision, 5AS for easy connections over ISDN, auxiliary data channel and relay transmission. For contribution links via IP connections on public or private networks, INMARSAT BGAN service, ISDN lines, for live broadcast from OB vans. *Also:* Mixy professional three-channel stereo and M/S mixer, analog and digital I/O.

Altronic Research **N6132**
Intro: Model 40160 dummy load
Also: Air and water loads

American Tower Corp. **C3310**

Anchor Audio **N6123**

Anritsu Co. **N9023**
Featured: Communications, optical, device and wireless solutions with instruments for R&D, manufacturing, field test, installation and maintenance that address 10 Gb Ethernet/IP, 802.11, SONET/SDH/OTN, 2.5G/3G wireless and a spectrum of RF/microwave applications.

ANT Group **C3321**
Intro: NetPod User Definable Screens is the last introduction to NetPod SW suite for remote control and monitoring. The graphical instrument allows the user to easily configure graphic windows inside a NetPOD window. DF-L-ETH is the low-cost data collection equipment designed to serve secondary and small transmission and reception sites where you have a DSL connection. It's the heart and the hands of the Garda remote control system. Tube-300S is a stand-alone self-powered data logger and automation system with rechargeable battery and built-in solar panel.
Also: NetPOD Network Management Software, SNMP Bridge, RDF remote data frontend, ANT131 precision power probe

Antelope Audio **N2234**

Anvil / Calzone Cases **C5719**

Aphex Systems **N5523**
Featured: Aphex is dedicated to the development of high-quality products for the professional audio, broadcast, fixed installation, touring-sound and home-recording markets.

APT **N6717**
Intro: WorldCast Equinox — The latest addition to APT's award-wining range of IP audio codecs, the WorldCast Equinox is a new, cost-effective stereo audio codec offering IP & ISDN connections with optional X.21 / V.35. This fully-duplex, multi-algorithm unit has been designed primarily for remote link-ups, studio to transmitter links and inter-studio networking applications. Compatibility with many other manufacturers' codecs means the Equinox can slot easily into your existing network infrastructure. With robust, DSP-based architecture and the ability to automatically back up your primary IP or X.21 link, the WorldCast Equinox offers a stable platform for 24/7/365 reliability.

Also new: WorldNet Oslo already has won many accolades from the radio industry, where it has become the platform of choice for the delivery of audio, voice and data over IP links. At NAB 2009, APT will launch a new module specifically designed for the streaming of video over IP networks. The new video module will provide support for the JPEG2000 video format in accordance with the ISO/IEC 15444-3 (Motion JPEG2000) standard. Thanks to its low-latency approach, the use of JPEG2000 on the WorldNet Oslo will enable the delivery of high broadcast video quality in near real-time. The technology works together with the low-latency Enhanced apt-X audio algorithm to provide broadcast-grade audio/video with minimum delay and still provide savings on bandwidth requirements. Delivering professional quality and real-time transmission makes the WorldNet Oslo perfect for applications such as sport events with high-quality video and multiple audio channels, video contribution over satellite or IP networks, studio/studio contribution, multi-channel audio distribution with video monitoring and de-embedding audio for SDI multi channel links.
Also: WorldNet Oslo Audio Multiplexer for Audio, Voice & Data over T1 & IP, WorldCast Range of IP Audio Codecs for STL, TSL & Remotes
Kevin Campbell, SVP Global Hardware Sales
48 Summer Street, Ste. 1
Watertown, MA 02472
617-923-2260
800-955-APTX
E-mail: sales@aptcodecs.com
Web: www.aptcodecs.com

Argentem **SU13502**
Intro: ATB-1 Argentem Traffic System is a sales, traffic and billing system that is easy to learn and use. It employs the software development tools from Microsoft, which bring reliability and productivity.

Armstrong Transmitter Corp. **N6517**
Intro: SCM1B affordable changeover system
Also: STLs, exciters, transmitters, FM antennas and passive products

Arrakis Systems **N7617**
Featured: Consoles, automation and furniture for broadcast radio. Over 30 years of service with innovative products like the Digilink Xtreme Automation. The ARC series of analog consoles $1,595 to $3,495. Modular MARC consoles $4,995 to $7,995. Digital consoles ranging from the Nova 10C at $3,200 to XMixers at $5,995 to $6,995. Accent furniture studio packages at $4k-10k.

ARRL The National Association for Amateur Radio **L1**

Associated Press/ENPS **C161**

ATI-Audio Technologies Inc. **N4525**
Featured: Manufacturer of analog and digital audio distribution amplifiers and studio accessories.

ATTO Technology Inc. **SL2205**

Audemat Inc. **N7632**
Intro: Two new products for DMB broadcasters, Navigator test and measurement platform and Goldeneagle DMB, for monitoring and quality assurance of up to 40 DMB signals in a single unit. Navigator DMB is capable of advanced signal analysis and mobile measurements to check coverage areas and reception quality in the field. It measures RF parameters and SFN synchronization, and can check an ETI transport stream. *Also:* Scripteasy is facility control software, capable of operating in a range of our equipment, from dedicated remote control hardware like the Relio to exciters, audio processors and RF monitoring

SURE BETS

Where the Neon Lights Were Pretty

Courtesy The Neon Museum

Have an afternoon to kill? After you've lapped the floor and networked a bit, you could make a beeline for the cabstand and head down to Fremont Street for one of the coolest and most overlooked tour attractions in Vegas: The Neon Museum, a graveyard — or "boneyard," as they call it — of discarded, unrestored vintage signs from all around the city.

If you never tire of watching those "history of Las Vegas" shows that run all day in your hotel room, you'll love this place. With its combination of nostalgia and electrical craftsmanship, it's the perfect antidote for the glitz and gluttony that is the Strip: a $15 guided tour of abandoned kitsch that even recommends close-toed shoes due to the exposure/proximity to rusted metal and glass. Awesome.

Among the popular residents are the Silver Slipper, the Stardust, Aladdin's Lamp and the Treasure Island Skull. Many visitors also ask about a certain "W" that was featured in an episode of CSI. You'll also find signs from small local businesses like dry cleaners, wedding chapels and flower shops.

Be sure to check out the latest addition, the architectural treat that is the La Concha Motel Lobby, recently "saved" by the Nevada Preservation Society. (The motel portion was demolished in 2003.)

Tours are offered Tuesday through Saturday, twice daily at noon and 2 p.m. The minimum donation is $15 but the sheer "wow" factor may inspire you to donate more.

The Neon Museum
Phone: (702) 387-NEON (6366)
Address: Corner of Fremont and Fourth Streets
www.neonmuseum.org

devices. It is capable of autonomous operation, multi-site communication and control, and connection methods such as SNMP and our Advanced Programming Interface. The API controls communication with external equipment using serial protocols, making it possible to access hundreds of data and control functions using a single RS-232 cable. API software has been written for Harris Z and Ecreso transmitters, with more on the way. Open architecture so users can write interfaces using Javascript. *Also:* Navigator HD has made the move to multiband operation; now measure FM and AM IBOC coverage automatically while you drive. Coverage data can be plotted into popular mapping software, or exported and viewed in 3-D using Google Earth. *Also:* Digiplexer 246 processor will be available with advanced audio codecs that will allow broadcasters to use IP streaming audio as a primary on-air source. Capability has been added to the on-board audio back-up, to allow broadcasters to store multiple files in the embedded hard drive and control them using a playlist.

Audio Plus Services **N5923**

Audio Precision **N6223**
Featured: Recognized standard in audio test. Since 1984, we have continued to innovate, delivering the most extensive multichannel support and the only HDMI audio test solution, while leading in performance with the lowest THD+N and the flattest response of any audio analyzer.

AudioScience **N8313**
Featured: Professional audio cards and network audio products for the broadcast industry and professional audio industry.

Audio-Technica U.S. Inc. **N2121**
Intro: BP4025 X/Y Stereo Field Recording Microphone, designed for broadcast and professional recording, offers large-diaphragm capsules in an innovative coincident capsule configuration. This allows for a smaller housing while producing an X/Y stereo image with the spatial impact and realism of a live sound field. Ideal for use with professional audio and video equipment. The microphone's compact, lightweight design is ideal for camera-mount use. *Also:* AT8022 X/Y Stereo Microphone — Suitable for video camera-mount use, stereo field recording, interviews and home recording. *Also:* With the ATH-M50s Professional Studio Monitor Headphones, Audio-Technica expands its professional studio line with a straight-cable version of its flagship ATH-M50s, offering maximum isolation/ultimate comfort during long tracking and mixing sessions.

Avid Technology Inc. **SU902, Hall 3**
Featured: Pro Tools HD, Pro Tools LE, Pro Tools M-Powered

AVT Audio Video Technologies GmbH **N3223**
Intro: Magic AD1 ETI Decoder — Monitoring of the ETI output signal of an ensemble multiplexer: Simultaneous monitoring of all DAB & DAB+ Audio data streams and display of the service organization of all sub channels (audio & data); integrated protocol stack; headphone output. Also, Magic DAB ETI Decoder Upgrade — Existing MAGIC DAB ETI Decoder can be extended via the Extension Bus by a Magic AD1 DAB & DAB+ Audio Decoder. *Also:* Magic AC1 XIP TI Audio Codec — With ISDN, IP and X.21 interfaces; Supports G.711 (3.1 kHz), G.722 (7 kHz) and HE-AAC-V2 coding algorithms; the big advantage of HE-AAC-V2 is the fact that good audio quality can be achieved with very low bit rates. *Also:* Magic POTS Telephone Hybrid System — For up to 16 callers; high speech quality due to echo canceller, AGC and expander for each caller line; up to 12 audio lines; comfortable operation via Magic Touch software optimized for use with a touch screen; provides a variety of useful functions like call forwarding, black list, VIP list; Screening software with database and extensive functionalities (e.g. caller lists, statistics); different work places can be established, control via LAN network

Axel Technology **N2518**
Intro: WOLF measures and certifies signal changes and decay through the broadcast path, and reports real-time information and alerts whenever any detected parameters should be under the selected threshold, eventually switching between main and emergency sources. *Also:* DJ-PRO Enterprise Radio Automation is the Axel Technology product for advanced broadcast automation, editing and playout. Based on the DJ PRO digital automation software, it has been renewed in graphics with multiple screen views and OS compatibility, and enforced with multi-stack playout and multitrack editor features. *Also:* DML is a 24/7 digital audio/video logger featuring recording up to 90 days for broadcasting law certification and monitoring.

Axia Audio **N7620**
Intro: PowerStation Broadcast Console System is an IP-Audio console system that combines analog, digital and microphone I/O, a console power supply, DSP mixing engine and network switch into an easy-to-deploy package. Just connect your studio gear with Cat-5 cables, connect an Element console with one cable and name your sources with a browser. Make PowerStation the heart of a standalone studio or part of an Axia network. Simple Networking lets you daisy-chain four for multi-studio installation without a separate core switch. *Also:* Element 2.0 Modular Broadcast Console has features like voice and headphone processing by Omnia, peak and average metering, one-touch phone recording, automatic mix-minus for every fader, an eight-channel Virtual Mixer that lets you combine multiple audio streams and control them with one fader and Show Profiles that recall settings. *Also:* Livewire Intercom System integrates with Axia networks, providing intercom communication not only between stations but to and from talkback channels built into Axia Element consoles. Available in 10- and 20-station rack-mount configurations, Livewire Intercom lets users talk one-on-one or with multi-user groups by pressing a button, and uses your existing IP-Audio network infrastructure. *Also:* Axia expands its Router Control Panels. Single Router Selector, Dual Router Selector and X-Y Router Control Panel occupy 1 RU and feature OLED displays and rotary selection. Axia networks allow routing any source to any destination instantly; optional PathfinderPC Routing Control software enables custom routing applications up to multi-point scene changes that can reconfigure an entire facility manually, at a specified time, or in response to an event trigger. You can combine audio and machine logic into a single virtual router, "watchdog" audio sources with metering+Silence Sense that sends e-mail alerts while switching to backup, and make custom routing applications with a graphical "Stacking Events" editor that eliminates script writing.

Axon Digital Design **SU11410**
Intro: TRACS Transmission Compliance and Recording System More broadcasters globally now are legally obliged to provide recordings of their transmissions on-demand. Being able to quickly prove that a transmission actually happened can help to resolve a dispute, or maintain advertiser confidence.

Azden Corp. **N2614**
Featured: On-camera wireless audio, shotgun mics, portable mixers, powered speakers and IR conference systems.

Barix AG N8725

Intro: Barix Exstreamer 1000 network audio encoder/decoder with I/O for professional and broadcast applications, now shipping. It is a versatile network device that can function either as an audio encoder, or decoder for a variety of high-quality audio applications. Features: AES/EBU in and out to provide a digital transmission path; encodes or decodes audio in high quality; AES/EBU and balanced stereo audio interfaces (inputs and outputs); supports streaming (http, UDP, RTP) with automatic failover and USB playback; 10/100 Mbit Ethernet connection; contact closure interfaces (four in, four relays); control via standard Web browser as well as serial, TCP, UDP, cgi API.
Also: Annuncicom 1000 network intercom and VoIP device, Instreamer 100 network audio encoder, Exstreamer 100 network audio decoder, Barionet IP automation controller, IPAM OEM Modules

Beat the Traffic SU10002

Intro: Online offering includes new elegant widgets, showing clean traffic maps and key route trip times in a small form factor that can be incorporated inside your home page. A new user-friendly Blackberry/PDA/Mobile Web site is available for co-branding opportunities, featuring camera images in selected markets.

Belar Electronics Lab Inc. N7629

Featured: Manufacturer of modulation monitors, frequency monitors, specialized AM receiving antennas, and related equipment for the broadcast industry.

Belden C6508

Intro: Belden 1353A is a single-pair unshielded Cat 5e patch cable. It is intended to run analog or digital audio. Bonded-pair construction means it has the highest CMRR for noise rejection, and most stable impedance for low signal reflection. It can also run video-on-twisted-pairs, RS-422, RS-485 control and 100baseT data. *Also:* Belden 7977A coax is almost 6/10 of an inch in diameter, the largest of our extensive 50 ohm transmission family of coax, with 86 percent velocity, high power handling for its size. Ideal for low-power broadcast, repeaters, RPU and microwave applications up to 6 GHz. *Also:* Our purchase of Ethernet switch manufacturer Hirschmann allows us to offer a line of reliable Ethernet switches for your on-air applications such as Axia in radio, or 100baseT editing for newsroom video.

Bext Inc. N4521

Featured: FM transmitters up to 35,000 Watts, FM exciters from 10 to 1,300 Watts, remote and PC controllable. FM translators and boosters. FMeXtra digital encoders and receivers. STL systems. audio/stereo processors. FM antennas, directional/omnidirectional, vertically/horizontally/circularly polarized. Digital/analog TV transmitters from 4 to 40,000 Watts, TV exciters, translators and boosters.

beyerdynamic Inc. N6129

Bird Technologies Group N605MR, N8517

Broadcast Bionics N8723

Featured: Talk show technology like you've never seen it before. A range of SIP (VoIP)-enabled talk show call-in systems; PhoneBox Solo (new version); PhoneBox HD, codec-quality calls for your talk show; PhoneBox3 SIP-Solo for larger installations.

Broadcast Design International R101

Broadcast Electronics Inc. N7917

Intro: AudioVAULT FleX is an automation and audio content management, music scheduling, and traffic management system. STX LP is a scalable 1 kW to 5 kW FM solid-state transmitter that features IP connectivity, a compact design, redundant controller and integrated exciter.
Also: AM 10A, FMi 703, TRE

Broadcast Software International N8720

Intro: Broadcast Software International supplies small, medium and multi-station markets with our comprehensive radio automation software, playout and multichannel logging/skimming solutions. Developed and supported in the United States by a dedicated team of broadcast professionals.

Broadcasters General Store N8120

Featured: One-stop shop for all of your radio and TV broadcast needs. We represent more than 400 manufacturers. We feature Axia, Broadcast Devices, Broadcast Tools, CircuitWerkes, Graham Studios, MicroVideo, Mika, Yellowtec and more at our booth.

BroadView Software Inc. SU1222

Featured: BroadView for Radio traffic and sales software. Unique business tools such as roll-up reporting, accurate real-time avails and powerful sales and management reports. Integration with your secondary applications gives you an end-to-end solution that is easy to use and intuitive. BroadView is cost-effective to purchase and install, backed by 24/7 support and can be used to manage an unlimited number of stations and channels. To ease the transition from your existing systems (including Deltaflex), BroadView provides expert migration and data conversion that includes historical contracting and finance information as well as current and future contracts and A/R information.

Burk Technology N6920

Intro: The Audience Measurement Assurance Monitor minimizes PPM encoding downtime by automatically switching to a backup Abritron PPM encoder if primary encoding is lost, onboard silence monitoring allows the unit to differentiate encoder failure from silence alarms; ARC Plus SL IP-based remote control in a slim 1RU footprint with embedded Web server to show telemetry, alarms and events in real-time, and a mobile PDA interface for on-the-go access, Ethernet-based I/O connections for up to 256 metering, status and command channels, compatible with all ARC Plus systems and all Plus-X modules; Plus-X 300 simplifies distribution of monitor and control to all areas of a facility with Ethernet-based connectivity to the ARC Plus or ARC Plus SL to reduce plant wiring and enable remote monitoring; PlusConnect 4MX and PlusConnect Nautel V direct transmitter interfaces for the Burk ARC Plus and ARC Plus SL broadcast remote controls bring TCP/IP connectivity to BE 4MX transmitters and an easy serial connection to Nautel V Series transmitters, PlusConnect interfaces for Harris Z and 3DX transmitters also available.
Also: Broadcast remote control and monitoring equipment.

Burli Software Inc. N5131

Intro: Burli NE, news data ingest and management software, includes RSS and XML feeds, newscast/rundown management, e-mail and fax ingest and management, audio ingest, recording, editing and play-to-air, radio prompter, assignments management, contacts database, XML export to Web sites/new media platforms.

Calrec Audio Ltd. N8207

CircuitWerkes Inc. N8120

Intro: Silence Sentinel Web-enabled intelligent silence monitor with programmable logic and optional multisite monitoring software; TeleRadio II dialup, DTMF or serially remote controlled radio tuner allows real-time monitoring of all radio stations in remote markets via telephone, also can be used as a standalone, high-quality analog tuner for studio use; DTMF-16d programmable DTMF decoder/remote control outputting both dry relay and open collectors from DTMF tones on any audio source, tones can be single or user-defined sequences with support for latching, momentary and interlocked modes and leading or trailing edge detection; DT-232 dialup or audio line monitoring DTMF decoder can auto-answer an incoming phone call and, with password security, perform multiple tasks in response to DTMF tones or user-defined sequences of tones, including closing/opening relays, outputting user-defined ASCII serial strings and sending new DTMF tones or sequences; Silencer-3 stereo, DSP-based audio delay line with 16 bit audio resolution and integral DTMF muting removes tones from any line, each channel can be muted individually or together or specific DTMF tones can be muted or all tones.

Clark Wire & Cable C10108

Intro: ProAud1 Cable Tester tests for opens, shorts and crossed wires and adds a memory "Hold" function to identify intermittent connections easily. Backed by an unconditional two-year warranty, this is a must-have for any engineer's toolbox. Tests for: XLR, 1/4-inch phone, RCA, 1/8-inch Mini, TT (Bantam) and MIDI.

Clear Channel Satellite OE418

Clear-Com Communication Systems C6521

Intro: Hybrid Time-Divisional Multiplexing (TDM) intercom/IP server network. combines the reliability of traditional TDM-based architecture with the flexibility and affordability of the company's I.V.Core technology. It is designed to extend the reach of intercom systems to more users. Eclipse Version 5.1 is the latest version of Clear-Com's flagship digital matrix intercom system.

Coaxial Dynamics N4831

Intro: Model 81094 Advanced Wattchman Internet-/intranet-accessible wattmeter/alarm system will monitor both forward and reflected power in two transmission lines with only one controller.

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Fax: 440-2431101
E-mail: coaxial@apk.net
Web Site: www.coaxial.com

Comrex Corp. N6729

Intro: BRIC-Link is created specifically for STL applications and other "nailed-up" audio links using point-to-point IP audio connections, such as T1/E1 links, WANs, LANs, ISM band IP radios and satellite data channels, as well as the public Internet when using the included AAC and HE-AAC coding algorithms; BRIC Traversal Server (TS) compliments the ACCESS Stereo BRIC IP codec system, allowing for fast and easy connections from the field while eliminating the need for IP address configurations, port forwarding or setting firewall permissions by automatically updating all ACCESS units in the BRIC TS's group whenever the codecs connect to the Internet, connecting to another codec in the group is as easy as "Select" and "Connect"; ACCESS Portable and Rack Stereo BRIC IP codecs feature Broadcast Reliable Internet Codec (BRIC) technology for stability and extremely low delay for live, real-time broadcast applications, can be used over a wide variety of IP data circuits including DSL, broadband cable, Wi-Fi, 3G and 4G wireless cellular data services, satellite data services and more; DH42 four-line conferencing VoIP/POTS hybrid meets the needs of the changing telecommunications landscape by combining legacy POTS capability with low-cost VoIP (or VoIP PBX) services to bridge traditional analog telephone service with new IP-based services in a single 1 RU unit, simple Web-based interface is used for SIP/VoIP configuration, as well as audio routing setup.
Also: ACCESS Stereo BRIC IP codec, ACCESS Portable, ACCESS Rack, ACCESS Mixer and STAC telephone talk show system.

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Countryman Associates Inc. N5525

CPI N7320

Crown Broadcast **N7907**
Also: FM broadcast transmitters from 30 watts to 10 kW. All units feature three-year warranty and 24/7 service and support. Optional internal audio processor/stereo generator or built-in receiver for translator applications.

CTE Digital Broadcast Srl **C3307**
Intro: The TX1 1 kW FM transmitter features a robust, compact, modular design for quick maintenance with flexible telemetry and remote control options, adjustable output power from 100 W to 1 kW, and weight of less than 40 pounds; new high-power FM transmitters up to 20 kW at competitive prices and with a design focused on low power consumption and linearity for a 20 percent longer MTBF compared to other average equipment.

Cummins Power Generation **C3840**

Dalet Digital Media Systems **SU3702**
Featured: Dalet Radio Suite

Dan Dugan Sound Design **N2515**
Intro: The Model E-1 automatic mixing controller is an eight-channel signal processor that patches into the input insert points of an audio mixing console, detects which mics are being used and makes fast, transparent crossfades, allowing the operator to focus on balance and sound quality instead of working the faders.
Also: Model D-2 automatic mixing controller.

Davicom, a division of Comlab Inc. **N5233**
Intro: MacNet 5.30 multisite alarm management software has a modular architecture with the following features: Unicode GUI for operation in any language, BitMap display option for quick easy displays, MapInfo display option for complex display requirements using MapInfo GIS, MapPoint display option for low-cost GIS display requirements, virtual logic gates in MacNet for alarm redirection, alarm redirection by e-mail, alphanumeric pager, SMS, Windows Messenger IM client or printer; MAC Firmware 5.40 for Davicom MAC remote control units adds support for MODBUS sensors and I/O devices.
Also: Davicom MAC remote site monitoring and control systems, MacComm communications software, MacNet multisite alarm management software, bidirectional RF power sensors, RMS RF power sensor, temperature sensors, dual audio presence detector, audio/video switcher, FM power monitor.

DAWNco **C6345**
Intro: LNB for satellite, HD ready +/- 5 kHz stability — Top-of-the-line C and Ku band LNBs, recommended by major networks for use with HD satellite receivers. The stability rating results in interference-free reception, even when temps at dish range from very cold to extremely hot. Mount LNB at feedhorn, for reception of digital sat channels. Ooptimum performance when used with new "finicky" sat receivers. *Also:* High-gain 4.2 meter satellite antenna will mount onto an economical 5.5-inch OD pipe. Optimum reception characteristics for C and Ku band sat signals. Stationary or motorized mounting. *Also:* Starlook-D Sat Spectrum Analyzer & Indentifier — Portable monitor and spectrum analyzer for analog and digital satellite channels. Quickly identify satellite and channel name. Satellite receiver for 920–2150 MHz, measure Digital BER, QPSK and S/N-ratio, 4.5-inch B/W monitor for PAL/NTSC/SECAM. Tunable sound 5.5–8.5 MHz, power to LNB (voltage 13/18v with 22 kHz tone switch). input from KU- and C-band (normal/inverted video), RS-232 for PC-connection, rechargeable battery, 11 pounds with carrying-case. *Also:* Satellite fiberlink, cable run from dish to sat receivers — Good for dish-to-receiver distances over 300 feet. Outdoor-rated TX can be placed in box mounted on back of dish. Wall-mount units work with new "frequency-stacked" MiniDish systems. Connect dish-mounted LNBs to receivers over long distances without loss. Stop lightning damage. Provide high signal level to receivers. CableTV Fiberlink, extend cabling beyond CableTV entrance — Pass 100+ analog and digital cable TV channels over 1-fiber into viewing areas, on 50–870 MHz forward path. Option for two-way data on 5–200 MHz reverse path.

DaySequerra **N5129**
Intro: HDR2 HD Radio Receiver delivers station and market monitoring tools in a small, portable package. You can remotely monitor audio and log data for analog AM and FM as well as HD Radio stations. The HDR2 can also log Apple Buy Button tokens as well as your traffic and weather data. The HDR2's digital audio output works full time even when tuned to an analog station. It stays locked to the station you've selected even if the broadcast or your AC power is interrupted. *Also:* M2 DSP HD Radio Modulation Monitor is a DSP-based version of the M2 that replaces the M2.2R analog measurement circuits with DSP measurements, meaning no more periodic calibration and possible drifting. The M2DSP also uses new proprietary Diversity Delay Measurement for monitoring your HD1's analog and digital level and delay settings. The DDM algorithm also provides a useful correlation of audio processing differences between the analog and HD1 streams. *Also:* HD Radio Diversity Delay Manager automatically measures the HD1 analog and digital audio diversity and in real time sends the continuous offsets as required to keep your analog and digital HD Radio streams aligned via its Ethernet link. The DDM uses iBiquity's new HDP command protocol and is compatible with HD Radio existing Gen II installations and new embedded exporters from Broadcast Electronics, Continental RVR, Harris and Nautel running iBiquity MPS Framework version 4.3 or later.

DB Elettronica Telecomunicazioni **C3018**
Featured: Solid-state tech for analog & digital FM radio and television. Award-winning solid-state amplification for its Cold-Fet technology, DB also provides analog & digital microwave links, remote control & management systems, antennas and accessories. Recently DB has developed liquid cooling system technology for both TV & FM equipment.

Delta Meccanica s.r.l **N4824**

Denon & Marantz Professional **N7636**

Dialight Corp. **N2237**

Dielectric Communications **C1324**
Intro: 1.4-GHz Antenna is a twist on our pylon-style broadcast antennas. L-Band, high-power, circularly polarized, broadband antenna features azimuth and elevation pattern versatility in a single low-wind-load mechanical package. The aesthetically pleasing construction can be side- or top-mounted and provides an excellent axial ratio, a 1- to 4-kW input power rating, gains from 15 to 19 dBi, a VSWR of less than 1.1:1, and 10- to 24-kW ERP/polarization. *Also:* 1.8-kW Switchback Filter is designed for the stringent requirements of 700 MHz applications. Within a compact rack-mountable package, the filter provides superior electrical performance with low insertion loss for a unit of its size — less than 1.1 dB integrated insertion loss. Material selection provides temperature compensation within +/- 10 kHz and an overall temperature range of 0 to 45 degrees Centigrade. The filter supports a 2000-W power capability and provides a VSWR of less than 1.25:1.

DiGiCo Soundtracs **N8630**

Digigram **N9024**
Featured: at the convergence of digital audio and

information technologies, Digigram enables those with a vision to stand out in a competitive market. Digigram is one of the top three worldwide suppliers of digital audio network solutions for radio broadcast and sound distribution in public places. The company develops digital audio network devices, sound cards and audio processing software.

Digital Alert Systems LLC **N2135**
Featured: Digital Alert Systems designed and certified the DASDEC EAS encoder/decoder in 2004 and has delivered more that 900 units into broadcast, cable, emergency operation centers and IPTV applications. The DASDEC is an IP-based Linux-driven platform, EAS- and CAP-compliant.

DK-Technologies A/S **N3235**
Intro: MSD100C-Loudness meter for use in production, post-production and transmission facilities handles stereo monitoring of loudness as set out in ITU BS.1770/1771 specifications, AES3 and stereo analog inputs, as well as user selectable scales; MSD Audio Meter 5.4 software upgrade provides loudness metering with graphical display, PC interface and meets ITU BS.1770/1771, also provides the BLITS tone for channel identification of embedded audio within surround sound applications for remote line up or channel identification at the head of prepared material.

Dolby Laboratories Inc. **N1815**
Intro: Dolby Pulse encompasses a bit-stream format as well as dedicated encoder and decoder solutions. Built on and compatible with the MPEG-4 HE-AAC (High Efficiency Advanced Audio Coding) open-standard audio codec, Dolby Pulse brings our experience with content delivery ecosystems to emerging entertainment platforms from HD television to mobile phones.

Dorrough Electronics **N6429**
Featured: Dorrough Loudness Meter

DPA Microphones **N4819**

DSI RF Systems Inc. **C1328**
Featured: Technical and engineering solutions for the broadcast industry. We specialize in FM/TV transmitter facility systems integration, satellite, specialty antennas, microwave and tower work. We offer a product line tailored to our service & installation capabilities, including licensed/unlicensed microwave, HD traffic cameras & The CUE, HD IFB two-way communications system.

Eckel Noise Control Tech **N8823**

Ecreso, an Audemat company **N7632**
Intro: Competitively priced, highly efficient, HD-ready FM products including a compact 1 kW power amplifier block that connects with Ecreso exciters and the Next FM, an exciter that combines Digiplexer 246 audio processor, audio backup, RDS encoder and transmitter remote control. *Also:* Next FM now available with advanced audio codecs allowing for the use of IP streaming audio as a primary on-air source with excellent quality and reliability, also advanced capability has been added to the on-board audio backup, allowing broadcasters to store multiple files in the embedded hard drive and control them via a playlist.

Eddystone Broadcast **N6435**

Elber S.r.l. **C2626**
Intro: CPM digital portable microwave link; working frequency can be any 500 MHz band between 6 GHz and 15 GHz and the modulation can be FM analog or COFDM digital. An external IF input for back-up signals is available. Ideal for fast and reliable mobile links, even in hard weather. An FM modulator and demodulator implemented with software radio techniques are available.

Electronics Research Inc. **C1307**
Intro: ERI Shared Aperture Rototiller FM Antenna System for simulcast analog and IBOC digital transmission operation. This new configuration uses Rototiller Series FM antennas. The systems can implement the proposed increase to digital IBOC ERP levels of up to 10% (–10 dBc) of authorized analog ERP. The shared aperture antenna system is available in a variety of configurations and uses construction methods that yield analog-to-digital isolation ratios of –40 dB, for single-frequency applications. The antenna systems are also available in arrays that are suitable for multiplexing two or more signals into a common antenna and transmission line. *Also:* ERI expands its line of air Heliax coaxial cable connectors with an HJ4-50 (1/2 inch cable) to 7/8 inch EIA connector, HJ5-50 (7/8 inch cable) to 7/8 inch EIA connector, and HJ9-50 (5 inch cable) to 6 inch EIA connector. With these additions, ERI offers the full range of broadcast connectors for Heliax air-dielectric coaxial cable.

Electro-Voice **C7025**
Intro: The REV professional wireless microphone system features an optimized analog audio path developed to provide the truest representation of a wired microphone sound in a wireless system, includes two handheld options and REV-Link PC software for remote monitoring, control and programming over a CAN-bus connection through an EV UCC-1 converter. *Also:* RE97TX head-worn ultra-low profile condenser microphone for use with standard EV and Telex belt packs; RE97-2TX lightweight, two-ear-style head-worn; RE20 Variable-D dynamic cardioid microphone with heavy-duty, internal P-pop filter to reduce proximity effect, internal element shockmount to reduce vibration-induced noise and bass roll-off switch; RE50/B handheld interview microphone with EV DynaDamp shockmount for low handling noise and dynamic omnidirectional capsule with camera-friendly matte-black finish; 635 family of wired microphones for ENG and EFP applications.

Elenos **N7917**
Featured: Founded in 1977, Elenos has improved its presence on the market thanks to an entrepreneurial spirit and courageous business approach. Company policy with a focus on changes and technological innovation has made us an acknowledged leader in the world market for FM transmitters.

Elettronika S.R.L. **C1719**
Featured: Radio and broadcasting equipment, digital and analog, microwave links, antennas.

ENCO Systems Inc. **N7607**
Intro: New Automation Product — This as yet untitled automation product will take the power behind our DAD system and deliver a new user experience concentrating on ease of use and intuitive operation. *Also:* A new audio playback appliance, also yet to be titled, combines a "button box" approach to instantly playing audio cuts with a choice of user interfaces, from tactile button interfaces to touch screens in a 1 RU form factor and configured "ready to go" out of the box. Intended for radio studio use, live and production TV and trucks.
Also: DAD, RAMA, PADapult, NewsBoss

Energy-Onix **N5823**
Featured: Solid-state and tube FM transmitters to 50 kW and Pulsar solid-state AM, 250 Watt to 50 kW. We have developed a unique, shortwave, solid-state broadband 10 kW, RF efficiency of 97%, DRM-compatible. We offer RPU VHF and UHF transmitters with 16 preset freq. 150 to 170 MHz & 450 to 470 MHz. Systems for broadband, Internet, DST and companion receivers. Tele-Link STL & spread spectrum.

ESE **N3124**
Intro: The HD-488/SD is a timecode reader, generator and inserter for HD and SD Serial Digital Interface (SDI) video. The HD-488 is a timecode reader, generator and inserter for HD Serial Digital Interface (SDI) video. The DV-321 is an HD/SD sync generator with a genlock input. The DV-319 is an HD/SD sync generator.

Euphonix **N6812**
Intro: A new, larger DSP SuperCore, the DF70, now supports over 450 DSP channels. *Also:* A new larger 1,536 x 1,536 digital audio router can integrate with facility routers and pass through Dolby E. *Also:* New broadcast software versions for Max Air and System 5 to include remote logging and Ross Automation integration.

Eventide **N6126**
Featured: BD600, BD600E, BD960, Anthology II bundle of TDM plug-ins, DSP4000B+, H7600, H8000FW, Eclipse, Reverb 2016.

E-Z Up International, Inc **N9130**

Fairlight **SL1910**

Federal Communications Commission **N8507**

Flash Technology, An SPX Division **N6225**

Fraunhofer IIS **SU6023**
Intro: MPEG Surround expands digital broadcasting and IPTV systems to surround at the same data rate as previously required by the transmission of stereo sound only. Legacy devices will continue to play the program in usual mono or stereo quality; new receivers will play the same signal in high-quality multi-channel sound. *Also:* Fraunhofer SX Pro is an upgrade product for any stereo broadcasting station to multi-channel sound. It supports a flexible, real-time upmix process. Broadcasters can use the automated mode as an efficient way to save time and effort. In addition, they can fine-tune the automated upmix manually to adapt it to an individual up-mix concept. *Also:* Fraunhofer IIS Audio Communication Engine is an integrated solution that delivers all relevant components of an audio communication system, including high-quality low-delay audio codecs, robust acoustic echo control and a low-delay IP streaming system. Fraunhofer DRM ContentServer is a professional broadcast system that encodes audio in real-time, provides data services like NewsService Journaline, TextMessages and EPG, and supports DRM features including "Announcement" and "Alternative Frequency Signaling" as well as automatic configuration scheduling.

Genelec Inc. **N3414**

Gepco **C7430**

Google **N6507**
Intro: Google Radio Automation is a new kind of automation system, built on the idea that radio automation can be more intuitive, powerful and innovative. And maybe even more profitable. After all, Google Radio Automation delivers the unparalleled ease of use of SS32, the uncompromising power of Maestro and the innovative approach of Google in a single product.

Groove Addicts **SL9505**

Harris Broadcast Communications **N2502**
Intro: The HPX Series is a range of high-power tube transmitters designed for HD Radio broadcasting. HPX transmitters provide a high-power solution in a compact, power-efficient and cost-effective package. HPX transmitters are also available in analog FM-only or common amplification HD Radio versions, and incorporate an advanced transmitter control system. HPX transmitters use Harris Corp.'s experience with HDTV tube technology to provide a compact and efficient radio broadcast transmitter.
Also: FlexStar family of HD Radio products; HDE-200 embedded exporter; HDE-100 importer and HDX exciter; ZX5000 transmitter.

HD Radio **N5437**

Henry Engineering **N8215**
Intro: PowerSwitch — Failsafe AC power switcher switches AC power to backup equipment if main equipment fails. Two 500-watt AC outputs, controlled with an external GPI, audible alarm alerts nearby personnel when backup equipment has been activated. *Also:* USB Matchbox II — This new USB interface includes the most requested features of our past USB products. Stereo analog inputs and outputs on XLRs, plus AES/EBU out-

put on XLR and a Headphone/Monitor output for critical monitoring. 16-bit, 32k, 44.1k, and 48k sample rates supported. USB interface, plug-and-play installation needs no special software or drivers. Built in AC power supply. Global Distribution Portal — This universal interconnect panel facilitates connecting outboard equipment to any studio. Provides analog and digital interface via XLR, TRS, RCA and mini-TRS connectors. Both professional and consumer analog and digital interface is supported. Digital I/O on USB, RJ45, and FireWire ports. StereoSwitch II — This update of our StereoSwitch stereo audio switcher now features front-panel pushbuttons for selection of up to three stereo sources. Can also be remotely controlled with GPI or DC voltages. Can switch balanced analog or AES digital audio signals.

Hollywood Edge **SL9809**

IABM **C1205**
Featured: International association representing almost 300 broadcast and media technology businesses who represent >80% of the global market value.

IEEE Broadcast Technology Society **L29**

Independent Audio Inc. **N3218**
Featured: Exclusive distributor of CEDAR Audio noise reduction processes. We will feature the DNS3000 Dynamic Noise Suppressor and the CEDAR Cambridge Audio Restoration System. Also featured will be Audio Developments portable location sound mixers, Coles Ribbon Microphones, Pearl Condenser Microphones, Signex Patchbays, DACS, E.A.R. and Audessence levellers.

Industrial Acoustics Co. **N4626**

Inovonics Inc. **N5829**
Intro: Model 703 RDS/RBDS Mini Encoder — Supports scrolling messages, IDs and advertising; identifies translators; performs important RDS "housekeeping" functions. Easy USB programmability, low cost. Model 730 RDS/RBDS Encoder - Version 2 — Links to automation for scrolling song titles with serial, USB, and TCP/UDP network connectivity. Full-function encoder, conforms to NRSC and CENELEC/UECP standards, computer or jog-wheel setup.
Also: With 37 years under the same management, Inovonics proudly manufactures and markets worldwide a broad range of broadcast products including analog and digital audio processors for AM and FM on-air and production applications; AM/FM/Subcarrier modulation monitors; rebroadcast receivers for translators; RDS/RBDS encoders and decoders for scrolling song title or advertising messages. New for introduction this year at the NAB Show is the INOmini series of space-saving, cost-effective broadcast products.
Mr. Steve Gordoni, Sales/Marketing Mgr.
1305 Fair Ave,
Santa Cruz, CA 95060 USA
831-458-0552
Fax: 831-458-0554
E-mail: info@inovon.com
Web Site: www.inovon.com

International Datacasting **C5542**
Featured: Solutions for the distribution of broadband content via satellite. IP-based datacasting solutions via satellite and content distribution technologies with installations in more than 100 countries.

IRTE SpA **C2325**
Featured: System integration. In 2006, first in the world, deployed the Italian commercial DVB-H network for 3G operator. Produced and installed more than 300 transmitters and more than 1,000 gap fillers.Manufacturer of TV microwave links, broadcast transmitters, wireless cameras, professional satellite dish antennas, microwave dish antennas UHF, VHF and FM antennas.

iZotope **N9108**

Jampro Antennas **C2611**
Featured: Penetrator HD Radio antennas, JLCP antenna for low-power FM, translator and booster stations, JTS test section, RCPU patch panel, JMPC-HD antenna, JSHD-HD antenna, RCHA-323-10HD digital FM Radio combiner.

Jetcast Inc. **N8214**

JK Audio Inc. **N2125**
Intro: BlueKeeper is a desktop hybrid that connects to a cell phone using Bluetooth wireless technology. Suitable for interview recording or desktop reporting. BlueKeeper features one mic/line XLR input, mini jacks for mono and stereo send and receive; LED level indicators and a headphone output.
Also: BluePack, AutoHybrid, ComPack, Broadcast Host, innkeeper PBX, PBXport, RemoteMix C+, RemoteMix Sport, RemoteMix 4, innkeeper 1x, innkeeper 2, innkeeper 4, THAT-2, Daptor Two, Daptor Three.

JLCooper Electronics **N2916**

Jünger Audio Studiotechnik GmbH **N4937**

Kathrein-Werke KG **C1334**
Featured: FM Broadcast transmitting antennas and systems

KD Kanopy Inc. **N9033**

Kintronic Labs **N5217**
Featured: KinStar low-profile "Green" AM HD-compatible antenna; AM HD-ready non-directional, directional and multiplexed antenna systems; forced air-cooled indoor or outdoor dummy loads; XMTR combiners; tower unipole and detune skirt kits; FM, STL and PCS iscouplers; open-wire transmission lines; RF patch panels; RF contactors; and the PowerAIM120 vector antenna analyzer.

KLZ Innovations Ltd. **N8824**
Intro: NewsRoom 4.5 radio news production software, audio/video logging and mic skimming systems. KLZ Innovations Ltd. is an information technology company focused primarily on electronic news systems for broadcast companies. We offer a range of software and hardware solutions for gathering, production and presentation of news based information.
Also: NewsRoom 4.5, KLZ AudioFile

Kowa Optimed Inc. **N7936**
Featured: PX10 Flash Memory Hotkey Audio Player. The PX10 uses convenient and widely available USB Flash memory drives and compact Flash cards. You can drag and drop your favorite audio cuts onto any of the 50 hotkeys of the PX10 right from your PC screen. Audio clips can then be played instantly by pressing the hotkeys. On top of the USB drive, a Compact Flash card drive is provided for your convenience. Perfect for audio effects for radio and television studios, productions, various shows and events.

Kramer Electronics SL6205A

Larcan USA **C2616**
Intro: The new Encore Series is an IBOC FM translator solution combining proven translator and linear amplifier technology. Power levels from 25 W to 250 W (separate linear amplifier), superior IBOC FM performance & coverage, integrated features & adaptable to meet your rebroadcast needs, broadband design, frequency agile. For analog FM and IBOC digital radio
Also: FM Series of translators/transmitters

Lawo North America Corp. **N5433**
Intro: Lawo crystal digital mixing console is for radio on-air

and edit-suite applications. Its easy-to-operate surface with a small number of control elements and displays guarantees short training and high operational reliability. The crystal comes with ready-to-use configurations for standard applications but also programmable elements to adapt to user workflows. Starting from app. $7,200, crystal not only provides comprehensive functionality but also an integrated matrix of up to 288 inputs and outputs, customizable configuration and intelligent networking with other consoles and matrices. *Also:* First plug-in collection, Lawo Plugins. Use the performance and sound quality of the Lawo mc? series on digital audio workstations The typical "Lawo Sound" can be experienced now by video editors and sound designers in the fields of music production, film, television and radio who are working with DAWs.

Lawson & Associates/Architects **C3318**

LBA Technology Inc. **N9115**
Intro: TUP-3N is an advanced AM broadcast antenna mobility platform. Now adapted to NATO standards, it enables rapid relocation of a self-contained trailered broadcast antenna and tuning system capable of up to 10,000 watts between 540 and 1720 kHz. The TUP-3 system is intended for military operations, disaster area communications and other interim or transient broadcast requirements. Installation can be made by four individuals in under four hours. TUP antennas are deployed with British and U.S. forces. A personnel-transportable low-power version, the TGR-50 also is in service by military and civilian users. *Also:* SafeOne personal handheld RF safety monitor is an effective, economical personnel RF protection system. Sensing potentially hazardous RF fields from communications antennas and radio and television installations between 10 MHz and 10,000 MHz, the SafeOne is essential RF safety equipment in complying with FCC and OSHA requirements. Monitors give an audio and visual warning when a safe limit is exceeded. *Also:* Schomandl DPM-3014 RF power monitor provides computed true RMS values for AM/FM, CW, DVB-T, 8VSB and CDMA carriers. A peak function meter enables the measurement of signals such as NTSC and CCIR TV, SSB and TDMA. Measurements from below 1 MHz to above 3000 MHz and to 1,000 kW are possible with appropriate coupler units. The system can be programmed to accept a variety of power couplers, including most existing customer installed units. VSWR monitoring, remote temperature measurement, external device voltage sensing and a number of external alarm and data modes are standard. Rackmountable or portable, the DPM-3014 has full digital connectivity for remote control and monitoring.

Lectrosonics Inc. **N5223**

LEMO USA Inc. **C7433**
Featured: Microphone connectors

Linear Acoustic **N1725**
Intro: The AERO.air is a 10-channel transmission loudness manager. Engineered on the foundation of the company's first- and second-generation digital television audio processors, the third-generation AERO.air enables broadcasters to deliver 5.1-channel surround sound while saving time, money and space. AERO.qc is an ingest quality controller that allows users to fix loudness problems automatically and in real time as audio enters the plant and is fed into the ingest server. AERO.pro production audio maximizer enables users to achieve commanding sound quality in news and other locally produced content. LAMBDA professional digital audio and metadata monitor is designed to enable audio and metadata monitoring throughout the broadcast chain.

Linear srl Italy **N3118**

Liquid Compass **N8330**
Featured: We are a premier streaming delivery network, offering comprehensive stream hosting solutions, including custom player design, ad replacement and reporting.

Logitek Electronic Systems Inc. **N7124**
Intro: JetStream Mini IP Audio Router represents the next generation of IP audio routing and mixing. In only 2 rack units, the JetStream Mini provides enough capacity for up to 24 faders over one-to-four control surfaces. It includes eight I/O slots with five types of I/O cards (mic preamps, analog stereo line inputs, analog stereo line outputs, digital stereo line inputs with rate conversion, digital stereo line outputs), 12 GPI inputs and 16 GPI outputs, 2 GbE Ethernet ports, profanity delay, input metering, mic processing and more. JetStream units can automatically detect each other in a network and auto-configure. VLAN tagging, DHCP, DNS, MADCAP, SNMP, AutoIP, mDNS, DIFFSERV, SIP and SDP protocols are available.
Also: Mosaic digital console — With traditional styling, multiple frame sizes and drop-in modules, the Mosaic can be tailored for any radio application including on-air, production, or news applications. *Also:* vScreen user-configurable GUI; Remora digital console; audio level meters.

Magnum Towers Inc. **N5229**

Marshall Electronics **C8908**
Featured: Digital audio monitors, USB microphones, Mogami pro audio cable and connectors.

Masterclock Inc. **N3418**

Mayah Communications **N8514**
New: C11 Audio Codec family for IP/ISDN/POTS/ASI within a half-width 19 inch 1U chassis
Also: Reporter Audio Codec; Sporty & Audio Recorder/Codec; Flashman II with unique support of simultaneous transmission and recording, supporting audio-over-IP according to EBU standard.

Megatrax Production Music Inc. **N7221**

Middle Atlantic Products **SU4408**

Minnetonka Audio Software Inc **N8531**

Moseley Associates Inc. **N7112**
Intro: The Moseley Event 5800 high-capacity digital STL handles up to nine radio stations uncompressed over a single link. Linear uncompressed audio produces the cleanest, highest fidelity, artifact-free on-air sound; the Event 5800 provides the bandwidth necessary to make multiple uncompressed audio feeds a reality. While even the largest station clusters won't have that much payload, it is best to have the capacity there for when you will need it. The Moseley Event 5800 is a carrier class T1/E1/IP Ethernet radio link. Combined with the Moseley Starlink SL9003T1, the Event 5800 creates a high-capacity bidirectional STL/TSL.
Also: Starlink digital STL, LanLink HS900D LAN extender/data link, SL9003T1 T1/E1, microwave STL/TSL.

Musicam USA **N4925**
Featured: Ours were the first generation codecs. We shipped the world's first professional broadcast audio codec in 1987; since then we have led the industry with innovative codec products that have connected tens of thousands of audio professionals.

MusicMaster/A-Ware Software Inc. **N8312**
Featured: MusicMaster for Windows

Myat Inc. **C2022**
Intro: High-efficiency HD injection for 20 dB and 10 dB down applications
Also: Filters, station combiners, high efficiency HD injectors, rigid line and components

Myers Information Systems Inc. **SU6102**
Featured: ProTrack Radio is designed for the operating environment of radio broadcasting. It accommodates template scheduling, segmented program elements, multiple channels and a centralized management solution for single stations, multi-stations and/or multi-location

broadcast groups. Additionally, ProTrack Radio provides a collection of sales management tools so development teams can quickly identify and secure optimal revenue generating opportunities.

Nagra USA Inc. **N2514**

Intro: Nagra VI offers six independent audio inputs (4 Mic + 2 line) 24 bit, 96 kHz AD/DA, equipped for dynamic and phantom +48 V microphones, records to internal 2.5-inch hard disk, has extractable compact Flash slot, standard SMPTE/EBU time code plus pull-up/down, USB 2.0 communication, Broadcast Wave File (BWF) format and is iXML compatible for the metadata; Nagra LB records two channels, 24 bit, 192 kHz, PCM Linear, MPEG-1 Layer II, or MP-3 compression, compact flash and internal 2 GB flash memory, USB 2.0 and Ethernet communication ports, Bluetooth, on-board graphic audio editor, pre-record buffer.

National Association of Tower Erectors **C3110**

National Weather Service **N5925**

Nautel Ltd. **N7016**

Intro: NV3.5 FM Transmitter — Offering 4.13 kW analog, 3 kW FM+HD and 1.13 kW digital output power, the NV3.5 provides an integral digital exciter with adaptive pre-correction, a plug-in upgrade to the HD Radio Exgine, advanced instrumentation and management, and frequency-agile operation in a compact solid-state design. The NV3.5 joins seven other products in this FM transmission series covering a range of power levels. NV7.5 FM Transmitter — One of seven new FM transmitter introductions this year, the NV7.5 provides 8.25 kW analog, 6 kW hybrid and 2.2 kW digital operation. Features a modular design, advanced instrumentation and compact footprint. NV10 FM Transmitter provides 11 kW analog, 8 kW hybrid and 3 kW digital output power. As with other NV Series products, the NV10 includes an Advanced User Interface that gives the user both local and remote control over the whole transmitter and multiple exciters. The NV20 FM Transmitter offers 22 kW analog, 16 kW FM+HD, and 6 kW digital operation with adaptive precorrection for exceptional linearity. Like other NV Series transmitters, it is digital-ready and features an Advanced User Interface along with real time instrument grade spectral analysis. NV30 FM transmitter joins the NV3.5, NV5, NV7.5, NV10, NV15, NV20 and the established NV40 to round out a line of solid-state FM transmission products. With 33 kW analog, 24 kW hybrid and 9 kW digital operation, the NV30 offers an affordable, reliable migration path to HD Radio broadcasting. Advanced user controls (both local and remote), hot swappable modules and adaptive precorrection for exceptional linearity are trademarks of this product line. *Also:* NV40 FM transmitter, the flagship product of the NV Series offers single cabinet power output with a maximum analog power output of 44 kW. The NX50 AM transmitter is digital-ready and provides adaptive precorrection, 2.7 MHz Direct Digital Modulation, and 88 percent efficiency.

Nemal Electronics International **C2534**

Netia **SU822**

Intro: Radio-Assist 8.0 is equipped with a range of tools for end-to-end multimedia workflows. It allows users to prepare publication at an early stage of workflow, at the same level as the on-air. Features include an automatic publishing engine for all media as well as managing associated metadata and linked media; instant access to all types of media, archived or online. Regardless of storage medium, items can be previewed and restored for repurposing and distribution, both for broadcasting and for multiplatform distribution. By interfacing with Netia's Media Asset Management system, Radio-Assist 8.0 also responds efficiently to the needs of media groups having to manage and share video, audio, images and text throughout their entities. With the new Publication tab, journalists can publish only audio content and its metadata; publish audio and associated media, such as video, text or images; or prepare a group of items for automatic conversion and publishing to an array of destinations, such as a podcast, posting on the Internet or delivery to mobile devices. Netia's Radio-Assist family of digital audio software programs covers each part of the production and broadcast workflow, allowing users to record, edit or prepare a playlist. In addition to new browse and publishing tools for multimedia functionality, the software features tools for acquisition, sound-file editing, commercial and music production, newsroom systems, scheduling, multicasting, administration and more. *Also:* Netia will highlight updates to its Manreo software family; and Netia's U-Share network management system, as part of the company's OpenNet Range, has been integrated into Radio-Assist to simplify the distribution of audio content from one site to multiple destination sites.

Neural Audio Corp. **N5130**

Neutrik USA **N7929**

NKK Switches **N2816**

Non-Stop Music **SL10515**

NPR Satellite Services **C6337**

Intro: NPRSS Video and Radio Networks — NPR Satellite Services is a full-time C Band satellite space segment provider specializing in building and designing video and radio networks. NPRSS, with more than 25 years' experience, helps broadcasters reach new markets while providing a cost-effective way to distribute video and audio content nationwide. NPRSS offers the satellite capacity and everything to get started including channel space segment, uplink licensing and the right equipment for your needs. We provide system designs using the newest compression methods to save bandwidth while lowering costs. Talk to us about our custom-designed video service.

Oldcastle **N4832**

OMB Sistemas Electronicos **C2019**

Featured: FM and TV transmitters for powers from 15 W to 10 kW, STL systems, antenna systems for FM and TV. The headquarters and factory are in Zaragoza, Spain and the International Division in Miami.

Omnia Audio **N7620**

Intro: Omnia A/X IP Encoder invigorates audio streams by improving the uniformity, vividness and intensity to make IP audio come to life. Works on all audio streams, bitrate-reduced and linear, and integrates with other audio software. It runs as a background service, is remotely configurable with a browser and processes multiple streams in multiple formats simultaneously. It can encode directly to MP3, AAC and Windows Media as well as feed Shoutcast-style servers. A/X IP Enoder can also process audio for your Windows Media, Real, mpgPRO and MP3 streaming encoders. Adds punch, power and purity to a workstation's processed audio for Internet broadcasts, podcasts, workstation audio, MIDI generated music, audio-for-video and video post-production audio. Also new: Omnia One Studio Pro answers the call for a lower-delay pre-processor where absolute peak limiting is not needed. It's the first studio processor to include a four-band compressor/limiter allowing precise and accurately defined individual control while pre-processing music, commercials, remote feeds or sweetening audio. Features include wideband and four-band AGC; four-band limiter; four-band compressor; new

"Bypass" settings for the final look-ahead limiter and bass EQ sections; selectable phase rotator; analog, AES3 and Livewire I/O; remote browser-based controlautomatic input fail-over on loss of audio. Also new: Omnia 8xcombines the power of eight discrete three-band stereo Omnia audio processors in a single, networked box to improve the sound of your streams dramatically. Using algorithms modeled after the Omnia-3, we added a unique processing architecture to work ahead of any bit reduced audio coder to reduce artifacts and improve the sound of audio destined for HD Radio, Internet and satellite broadcasting.

Omnirax Broadcast & Technical Furniture **N4517**
Featured: Innova line of broadcast furniture, Omnirax Technical Furniture production line

OMT Technologies Inc **N8420**
Intro: iMediaTouch V3 encompasses the latest in broadcast automation software technology. The first digital delivery system developed for radio broadcasting, the product has been continually enhanced since its unveiling in 1984, in order to meet the ever-evolving needs of radio stations and radio groups. Our fifth generation release includes new features based on collaboration with customers and technology partners. *Also:* iMediaLogger set a new standard in software-based audio logging, archiving, skimming, podcasting and storage, delivering a simple way to manage each and every one of your recording needs with just one workstation. Now iMediaLogger v3 makes the digital logger more versatile and stable. *Also:* WebSecure+ is a standalone Web server; when combined with iMediaLogger, WebSecure+ provides a secure, managed storage and distribution center for the automatic ingest of iMediaLogger audio recordings. Using your intranet or the Internet for WebSecure+, audio assets can be archived and their access managed through a WebSecure+ configuration interface that allows user accounts to download and/or to audition audio assets. Logged content can be shared with internal personnel and offered to public radio listeners through podcasts. Stations using multichannel iMediaLoggers who require a more comprehensive solution for multiple personnel accessing logged recordings will find WebSecure+ to be the perfect solution.
Also: iMediaTouch Radio Automation, iMediaLogger Digital Logging and Archiving Software

Orban **N2238**
Intro: Optimod PC 1101 tailors your audio signal to help you compete in digital audio broadcasting (DAB), Internet Web/netcasting and recording applications. The 1101-PC Optimod-PC is a PCI sound card with on-board digital signal processing that's suitable for both live streaming and on-demand programming. The DSP provides a loud, consistent sound to the consumer by performing automatic gain control, equalization, multiband gain control and peak-level control.
Also: Featuring versatile five-band and two-band processing for both analog FM transmission and digital radio, the 8500 provides the industry's most consistent sound, track-to-track and source-to-source. This consistency allows you to create a sonic signature for your station with the assurance that your signature will stay locked in, uniquely branding your sound.

Paragon Towers **N8010**

Phasetek Inc. **N8229**

Phillystran Inc. **N6735**

Potomac Instruments Inc. **N4526**

Power Module Technology **N9107**
Intro: FM1500 provides 1500 watts CW output power from a single compact pallet. The frequency coverage is 88 to 108 MHz with 24 dB gain HD (21 dB Class C) and 75 percent efficiency. The FM1500 features gold metallized LDMOS-FET transistors for high reliability and performance. FM1500 offers our customers high power and efficiency in a small 4 x 7 x 1.5-inch outline providing the best possible design options for FM broadcast systems or single pallet applications.
Also: FM25, FM200, FM350, FM400, FM 700

Prime Image **C10720**

Prism Media Products **N4624**

Pristine Systems/Summit Traffic **N8007**
Featured: Development and support of cost-effective digital storage, automation and content delivery systems for the broadcast industry: on-air automation, digital production and satellite workstations, and music log scheduling software. Also available is Summit Traffic, a traffic system for radio, TV and cable.

Professional Sound Corp. **N4920**

Professional Sound Services Inc. **N6835**

Propagation Systems Inc. - PSI **C2329**
Featured: For FM, the medium and high-power versions of both the Power-Tiller and Slant-V along with a cavity-backed panel antenna and our vertically polarized PSI-FLV give the customer a sample of the designs available. The popular Power-Tiller is noted for its superb radiation characteristics and the Slant-V provides a reliable solution at a lower cost. An HD Radio version of each model is available.

PTEK **N5825**
Intro: SMART Series — Affordable, high-quality, hot-pluggable transmitters made in America, and they're upgradeable to digital. Systems available from 2,000–10,000+ watts. Can be configured for linear operation when required. Included are RF modules, hot pluggable switching power supplies with two built-in USB ports and optional Web interface. All accessible from the drop-down front panel. Compact, sleek chassis for accessibility and quick installation. Solid-State FM Transmitter/Exciter Series available in 150–1,000 watts Each unit has built-in stereo generator and FSK ID for translator use. The built-in remote control interface results in convenient use of all current remote control systems. Built to last and designed to withstand harsh environments. Frequency stability is ensured by using PLL frequency synthesis from a stable crystal oscillator. The new Solid-State FM Kilowatt Series offers a selection of 1 kW to 5 kW power amplifiers and transmitters at low cost with high performance and long life. Included in the series is a combination of 1 kW power amplifier modules (depending on output power) a combiner, exciter and 19-inch rack cabinet. Units are lightweight and designed for ease of operation and maintenance. Each 1 kW module can be operated independently giving the user greater flexibility. The PAs feature redundant power supplies and proportional VSWR foldback, protecting the unit by automatically reducing output power to a safe operating level. Over-temperature protection and multiple cooling fans keep things running smoothly. In addition, the built-in low-pass filter will give you a clean RF output. All transmitters are capable of full remote-control operation. PTEK designs and manufactures all products in the U.S. and provides a three-year warranty.
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San Jose, CA 95125-1052
(888) 889-2958
E-mail: rosy@ptekpower.com
Web: www.ptekpower.com

QuStream **N3421**
Featured: Cheetah DRS audio routing

Radio Advertising Bureau **L2**

Radio Frequency Systems **C2315**
Featured: Cable and antenna systems plus active and passive RF conditioning modules. Total-package solutions for wireless infrastructure.

Radio Systems **N6512**
Featured: Analog, digital & network consoles, StudioHub+ wiring solution, IP Connect broadband licensed STL data link

RadioTraffic.com **N6125**
Intro: Contact Manager — Customer Relationship Manager & Appointment Calendar now included free with RadioTraffic.com traffic and billing software. RadioTextMessages.com — Broadcast text messages with station promos and sponsor messages. $150 per month for unlimited outgoing messages. Can include morning, afternoon and severe weather warnings automated and unattended.

Radio World/NewBay Media **N2133**
New: An exceptional new Web site. RW Newsbytes headlines and pushmails. Digital edition delivery. Webinars. Name your new media channel, Radio World is there to help technology suppliers and services reach engineers, operations managers, consultants, station owners, IT experts and other highly qualified readership who are in a position to purchase. Radio World is the single most trusted source of news and technology analysis in your business.
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RCS **N5917**
Intro: Aquira is a flexible traffic system with robust design that gives the operator integration with the programs needed to run a radio station. With its modern user interface, real-time access to sales and inventory, range of scheduling, billing, and reporting options, Aquira will target multistation and network facilities with inventory control over a large range of selling opportunities.
Also: NexGen Digital, Master Control, GSelector, RCSnews, RadioShow

RDL **N8125**
Intro: Application-specific audio, video and control modules. D-CIJ3 Consumer Input Jacks provide mono-stereo inputs to mono output, stereo inputs on RCA jacks and stereo mini-jack, unbalanced to balanced conversion without gain, transformer isolation for unbalanced line inputs, hum cancellation on unbalanced line inputs, line-level output to feed 10 kΩ equipment inputs, and available in RDL white/gray and in stainless steel. *Also:* D-CIJ3D Consumer Input Jacks provide stereo inputs to stereo outputs, stereo inputs on RCA jacks and stereo minijack, unbalanced to balanced conversion without gain, transformer isolation for unbalanced line inputs, hum cancellation on unbalanced line inputs, linelevel output to feed 10 kΩ equipment inputs, output connections on detachable terminal block, available in white/gray and in stainless steel. *Also:* HR-ADC1 Analog-Digital Audio Converter provides broadcast-quality conversion. Inputs: balanced and unbalanced stereo audio; output are AES/EBU, coaxial S/PDIF, AES-3ID; external sync inputs are AES/EBU, coaxial S/PDIF, AES-3ID; adjustable audio input gain trim; peak or average ballistic metering with selectable 0 dB reference; peak metering with selectable hold or peak store modes; operation up to 24 bits, 192 kHz; selectable internally generated sample rate and bit depth; external sync enable selector and indicator; sample rate, bit depth, external sync lock indicators; transformer isolated AES/EBU output.

Richardson Electronics **C1736**

Richland Towers **C1807**

Rohde & Schwarz **C1933**
Featured: R&S ETL TV Analyzer, R&S ZVL3-75 Vector Network Analyzer

Roland Systems Group U.S. **SL10420**

RTS Intercom Systems **C7025**

RTW **N3123**

RVR Elettronica S.p.A. **N3231**
Intro: Barracuda liquid-cooled compact FM power amplifi-

er family with double redundant pump and automatic changeover and auto-diagnostic, starting from 4 RU dimension. 5 kW, 10 kW, 15 kW and 20 kW output power. Efficient multiple sections PFC power supply. High redundancy on RF output power. *Also:* HD Radio Transmitters and complete HD Radio solutions; TEX2000 2 kW compact transmitter in only 3 RU with built-in exciter with high performance stereo coder. Optional Telemetry System with GSM modem, battery and battery charger. PFC power supply. User-friendly interface provides great accessibility for user interaction. OIRT and JPN bands upon request; also, PJ5000 M-C Family 5 kW compact power amplifier. Automatic gain control to avoid fluctuating drive power. High reliability and performance among the various units due to total absence of tuning requirements. Triple-section PFC power supplies.
Also: URPT portable FM transmitter

Rymsa **C1312A**

S.W.R. Inc. **C1930**
Featured: We are an antenna and transmission line manufacturer. We specialize in upgrading your existing analog station to digital by working with our customers to make the transition as cost efficient as possible by providing our customers high quality products at affordable budgets. We work to make your digital transition to a cost-sensible solution.

Sabre Towers & Poles **C1632**
Featured: Sabre designs and manufactures towers for nearly all broadcast applications. Our guyed and self-supporting towers are available with tubular, solid round or angle legs. Sabre's catalog division, Sabre Site Solutions, offers pre-engineered lightweight towers along with a selection of tower components. CellXion, Sabre's shelter division, offers concrete and lightweight equipment shelters.

Sage Alerting Systems Inc. **N7909**
Featured: Emergency Alert System (EAS) devices to broadcast outlets and emergency organizations since 1996. The classic Sage ENDEC is eclipsed by its new plug compatible "Digital ENDEC," adding AES/EBU audio, a LAN interface, and support for the new Common Alerting Protocol.

Sanken Microphones/plus24 **N2914**

SAT Corp. **C7849**
Intro The SAT Digital Spectrum Analyzer has advanced features made possible by digitizing large portions of the spectrum. The DSA's signal characterization is not possible with a traditional spectrum analyzer. *Also:* Monics Satellite Carrier Monitoring and Interference Detection System is a hardware and software solution designed to watch over satellite up and downlink performance.

Sennheiser Electronic Corp. **N6520**
Featured: Established in Germany in 1945, Sennheiser is a manufacturer of microphones, headphones and wireless transmission systems with U.S. headquarters in Old Lyme, Connecticut. Sennheiser's pioneering excellence in technology has earned the company several prestigious awards, including an Emmy and a Grammy.

Seratel Technology **N8425**

Shively Labs **N6424**
Featured: Antennas, filters, combiners, transmission line and a range of coaxial components

Shure Inc. **N4529**
Intro: SM27 Vocal Microphone — Large diaphragm, side-address cardioid condenser microphone for the stage and studio. SM137 Instrument Microphone — Versatile, flat-response microphone in both acoustic and high-volume performance applications. PG42 Vocal Microphone — Side-address cardioid condenser microphone for lead vocal applications. PG27 Multi-purpose Microphone — Side-address cardioid condenser microphone for instrument and vocal recording applications.
Also: SM, Beta, KSM Microphone Lines

Sierra Automated Systems and Engineering Inc. **N8511**
Intro: M Series Console is a configurable control surface powered by the RIO Digital Audio Engine. It opens up the dream of SAS console ownership to everyone. The M Series works great as a standalone console or networked into a larger SAS plant. *Also:* KEL-16 - SAS 32KD AoIP Interface is the bridge between TDM and IP audio routing. It is now possible to build a high-capacity, zero latency, multi-zone routing system using a TDM backbone and still be able to enjoy the convenience and cost-savings of using an audio over IP interface to connect devices, locations or additional systems. The KEL-16 provides a NACIP-compliant, bidirectional, 32 channel AoIP link from the SAS 32KD to other SAS 32KD systems or any other compliant audio sources/destinations. *Also:* SAS has redesigned its SoftPanel Router Control Suite to offer new features. Upon logging into their client, each user will see the appropriate control panel(s) configured for their needs. Choose from X-Y panels, single output controllers, button arrays, fader controls and more, or combine several panels into a multi-panel dashboard for your users. Administration and configuration can now be done remotely. *Also:* USB Guest Turret — Another addition to the SAS Turret module line-up, the USB turret provides a convenient location for studio guests or talent to connect their laptop into the SAS routing infrastructure. This plug-and-play unit provides a bidirectional audio interface into the SAS audio network with analog and digital connectivity on easy-to-use RJ45 connectors. Also available as a rackmount unit.

SIRA srl **C3031**
Intro: FM03 — new FM panel suitable for both horizontal and vertical polarizations

Society of Broadcast Engineers **L27**

Solid State Logic (SSL) **N4031**
Intro: SSL C300 HD Master Studio System, designed for the spectrum of film and post-production applications, a compact, assignable console for fast and efficient sweetening and mix creation.

Sonifex Ltd. **N3217**
Intro: Redbox RB-DSD1 digital silence detection unit is for radio station master outputs and transmitter sites. It switches between two digital inputs on loss of audio. Similar to the RB-SD1 analog silence detector, the digital version has AES/EBU, S/PDIF and TOSLink digital inputs and outputs, selectable silence duration and gain threshold, manual or automatic return, TTL word clock and AES/EBU sync inputs. *Also:* The SignalLED range of illuminated studio signs is for studio installers and systems integrators. Elegant RGB LED signs contain control electronics so that they can be configured for color and operation on site. The signs are flush-mounted as standard but an optional kit can be used to end-mount them to the wall. There is also a double-sided end-mounted version which can be used, for example, in corridors, so that different wording is displayed on each side of the sign, or the same wording in a different orientation on each side. Each sign is 40 centimeters (14.75 inches) or 20 centimeters (8 inches) long. The 40-centimeter signs can be split into two 20-centimeter

sides which can be separately, or jointly controlled, e.g. a 40-centimeter "ON AIR" sign, or twin 2 x 20 centimeter signs, such as "ON AIR" and "MIC LIVE." The signs can be installed and then configured for operation using accessible DIP switches. Display modes available are: constant, flashing, pulse or off. Each sign is supplied with a 6V DC power supply with international mains fittings and a 15-foot cable. Custom signs with, for example with company name or logo can be produced for a nominal setup fee.
Also: The Redbox range of audio interfaces, Net-Log logging system, D:Scribe transcription system and HY-03 and DHY-03 telephone hybrids.

Sony Creative Software C10515
Featured: Vegas Pro software, favored by users for its efficient workflow, is an affordable application for broadcasters seeking greater power, value and flexibility in their NLE. Vegas Pro is a high-performance digital nonlinear video editing application. The software has a flexible interface, precise editing tools, Blu-ray disc authoring, easy YouTube features, and full XDCAM workflow. Also including DVD Architect Pro and Dolby Digital AC-3 encoding software, Vegas Pro offers users an affordable and fully-integrated environment for professional video, audio, DVD and broadcast production.

Sony Electronics Inc. C11001

Sound Devices N5832

Spinner GmbH C1244

Staco Energy Products Co. N2814

Stagetec (Salzbrenner Stagetec Mediagroup) N1115
Featured: A dynamic German consortium of three enterprises. Together, in their respective fields of development and manufacture, project engineering and distribution, they are European market leaders in digital audio and intercom technology.

Stainless LLC C2115
Featured: Design, engineering, analysis, inspections, tower maintenance, 24-hour emergency repair

Statmon Technologies Corp. N2537

Stratos OE411
Intro: BGAN (Broadband Global Area Network) is a mobile satellite service capable of up to 492 kbps for data or voice use.

Stream On! N8529

Studer Soundcraft N6724

Superior Broadcast Products C1405

Superior Electric N8212
Featured: Stabiline family of automatic voltage regulators, transient voltage surge suppressors, uninterruptible power supplies and power conditioners.

Sure Shot Transmissions Inc. C7037

Swe-Dish Satellite Systems OE409

Switchcraft Inc. C11826

TASCAM SL1713
Intro: DR-07 Portable Digital Recorder featuring built-in stereo electret condenser microphone. It records to SD or SD-HC card media. 2 GB SD card included. USB 2.0 jack for transferring files. 3.5 mm stereo mic input, line input and line output. Switchable low-cut filter, analog limiter and auto gain setting on input. 24-bit WAV or MP3 recording. Variable-speed audition function slows music without changing the pitch. Powered by two AA batteries or optional PS-P520 power adapter. *Also:* DR-100 has four microphones, stereo cardioid and omni condenser mics. MP3 and WAVE file recording and playback. 2 GB SD card included. XLR mic inputs with phantom power. 3.5 mm line inputs and outputs. Low-cut filter, analog limiter and auto gain control. Built-in speaker. Integrated microphone stand mount. Runs on rechargeable Li-Ion battery or AA batteries.

TBC Consoles C12126
Intro: SmartCart mobile equipment racks are available in 12, 15, 18 & 24 RU configurations. Two-bay versions are also available. All come with locking casters, rear vented access door and a rear accessory track for mounting LCD monitor arms, phone mounts and task lights.

Tektronix Inc. N2522

Telex Communications C7025

Telos Systems N7620
Intro: The 2 RU Zephyr/IP packs the power of the Z/IP into a space-saving frame while being capable of using public IP networks and mobile phone data services for high-quality, trouble-free audio transmission with minimal setup and little delay. Z/IP produces superior audio for two-way applications over uncontrolled IP networks by dynamically adapting to the network and minimizing effects of packet loss and jitter, resulting in a stable connection even in the most adverse conditions. It combines dynamic buffering, auto-varying bitrate functions and the new AAC-ELD codec for excellent fidelity at low bitrates with nearly inaudible loss concealment. The Z/IP is wireless-capable and can connect to IP networks via Wi-Fi, EVDO and UMTS. It's Livewire-ready, includes AES-EBU digital I/O and can register and accept calls from compatible PBXs. Z/IP server technology makes it easy to connect to other Z/IP units through firewalls and NATs using simple user-friendly names. *Also:* Telos Zephyr/IP Mixer combines the versatility of the Zephyr/IP with the utility of a digital four-channel stereo mixer in a rugged, road-ready portable chassis.
Also: Telos Nx12 gives you the latest hybrid technology along with audio processing by Omnia for the cleanest, most consistent call quality. Four integrated digital hybrids, each with its own AGC, noise gate, caller override dynamics and a multi-band equalizer that analyzes and adjusts received audio so that calls sound smooth and consistent. *Also:* Telos ProFiler fulfills your needs for audio logging, aircheck skimming, remote listening, proof-of-play, audio archiving, capturing audio from live events or contest lines, side-by-side competition comparison. A flexible PC-based software solution. *Also:* Telos iPort MPEG Gateway enables broadcasters to transport eight stereo channels of CD-quality audio on a single connection. It houses eight stereo MPEG codecs, in a single 2RU box, capable of eight bi-directional or 16 encode-only channels. With a Zephyr iPort at each end of a QoS guaranteed connection, broadcasters in different cities can share audio as if they were in the same building. Can be used for any application where MPEG encoding and/or decoding is needed for transmission over IP channels, such as satellite uplinks, Internet streaming, broadcasting to cellular phones, studio-to-transmitter links, audio distribution systems. Zephyr iPort uses the Livewire standard. If you don't have an Axia network yet, pair the Zephyr iPort with an Axia AES/EBU or Analog Audio Node for use as a standalone, high-density audio codec.

TFT Inc. N5620
New: Ask for free CD with latest publication on CAP to EAS.

Thermo Bond Buildings Inc. N8515

Tieline Technology N8123

Intro: The Bridge-IT is a low-cost, point-to-point IP stereo audio codec for broadcast and professional applications including IP studio-to-transmitter links, IP audio distribution, simple IP remote broadcast links, cable headend IP audio distribution, real-time audio-over-IP bridging solutions and multiple codec installations. Two half-rack Bridge-ITs will fit into a single rack. Features include a choice of 22 kHz linear audio or G.711, G.722, MPEG Layer II, Tieline MusicPLUS and optional AAC LC, HE-AAC. The Bridge-IT is compatible with all SIP-enabled IP codecs (N/ACIP EBU Tech 3326). Hardware features include XLR audio inputs/outputs with analog and AES audio; hardware front-panel interface including screen, numeric keypad, navigation, dialing and VU/PPM metering, two input and output relays, USB port and RJ-45 Ethernet port. Remote control is via RS-232. Tieline's QoS Performance Engine is used for reliable and automatic IP stream management. Connect Bridge-IT to the new Tieline Traversal Server to see all of the other codecs in a group and their status. Automatic failover of main program jumps to backup audio on an SD card if the IP link fails. *Also:* The G5 is Tieline's 5th generation of the codec platform. It offers premium audio specifications and audio-over-IP reliability for high-end 24/7/365 studio-to-transmitter links as well as audio distribution. Features include audio-over-IP, POTS, ISDN, wireless 3G, Wi-Fi, WiMax and satellite interfaces. Algorithms include the AAC suite, MPEG Layer II, G.711, G.722 and Tieline MusicPLUS. There is support for multicasting and multi-unicasting to multiple destinations over IP and support for three encoders, stereo plus a bidirectional communications channel. Analog and AES/EBU audio inputs on XLR allow for simultaneous analog and digital audio output. A front-panel hardware interface including navigation, key pad, screen and four LED PPM meters. Support for multiple language text on the screen with planned languages — English, Spanish, French, Chinese, Japanese and Arabic. The G5 will connect to the Tieline traversal server to solve firewall problems and find other codecs in the network and connect with one touch. On the back, two relay control inputs and outputs with RS-232, USB host interface, USB slave, and RJ-45 Ethernet (LAN). Optional internal dual redundant power supplies. *Also:* Tieline IP Traversal Server (TieServer) is an IP traversal server designed to enable Tieline audio codec users to traverse network firewalls and see other codecs in the network. TieServer will automatically populate the address books of each codec connected to an IP service allowing users to see which codecs are available to dial, which are offline and which are busy. Other features will include automatic notification of new software updates and a range of storage and retrieval services for program audio.

TransLanTech Sound N8724

Intro: The Ariane A+ is a completely new design, the most advanced AGC leveler from TransLanTech. It features increased DSP horsepower for a larger feature set of processing options and IBOC/HD broadcasting. The A+ features a synchronization delay to match analog and digital processing paths, improved gain reduction algorithms and control functions.

Transradio SenderSysteme Berlin AG N9112

Featured: Research, development and design of modern AM, VHF/FM and DRM broadcasting systems and customer-tailored solutions. Delivery of the transmitters, antennas, power supplies and air-conditioning systems to the management of turnkey projects, including all facilities to operate a broadcasting station.

Trilithic C10548

Featured: Emergency Alert Systems, EASyCAST Encoder/Decoders

TSL SU7917

Intro: The PAM1-3G8 is a comprehensive and compact multichannel and Dolby D&E audio monitoring product.

TWR Lighting Inc. N4930

Intro: FAA-approved LED Beacon2 is a direct replacement for 300MM incandescent beacons. Advantages of employing LED technology include reduced power consumption from 1240 watts to 40 watts, longer life span and five-year warranty. STLDBeacon2 — Debuted as the first FAA-compliant combination Dual L-864/865 LED/Strobe lighting system. The white xenon strobes have an established, long life expectancy, with even longer expectancy for the LED portion. The combination of LED and strobe yields significant power-consumption savings, longer life span and five-year warranty. HILS-L856 — The High Intensity Lighting System (HILS) utilizes "STIX" (Special Technology for Ignition of Xenon Flashtubes) ensuring long lamp life, very low UV and Ozone generation and low power consumption. Ease of installation is ensured through the use of a single StrobeCable for both power and control wires. The computerized controller is in constant communication with the flash heads ensuring optimum performance and displays system status via its LCD display or remotely via modem.

Utah Scientific N3531

Intro: ProProducts series routers, distribution amplifiers and associated products targeted at the growing market for professional-quality products in smaller broadcast and nonbroadcast facilities.

VCS SU10413

Intro: dira! Radio playout/Next Generation. Now available both on an OpenVMS platform and as a lightweight all-in-one Windows playout station, the new dira! Radio playout allows you to schedule and play your radio programming with greater ease. *Also:* dira! Newsplayer is a one-stop solution for playing out newscasts. Combining a prompter, jingle machine, audio player and rundown control into one single user interface operated with a handful of keys and directly integrated with the newsroom computer system via the MOS protocol, this player makes newscasting a one-screen affair.
Also: dira! for Radio production and playout suite

Viero/LAN International N5617

VocalBooth.com Inc. SL9612

Intro: VocalBooth Mobile Studio allows users take their recording, production and broadcasting on-location. VocalBooth Mobile Studio is constructed with the engineering, quality and performance that VocalBooth.com customers have valued for years. Also, VocalBooth.com offers VocalBooth Recording Packages with the latest gear and technology for professional or home recording studios. VocalBooth Recording Packages include carefully selected and fully customized to match buyers' needs.
Also: 5 Carat Diamond Gold Series vocal booth, Platinum Series vocal booths.

V-Soft Communications N4617

Intro: Probe 4 is comprehensive coverage and interference analysis software. Building upon Probe 3, a winner of the Radio World "Cool Stuff" award for 2006, V-Soft Communications announces the release of Probe 4, written to take advantage of the new dual- and quad-core computer CPUs. It features dual-quad core calculations for faster map rendering and multiple stream processing. New flexibility is provided in the user interface, including the ability to move city names on a map and to copy, paste and duplicate objects such as text boxes, legends and logos. Users will find new user construction lines to line up screen objects and the new ability to cancel grid-based calculations while in progress. Terrain Profile Viewer has been rewritten to provide more convenience and better displays. Probe 4 has the capability to assign differing cutoffs values and colors to the signal areas of multiple stations on a map, so users can have several transmitters sharing one field strength cutoff. Probe 4 provides the ability to zoom the map to any scale previously used. The Point Search Tool allows the user to click on a location on the map and it generates a

sortable distance listing of all nearby items (such as cities or ASR towers) and at the user's choice adds the items to the map. A new Service Counting tool allows users to quickly determine the number of communications services at locations within a given area (based on contours). This information can be plotted on the map and used to generate population reports for user defined service levels. This feature makes working with any number of stations possible, allows an unlimited number of "services" to be counted, and the process is much faster than the service counting abilities of the previous version.
Also: FMCommander FM allocations software application; AM-Pro 2, the latest version of the AM allocations and AM mapping program; Conductivity, a standalone ground conductivity measurement program that receives measured field strength data as input and then it automatically fits the field values to the correct ground wave curve.

Ward-Beck Systems Ltd. **SU4813**
Featured: openGear modular distribution, conversion, processing system, PODS problem solving boxes, IMP impedance matchers, AMS8 audio monitor series, 8200 modular distribution, conversion, processing system.

WEGENER **SU7913**
Intro: ShowShifting — Introducing the ShowShifting feature for central-casting radio network operations. ShowShifting is a highly customizing feature of the WEGENER file-based solution for radio networks. It allows affiliates (or the network operator) to specify when specific programs are to play out of networked WEGENER iPump 6420 media servers. The feature is extremely flexible, allowing playback to occur multiple times, on different days, even to the point of spanning a weekend. "Disaster scenarios" are gracefully handled without operator intervention, by replacing episodes of lost signal or power with "evergreen" material. ShowShifting will yield tremendous satellite bandwidth savings over linear operations. Reducing the need for networks to rebroadcast a show multiple times for affiliates wishing to broadcast specific shows locally at a more desired (or additional) time slot. Next Generation Hybrid Solutions — WEGENER's fourth-generation network control system adds new hybrid network control functionality. The result is a flexible, open architecture system that provides simplified operations for dynamic media distribution via satellite or terrestrial paths for content providers, private network operators, and TV and radio broadcasters. Next-generation hybrid network control can be used in a variety of file-based workflow applications, such as, hyper-localized ad insertions, low-cost disaster recovery, virtual channel creation and time-shifting. WEGENER hybrid network control solution supports all WEGENER iPump media servers: iPump 562 for HD/SD enterprise video networks, iPump 6400 for professional video networks, iPump 6420 for multicasting radio networks. Introducing two new iPump media servers for 2009: 'Media localization receiver' for HD/SD broadcast/cable video networks, - 'IP Media Player' for HD/SD, IP enterprise video networks.
Also: iPump 6420 audio server and COMPEL network control: Specifically designed for localizing affiliate radio broadcasts, the WEGENER iPump 6420 media server generates a custom audio channel by seamlessly transitioning between live and stored audio programs, advertisements and liners.
Mr. Ken Leffingwell, Dir. of Sales
11350 Technology Circle
Duluth, GA 30097/USA
770-814-4000
E-mail: kleffingwell@wegener.com
Web Site: www.wegener.com

Wheatstone Corp. **N7612**
New:Wheatstone will be featuring the new E-SQUARE Audio-Over-IP Routing and Mixing System. E-SQUARE is the second-generation AoIP operating on 1 GIGABIT to assure all audio everywhere. Also featured are new and updated Vorsis audio processors for AM, FM and studio applications. In addition, the full range of Wheatstone and Audioarts consoles will be on exhibit.
Featured: Wheatstone and Audioarts Consoles, Routers, and Audio-over-IP; Vorsis Audio Processing
Mr. Jay Tyler, Dir. of Sales
600 Industrial Dr.
New Bern, NC 28562-5440/USA
252-638-7000
Fax: 252-635-4857
E-mail: sales@wheatstone.com
Web Site: www.wheatstone.com

Whirlwind **C6533**

WhisperRoom Inc. **SL10120**
Featured: Sound isolation enclosures with many options.

WideOrbit **N7029, N7033**
Intro: WO Sales is sales management software that enables media companies to make their sales operations smarter, from forecasting, to account management, to proposal, to post-buy analysis. WO Sales was built to meet the needs of media sales professionals and works natively with WO Traffic for seamless business operations. WO Sales is made up of three components: WO CRM, WO Proposal, WO Yield
Also: WO Traffic for Radio

Will-Burt Co. **C8031**

WinMedia America Inc. **N4924**

WireCAD **N4932**
Intro: WireCAD Version 5.1 — WireCAD software helps the non-CAD savvy engineer create CAD (dwg,dxf) documentation and manage cable, and connection information. WireCAD automatically creates functional block diagrams, rack layouts, assigns cable numbers, prints cable labels, bills of materials and other reports. WireCAD is standalone software, not a plugin. It helps organize your projects and keeps track of your drawings, equipment, cables and connectors. Knowledge of CAD is not necessary. Simply describe your equipment using the Equipment Library and WireCAD will generate the functional block.WireCAD also hosts a growing community library of more than 17,000 equipment definitions; make use of equipment descriptions contributed by other WireCAD users to customize your own WireCAD library.
Also: Patchverx Patch bay Design and Designation Strip Tools. Create jack field layouts and designation strips from a large set of pre-existing templates. Create CAD drawings and output without knowledge of CAD. Work in easy text grids with copy, fill and increment functions. Use one of the 90+ templates or create your own. Works with or without WireCAD. Used as a plugin to WireCAD, Patch Verx can pull strip data from the selected project cables database. This allows you to create layout as based on actual connection data. Many connector styles to choose from. Prints to any Windows print device. Exports to dwg, dxf, png, jpg, gif. Import data from csv. New template wizard. Create any one or two strip jack field with any number of columns, splits and pair combinations. *Also:* DWG DIFF is a simple tool that displays the differences (and commonalities) between two drawings. Compares drawing entities in the selected drawing space (Model,Layout) Compares all other drawing structures such as: Layers, Blocks, Text Styles, Layouts, etc. Compare dwg drawings from R12 to 2007. Comparative output can be saved as dwg, dxf, pdf.

Wireworks Corp. **C4147**
Intro: BG Series — BG Cable Assemblies featuring Wireworks flexible MusiLUX microphone cable or AES/EBU digital cable teamed with Neutrik's convertCON connectors. Wireworks BC Cable Assemblies are available in four configurations: XLR male to convertCON, XLR female to convertCON, convertCON to convertCON and quarter-inch TRS to convertCON, the new cable assemblies are offered in a variety of standard lengths with custom lengths available upon request.
Also: AV2000, WireLUX, MMCG, DT12, LumaVue

Wohler **N1102**

Yamaha Commercial Audio Systems Inc. **N3838**

Yellowtec **N8120**
Intro: iXm handheld recorder combines a microphone and recorder in one unit. The microphone heads have been optimized for speech intelligibility and low handling noise sensitivity. The heads are exchangeable to suit varying recording environments. The iXm utilizes an intelligent leveling algorithm, enabling the user to concentrate on the interview. Files are stored on removable SD memory cards as WAV, BWF or MP2. MP3 is to come. The recording section has only two buttons and three indicators supporting handy thumb-on operation. Its memory is virtually unlimited utilizing SD cards. The iXm has a unique dual power system with intelligent power management. It uses 3 AA batteries or a built-in rechargeable Li-Ion battery or both. The iXM comes with all essential interfaces. Track IDs will be announced by an integrated voice messaging system. The user can navigate through recordings on the separate playback section on the back. The line input will be useful at press conferences when the feed is from a mult box. The mini USB port can be used for accessing audio files from a PC, to recharge the Li-Ion accumulator battery or to configure iXm. *Also:* PUC2 is a professional USB-powered stereo audio interface for use with Mac or Windows PCs. Broadcasters have been using its predecessor PUC as a PC interface-to-professional audio equipment such as digital and analog mixers, powered audio monitors, level meters and to microphones (in conjunction with a microphone preamp). Yellowtec offers a choice of product versions with AES3 as common interface. The PUC2 has XLR connectors on its rear panel. The PUC2 is capable of recording high resolution audio at up to 24-bit/192 kHz sample rate. PUC2 also supports plug and play operation through its USB connection.
Also: m!ka microphone and monitor arms, Intellimix three-fader digital desktop mixer.

Zaxcom Inc. **N3114**
Intro: The QRX100 four-channel camera RF audio system is a new technology concept, a camera-mountable four-channel RF audio receiver.
Also: Deva and Fusion hard disk recorders, TRX family of digital wireless recording systems, ZFR audio recorders, Mix-12 mixing control panel.

SURE BETS

Fremont Street: Watch the Light Shows, Not Your Wallet

Talk about making lemons into lemonade. It used to be that visitors to Las Vegas avoided the old downtown area unless they were looking for $5 craps tables and some trouble. But these days the area, rechristened the Fremont Street Experience, is a veritable playground for both adults and kids alike, and a refreshing change of pace from waterfalls, pirate ships and rainforests.

The five-block pedestrian covered mall features live music, shopping, street performers, dining and a nightly light and sound show. The fun-loving crowds and bead throwers make it feel a bit like New Orleans during Mardi Gras. Don't think twice about booking a room on Fremont; lodging is one of its best features, as many of the hotels and casinos are touting renovations such as new rooms at The Golden Nugget; and The Fitz, which recently opened a "trend-setting" restaurant called The Courtyard Grill and Buffet.

One caveat: Because the Fremont Street Experience is literally (and figuratively) a departure from the Strip, it can translate to a semi-pricey cab ride depending on where you're coming from (but no more than $20-25). But with the good deals to be had on Fremont, the cab will likely be the most expensive part of your evening.

425 Fremont Street
(702) 678-5600
www.vegasexperience.com

Researchers Propose Energy Harvesting

Transmitted Power From Decades of Broadcasting Build to Highest Levels, Reaching Steady State

by Dr. Mead Citron

According to sources within federal research laboratories, considerable attention is now being given to the residual levels of radio frequency (RF) energy present in the environment.

The basic problem being studied is that all of the RF signals from decades of high-power transmission leave residual levels of energy that remain in the environment and continue to propagate nearly endlessly. The result is that the cumulative levels have been increasing.

As stated by one source, "While the instantaneous transient levels of energy being radiated are not a major concern, what has been discovered is that the steady state levels of energy within various frequency bands, especially in VHF and UHF, have been slowly increasing from year to year."

It is a complex problem not easily solved by a closed form equation due to numerous nonlinear effects and multipath, but the phenomenon can be illustrated using the classic Friis transmission equation, given by:

$$P_R = P_T G_T G_R \left(\frac{\lambda}{4\pi R}\right)^2$$

where the power received at a given point is related to the power transmitted, the gains of the transmit and receiver antennas, and the distance R between the transmit and receive points.

Clearly the received power decreases by the square of distance of separation, but the power never goes to zero. As the power available to be received continues to propagate, an accumulation of power over time results in the phenomenon of steady state effective power increase as the energy continues propagating.

A periodic function can be written to show an infinite series that predicts power levels at a given location, where each successive term in the summation represents a power term due to a transmission that occurred further back in time. The expanded Friss equation taking into account temporal effects is given by:

$$P_R = k\sum_{n=0}^{\infty}\left(\frac{1}{R_n}\right)^2 = k\left[\frac{1}{r^2}+\frac{1}{(r+D)^2}+\frac{1}{(r+2D)^2}+\frac{1}{(r+3D)^2}+\cdots+\frac{1}{(r+\infty D)^2}\right]$$

where R_n is the distance term, k is the collection of fixed terms from the Friis equation, and R_n is expanded by the number of repetitive cycles of transmission over the additional distance D to an infinite number of terms. Note that the power level decreases in each term but is additive to all prior terms.

The Friis equation obviously doesn't take atmospheric loss into account. The atmospheric loss varies greatly across frequency but is less at lower frequencies. Therefore the typical broadcast frequencies at VHF and UHF are the greatest contributors to this energy buildup.

The effect is non-linear in that it cannot be predicted by standard equations for transmission, reflection, absorption and energy transfer. The best way that it can be described is that a propagation resonance has built up that now is very easily influenced and maintained by even small transmissions at the same frequency.

Consider how a group of soldiers marching across a bridge are able to make the bridge resonate to the point of destruction by maintaining a steady cadence in their march (the "Angers Bridge" effect). Once the resonance condition begins, it is easily maintained and magnified.

If a law were to require recycling of unused signal, an energy harvesting device with a modulation scrubber could be used to return a signal to a clean tone at carrier frequency that can then be reused and remodulated by a station.

Worsening matters is another phenomenon referred to as sympathetic resonance where transmissions at one frequency can contribute to the amplification of oscillations at another nearby frequency. The net impact of greatest interest to broadcasters is that the VHF and UHF bands tend to invite the greatest level of impact from sympathetic resonance — for instance unlicensed devices in the UHF band, though typically at a lower power level than TV transmissions, will tend to have a collective impact on the higher power bands used by TV stations.

Why not harvest it

One researcher in the field, Dr. Mead Citron, has presented a number of possible mitigation plans which are now being pursued.

One of these mitigation plans coordinates with other efforts to promote "green" business practices by requiring producers of transmitted energy to recycle unused transmitted signals through energy harvesting.

Methods of energy harvesting are well documented for many military applications. For transmitted broadcast communication signals, it is clear that there are many producers of signals at a given frequency, i.e. at a specific channel. If a law were to be put in place requiring recycling of unused signal, it is likely that an energy harvesting device with a modulation scrubber could be used to return a signal to a clean tone at carrier frequency that can then be reused and remodulated by any station.

In addition, since the recycled unmodulated signal already exists at the carrier frequency, less energy will be needed from the oscillator. While requiring individual stations to procure and maintain their own energy harvesting equipment may be cost prohibitive, support from the government stimulus package is expected.

Reharvested energy credits may also be used as a means of allowing an energy harvesting cooperative to capture unused energy from a large number of broadcasters while paying them credits for the portion of energy attributable to individual stations. This may ultimately provide a new source of revenue to broadcasters to help defray costs, especially in the current economic times.

Dr. Citron also stated that his lab is experimenting with capturing stray ambient light for energy harvesting applications. The impetus for light energy harvesting is due in part to the amount of light pollution that occurs, especially near metropolitan areas.

Experiments have been conducted with various surface collector designs for use in a large Carnot engine using the earth as a heat sink. Experimental black surface collectors have been investigated, but the radiation efficiency of these limits the performance. A proprietary green design, based in part on the photosynthesis process found in nature, is currently being used.

The process seems to be providing promising initial results, and simulations predict the process will help the environment both by reducing background light and by reducing global warming caused by excessive carbon dioxide buildup from artificially induced photosynthesis.

Another proposal being considered, according to our sources, is that a one-week moratorium on all RF transmissions is being considered in order to let the current steady state RF levels die down to negligible levels.

Scientists suggest that there exists a threshold above which the increase in signal level due to dynamic loading resonant transfer occurs. The moratorium would reduce levels below the threshold so that the transfer of momentum from newly transmitted signals will be diminished.

Though not made public, the National Oceanic and Atmospheric Administration (NOAA) has developed a record of historic RF steady state levels at a number of locations and has correlated the data with other meteorological data. They have shown that the RF levels are reduced following certain weather events such as rain and snow, which indicates that precipitation serves to absorb some of the energy and reduces the absolute level of atmospheric energy. Global warming and drought conditions may then also accelerate the problem of RF energy build-up.

While not confirmed, one computer model shows that if the rate of increase in steady state conditions continues at the current pace, a tipping point will be reached in the year 2012, at which point an extreme acceleration in resonant activity will begin. The impact of this acceleration was not disclosed.

Comment on this or any article. E-mail radioworld@nbmedia.com.

PRODUCT EVALUATION

Omnia One Studio Pro Follows Tradition

by Stephen M. Poole

We use the Omnia 5EX and 6EX series processors at all of our stations here in Birmingham, both AM and FM, and love them. I was intrigued with the claim that the little Omnia One had "the sound" for a much lower price. The Omnia One Studio Pro (evaluated here) is the most recent addition to the Omnia One line. Other versions are optimized for AM, FM or DAB/Multicasting.

If you're in a hurry, here's the quick bottom line: the Omnia One is an amazingly versatile and good-sounding processor for under $3,000. It's a real problem-solver and it's cost-effective. Basically, anywhere you want "that sound," but can't justify spending the big bucks for a full-sized Omnia, this little fellow will fit the bill.

Installation

The Omnia One Studio Pro, like its siblings, fits in a single rack space, though the manual recommends that you leave the slots above and below open for ventilation. The unit is relatively light and is only 16 inches deep, so it's not difficult to find a good spot for it. It is well-shielded, with EMI/RF filtering on all inputs (including the AC supply), but the usual warnings still apply: Don't mount it over a big transformer and do plug it into a good UPS.

The unit feels nice and solid. There are only two front-panel controls, one for headphone volume and a jog wheel for configuration. The blue-monochrome LCD display is a little difficult to read more than a few feet from the unit, but it's fine for basic configuration and monitoring. There's also an LED level meter in the front panel that can be assigned to either input or output and which is visible from across a room.

So where does this processor fit? Larger units such as the 5EX and 6EX offer more control over every aspect of processing. They can also be used to provide simultaneous, separately-limited outputs with diversity delay for HD Radio. The Omnia One, by contrast, is an all-purpose box that can assume specific personalities (what Omnia calls 'styles') by simply loading different software. As the product brochure says, depending on the "styles" loaded, it can be used for AM, FM, HD-R, netcasting, multicasting, podcasting, or "any other form of '-casting' you can think of."

As of this writing, software for AM, FM, studio and multicasting (which covers all digital "streaming" or "-casting" applications) is available for download at no charge from Omnia's Web site. Another nice touch is that there are two software banks, so each can be set up in advance with different styles and then selected on the fly.

To support this approach, the One has plenty of gazintas and gazoutas on the back panel. There are analog ins and outs, AES ins and outs (via StudioHub+ RJ-45 connectors) and a Livewire/Ethernet connection. Analog and digital outputs can be used simultaneously, with separate level adjustments for each (nice!). BNC connectors are provided for composite and SCA I/O. There's even an SCA insertion adjustment on the rear — a pleasant surprise for a unit of this size.

I received the Omnia One Studio Pro "style" for this test. The BNC connectors aren't used, limiting is softer and there's no pre-emphasis or de-emphasis. As the name implies, this is ideal for studio use: gain-riding, post-production, headphone limiting and remote feed control. A key feature for this style is very low delay in throughput (the manual specifies less than 4.3 milliseconds, worst-case, input to output). This is ideal for creating a fake air monitor signal, providing a processed sound to air talent when they're unable to directly monitor the transmitter because of an HD-R or profanity delay.

For my test, I chose the analog inputs and outputs because I wanted to hear the "longest" path through the unit, with worst-case throughput delay, from A/D at the input to D/A at the output. Omnia states that Crystal Semiconductor 24-bit, 128x oversampled conversion chips are used. In my listening tests, the unit certainly sounded transparent and the delay was inaudible.

One warning: the Omnia One Studio Pro requires quite a bit of time to boot up. It takes 10 to 15 seconds before you hear audio and up to a minute to get a usable LCD display and jog wheel. Aside from the possibility of damage or data corruption from a power glitch, then, I really do recommend that you put this unit on a quality UPS. Noisy AC with dropouts will render it unusable.

Operation

I started at the front panel with the jog wheel. If you've used an Omnia, you'll feel right at home with it: You turn left or right to select different menu items, then press to make a selection. The jog wheel feels good, with a positive "click." All processing configuration can be done via the front panel; you can select presets, edit the parameters and save your current settings under a new preset name.

Of course, it's easier and more intuitive

Product Capsule:
Omnia One Studio Pro

Thumbs Up
- ✓ "Omnia Sound" for less than $3,000
- ✓ Four-band processing with control of all parameters
- ✓ Extremely flexible, field-upgradeable for different uses
- ✓ Built-in Web interface for remote control

Thumbs Down
- ✓ Relatively long boot time (up to a minute)

PRICE: $2,995

CONTACT: *Omnia Audio at (216) 241-7225 or visit* www.omniaaudio.com

to adjust the unit via the built-in Web interface. As instructed in the manual, I used the front-panel jog wheel to set up my IP address, netmask and gateway. Once done, I simply entered the IP address in Firefox under openSUSE Linux and it worked perfectly. I was happy to note this; while built-in Web browsers have become more common nowadays, many manufacturers apparently haven't gotten the message yet. They want to tie us to Windows-only software. Fig. 1 shows me tweaking the high-band limiting.

Now for the important question: How does it sound?

Remember that the Studio Pro style is intended for gain riding and in-house processing; it doesn't have the aggressive peak limiting that's required for positive modulation control. I judged it with that in mind. I started with the basic "General" preset, as recommended by the manual. The unit was virtually transparent with this preset, acting like a smooth and skilled operator riding a gain control.

I then switched to the "Aggressive" preset ... and started grinning. "Hey, that's an Omnia!" The signature sound was there: tight bass and sizzling highs. I tried this preset with several different formats, from Christian contemporary through AC/oldies to talk, and it sounded great with all of them. This particular preset will work out of the box for fake air monitoring, as mentioned above. You might want to tone it down a bit or use a "General" preset for production work, though.

I'm an incorrigible tweaker, so I used the remote interface to fiddle with the presets. By shortening the attack and release times and by increasing the drive at certain points in the processing chain, I was able to make this thing obnoxiously loud. Aside from the usual artifacts to be expected with very heavy processing — "shimmering" cymbals and occasional, outright ducking on some program material — it remained clean and clear overall.

Documentation

Telos/Omnia is known for producing some of the best user manuals in the industry. The manual is quite adequate. Once you've got the network set up and have connected to the unit with your Web browser, you might want to skip to Chapter 3, "Getting the Sound You Want."

Using the remote interface and a set of speakers, you can start with one of the factory presets and make minor adjustments until you get what you want. As with all Omnia products, a relatively small tweak (a half of a decibel, in some cases) can make a dramatic difference in the final sound, especially changes made before limiting. With the remote interface, you can save work in progress, go back to an earlier setup if you get lost, and finally, rename and save your customized preset when you are satisfied.

The suggested list price is $2,995, and many dealers sell it for substantially less than that. This makes the Omnia One Studio Pro an ideal way for a small-market station to get "that sound" on a budget. The Omnia One Studio Pro even has some of the trademark features of the larger units, such as "phat bass," which improves sound in portables with less-than-optimum speakers. .

Suggested uses include as a standby processor. Given its flexibility, it is cheap insurance for an AM/FM cluster. One bank could be loaded with the AM style and the other with FM. If any station should lose its main processor, the Omnia One Studio Pro could be substituted quickly during the repair.

Another use could be as a fake air monitor, as mentioned. One simple arrangement would involve the Omnia One SP with a relay that would switch open if the transmitter should go off air. You'd feed the studio's headphones and monitor speakers through the relay.

Of course, the Omnia One Studio Pro can ride levels wherever needed. It is inexpensive enough that many stations might consider using it to level remote and satellite feeds, or to preprocess an STL signal. It brings true, top-quality, all-digital multiband processing well within smaller budgets.

To me, for the price, the best feature of the Omnia One Studio Pro is its flexibility. By loading different software "styles," you can literally transform the One from an AM to an FM processor, and then from FM to podcasting, all on the fly. The remote interface allows you to save all sorts of presets, even across styles. I strongly recommend it as a cost-effective, top-quality broadcast audio processor.

Stephen M. Poole, CBRE-AMD, CBNT is market chief engineer for the Crawford Broadcasting Company's five-station AM/FM cluster in Birmingham, Ala.

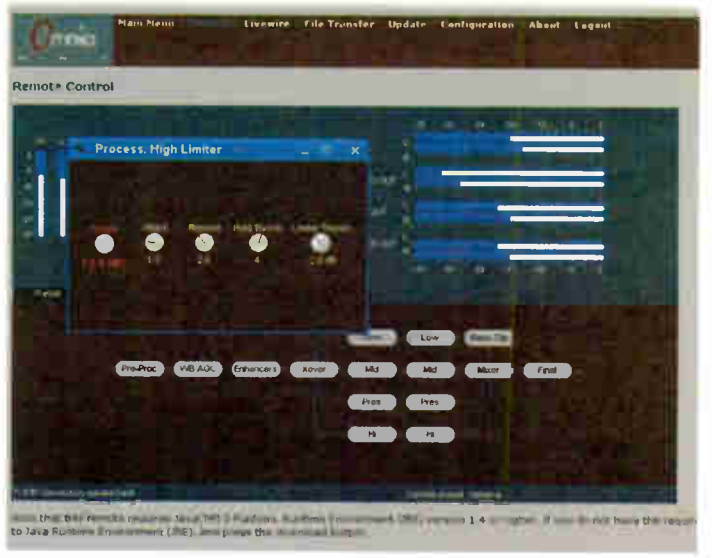


Fig. 1: Screenshot from Remote Software

SHORT TAKE

Do More With Fewer Cables

Paul K. Plays Around With Neutrik's Gender-Bending convertCon

by Paul Kaminski

Remote engineers will like Neutrik's recent addition to its line of XLR connectors, the "Cool Stuff" Award-winning convertCon (NC3FM-C) XLR connector.

The concept behind the convertCon is simple: It provides a male and female XLR connector in the same shell. A latch on the connector allows it to slide back and forth, exposing pins for the XLR male connection, and sliding back to pockets for the XLR female connection. This means the convertCon does double duty; the female connection will work with microphones, and XLR chassis and cable male outputs. The male connection will work with XLR chassis and cable female input jacks.

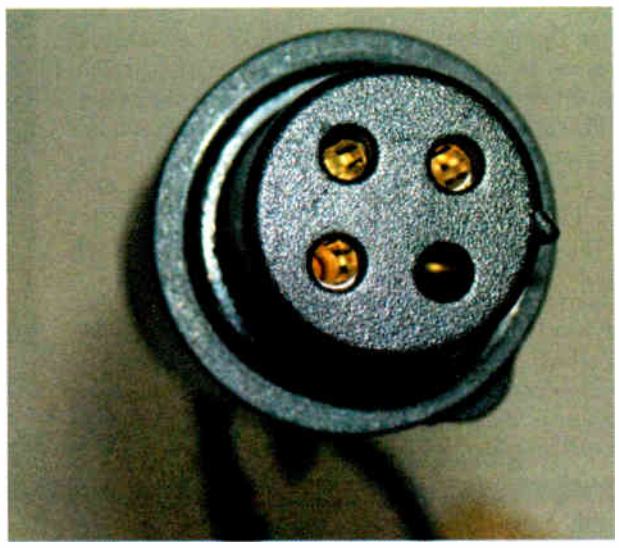
Although the convertCon may not lock fully with chassis mounts, the electrical connection is solid. With this connector, an engineer won't need to bring gender changers for those unusual connections that seem to arise on remotes.

For example, if a cable is constructed with a male 3.5 mm (1.8-inch) TRS plug on one end, and the convertCon on the other, it can provide a line output (with the XLR male connection) from a 3.5 mm source (like the earphone output of a handheld audio device). Slide the connector back and it provides an input (mic or line) in the same cable which can be plugged into the appropriate jack in a handheld audio device. Remote kits with these connectors won't need as many cables to provide the ability to connect to different sources.

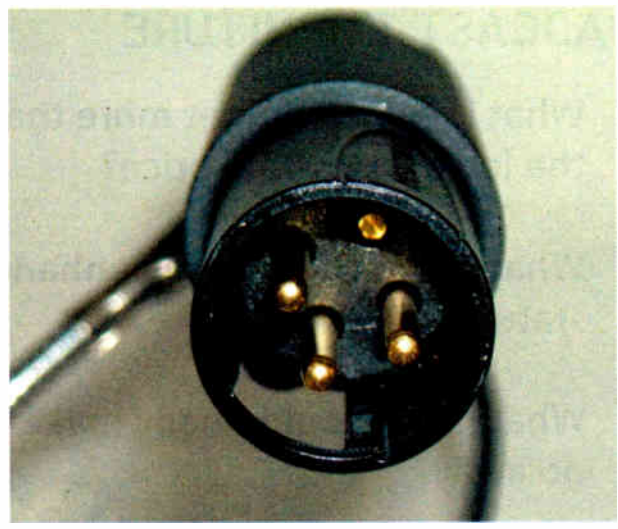
This flexibility will cost a bit extra, when compared to the price of other Neutrik XLR products. If cables must perform more than one function, the extra cost of convertCon connectors on each end of a cable may be economical when considered over time.

The construction process is much the same as with Neutrik's XX series, although the convertCon connector won't fit in a construction jig like the SolderBuddy.

But SolderBuddy's creator Lee Tingler has come to the rescue with the VersaVice, a handy little device that held the connector steady while an included alligator clip atop a gooseneck post held the cable to the connector and made for easier soldering. The VersaVice also makes other construction projects around the shop or office easier. Both devices have a small footprint and will easily fit on a workbench or shelf.

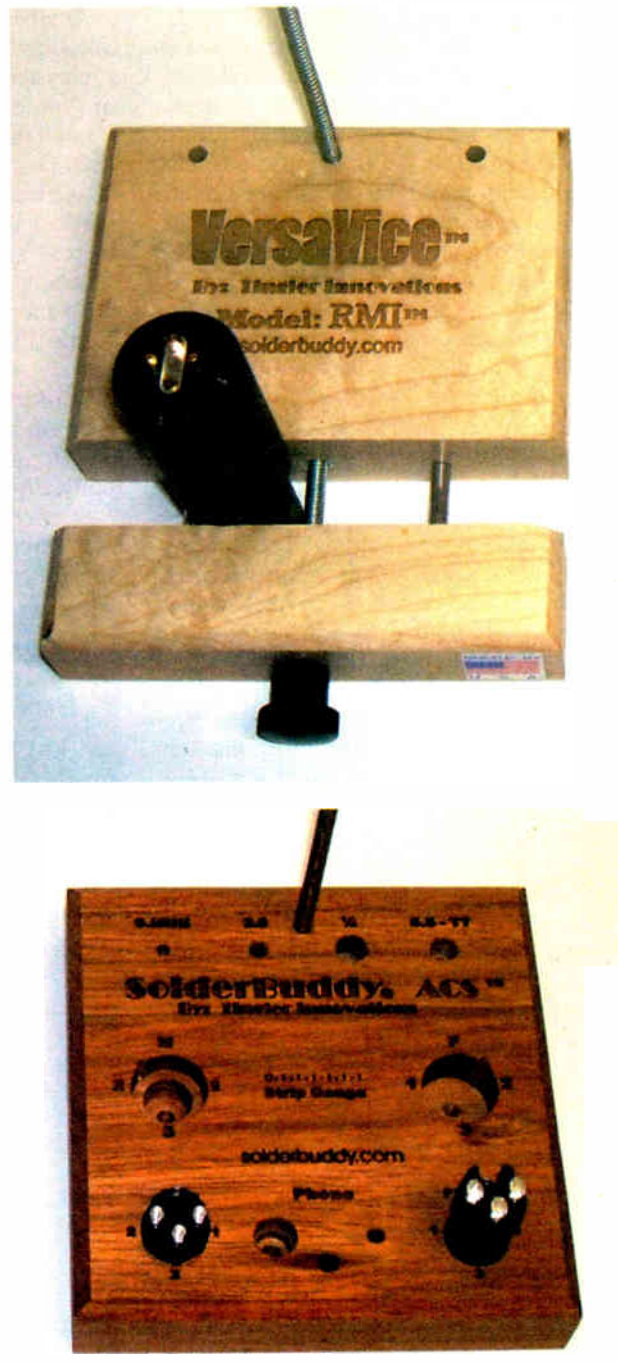


Neutrik convertCon in 'Female' Mode ...



... and in 'Male' Mode

For information on the convertCon, contact Neutrik at (732) 901-9488 or visit www.neutrik.com. *For the SolderBuddy and VersaVice, contact SolderBuddy at (770) 476-5337 or visit* www.solderbuddy.com.



A convertCon in the VersaVice (top) and NC3MX and NC3FX in a SolderBuddy for Comparison

PRODUCT GUIDE

Tieline Says 'Bridge-IT!'

Codec maker Tieline Technology has a new codec, Bridge-IT.

The half-rack/desktop-sized Bridge-IT is aimed at the affordable end — for simple remote, STL or other dedicated link uses.

International Marketing Manager Darren Levy called it a suitable solution for low-cost, point-to-point IP audio links.

The Bridge-IT will handle G.711, G.722, MPEG Layer II, Linear, AAC, HE-AAC v2 and wired and wireless networks, WANs, LANs, IP, satellite, WiMax and Wi-Fi, SIP and G3.

Included is the Tieline MusicPlus algorithm for improved efficiency at 22 kHz operation under 100 kbps. It also use Tieline's QoS Performance Engine technology.

Connections include XLR, 1/4-inch (headphone), Ethernet, USB, RSA-232 and an SD card slot. A numeric keypad is on the front.

Following Bridge-IT's IP lead, Tieline also announced that forthwith all G3 codecs sold will be IP-capable. Levy explained: "Leading with IP instead of POTS and ISDN as we have done for years, is more in line with broadcaster buying trends and the IP network infrastructure revolution."

Tieline said this would lead to a price reduction of $550. G3s out in the field can be retrofitted.

For information, contact Tieline Technology at +61-8-9249-6688 or visit www.tieline.com.

HHB Ships UDP-89

Audio equipment manufacturer HHB is shipping the UDP-89 Professional Universal DVD/CD Player.

The 1RU UDP-89 will play just about CD/DVD disc though it doesn't play Blu-ray discs. Included in that list is MP3 and MPEG-4 AVI files, along with CD-RW, SACD, VCD (Video CD) and DVD-Audio. It will play and output natively all major HDTV formats and has an HDMI output. It also decodes Dolby Digital and DTS surround sound formats.

Audio performance is handled by Wolfson 192 kHz DAC chips. An infrared remote control is included.

For information, contact HHB/Sennheiser at (860) 434-9190 or visit www.hhbusa.com.

Jumbo Canopies Available From KD Kanopy

Colorado-based KD Kanopy is offering a new line of large tents — based on some "classic" designs.

The KD Classic and KD Trio use 18-ounce vinyl for covers and marine-grade aluminum for weather-resistance.

The Classic ranges in size from 30 x 30 feet to 40 x 100 feet. The smaller Trio offers several different "top" styles and ranges from 10 x 10 to 20 x 30 feet.

Canopy colors offer a number of options in solid colors, stripes or customized designs.

For information, contact KD Kanopy at (877) 526-6791 or visit www.kdkanopy.com.

WEB POWER TOOLS

NEW!

Audio *Sentinel*™
Web-based Dual Channel Stereo Silence Sensor

The Broadcast Tools® Audio Sentinel is a web based dual channel stereo silence monitor with an integrated transparent audio switcher. The Audio Sentinel is designed to monitor two balanced or unbalanced independent stereo analog audio sources and transparently switch to a back-up analog audio source when silence is detected. The Audio Sentinel can be controlled and/or monitored via the Internet using a web browser.
Available March 2009

NEW!

Site *Sentinel*™ *4*
Web-based Remote Control

The Site Sentinel 4 is a fresh approach to remote site monitoring and control. or can provide an inexpensive solution to Internet enabling your present remote control system.
Available April, 2009

NEW!

Web*Switch*™ Remote Power Switch

The WebSwitch™ is an ideal solution for instant remote reboot or remote control over the Internet! WebSwitch™ offers two power outlets, which can be independently controlled using a web browser. It is completely self-contained and includes a built-in web server and internal power supply. WebSwitch™ is simple to set up and can be configured in minutes using its built-in configuration web pages. Each outlet can be configured for "Standard" mode or "Automatic Reboot" mode. In "Standard" mode, users can remotely control each outlet. In "Automatic Reboot" mode, WebSwitch™ will ping a specified IP address and "power-cycle" that outlet if a number of pings fail.

FEATURES
- Two Independently Controlled Outlets
- No Programming Required.
- Control using a standard web browser
- Password protected.
- 120 volt, 10 Amp relay contacts.
- Relay can be set up to either pulse for a user-specified time interval, or to simply change states. (ON/OFF)
- Auto-Reboot Controller.
- Selectable TCP Ports.
- Self Contained, Built-In Power Supply
- Rugged, UL94-V0 Enclosure
- Desktop, Rack Panel or Wall Mountable

Available March, 2009

NEW!

NEW!

NEW!

Relay *Sentinel*™ Web-based Three-relay Module

The Relay Sentinel is an least expensive and reliable way to remotely control equipment over the Internet using a web browser. The Relay Sentinel has three low-signal SPDT relays that can individually switch up to 1 Amp at 28V. Each relay can be turned on, off, pulsed or timed latched using the built in web pages.
Available March, 2009

Status *Sentinel*™ Web-based Three Input Module

The Status Sentinel is a robust, full-featured; Ethernet based data acquisition device with three optically isolated status (digital) inputs. The Status Sentinel may be monitored over the Internet using a web browser.
Available March, 2009

Temperature *Sentinel*™ Web-based Quad Temperature Module

The Temperature Sentinel is an industrial grade, Ethernet data acquisition product for monitoring temperature within the range of -67°F to +257°F (-55°C to +125°C) and equipped with one SPDT electro-mechanical relay and the ability to communicate with up to four digital temperature sensors and one optically isolated contact closure input. It can be controlled and/or monitored over the Internet.
Available March, 2009

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GM Journal

Radio World — Resource for Business, Programming & Sales — March 25, 2009

Could You Sell Your HD2?

Page 56

'The Flag' Aims to Get It Right

WZFG Is a 21st Century Rarity: A Brand-New 50,000-Watt AM Station

by Doug McLeod

This winter, when the wind screamed across the North Dakota prairie and the Red River sat white and frozen, a new 50,000 watt heat source offered talk radio fans some refuge — if their politics were conservative.

WZFG(AM), "AM1100 The Flag," is a 21st century rarity: a brand-new-from-the-radials-out 50,000 watt AM station.

The Flag is licensed to Dilworth, Minn., and is the newest player in Arbitron market No. 218, Fargo, N.D./Moorhead, Minn. (MSA population 342,000). It pumps out a 24-hour stream of conservative talk radio at several power levels: 50,000 watts non-directional during daytime hours, 5,000 watts during critical hours and 400 watts on a two-tower array at night.

The new digs on Broadway in downtown Fargo.

That's when The Flag's president, general manager and "Chairman of the Common Sense Club," Scott Hennen, hits the air with a show that is heard across parts of three states and western Canada.

Hennen's conservative talk has been heard in the market for more than a decade, primarily on heritage news-talker WDAY(AM), where he was also general manager. He has also substituted on Sean Hannity's network radio show and credits Hannity's help for getting the new station off the ground.

Surprisingly, during an election year in the largest market of a red state, the flag-wavers of conservative talk radio had been hard to find in Fargo-Moorhead.

"Hannity's show had been cut back to two hours a day at WDAY and Rush Limbaugh wasn't on here at all," Hennen said. "When I told Sean I was putting the new station together he said, 'If you go, I'll go.' Both Hannity and Limbaugh now follow Hennen's show on The Flag as do Laura Schlessinger and Mark Levin.

President-CEO-Host Scott Hennen works under the lights in the TV-friendly talk studio.

If a new 50,000 watt AM is now almost a blast from the past, rest assured that everything's up to date in Fargo-Moorhead: The Flag hit the air in the summer of 2008 as a multi-platform media content source, not just a muscular radio station. The new station is an integrated digital marketing platform, providing a range of Web content as well as broadcast and streaming audio.

Programming is all-conservative, all the time, with the exception of Doug Stephan's more across-the-board "Good Day" network show during a couple of low-power overnight hours. From 5 to 8 a.m. — while the station ramps up to full power — Paul Bougie and Shelly Knight, well-established personalities in the Fargo-Moorhead market, handle a locally-oriented morning drive-time show.

Then at 8, when WZFG's Broadcast Electronics 4MX-50 transmitter is at full throttle, the station takes on a more regional and even international flavor.

WZFG ownership is headed by Hennen and Ryan Rogen, vice president and chief revenue officer. There are three other local investors.

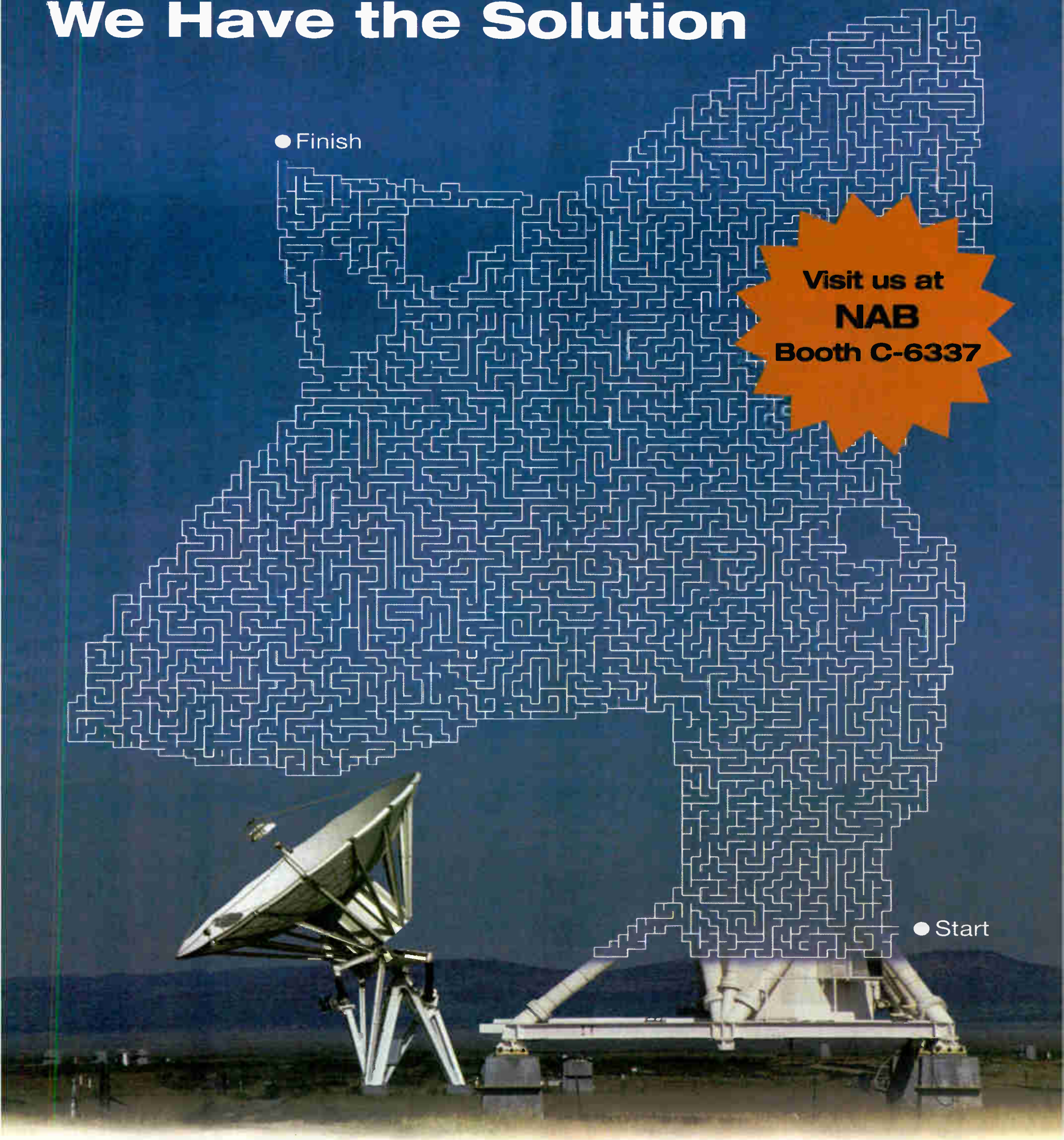
'Think TV first'

"We're programmed on the Phil Boyce model," Hennen said. Boyce, who left WABC(AM) in New York in October 2008, after more than 13 years as head of programming, originally hired Hannity for a drive-time slot and created a highly rated talk station that never tried to mix political viewpoints. "It's for a predominantly conservative talk show audience," Hennen said. "Not all things to all people."

Another well-known conservative talk personality offered a suggestion that helped launch the new station as a truly multi-platform entity: While the station was being planned, Hennen had a conversation with Tony Snow. The former White House press secretary and Fox

See THE FLAG, page 54 ▶

We Have the Solution



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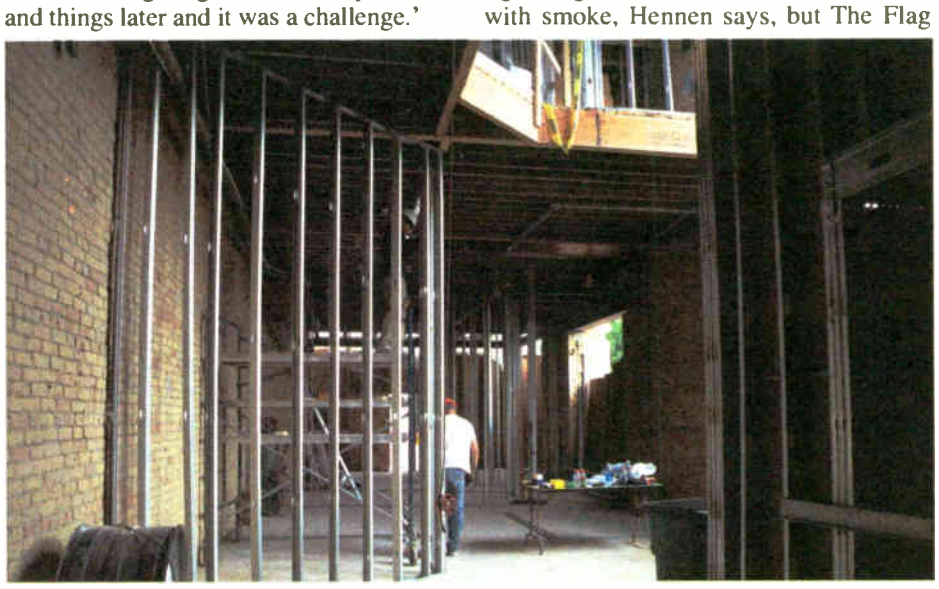
The Flag

▶ Continued from page 52

News Channel commentator had also been a regular guest host on Limbaugh's show.

"He said, 'What are you going to do for a talk studio? Build it like a TV studio. Think TV first. Look at Rush's studio: They built it for radio and had to work in all the TV lighting and camera positions and things later and it was a challenge.'



Exposed brick walls were retained.

"So we designed ours from the walls out for video," Hennen said. "It's the showpiece of the operation." With three cameras, full professional lighting and a switcher the studio is used for more than talk. Clients can go on the Web from there and other uses are in the works.

Snow died of colon cancer in July 2008, one month before The Flag signed on. Hennen says the talk studio is now named The Tony Snow Memorial Studio.

While planning continued through the spring of 2008, "We had the CP and had been telling people for months that we were coming on," Hennen said. "We started our Web site in March and announced that Hannity would be on our station. Then Rush. And people were really getting excited. We purchased a building in late April but renovation took longer than we wanted."

The building, at 16 Broadway in downtown Fargo, is a heritage structure that was gutted and redesigned for The Flag and its co-owned oldies FM station, KEGK, FM 106.9, The Eagle.

Its exposed brick walls were left intact in the talk studio, which features a large storefront-type window where passers-by can look directly in on talk shows in progress. Hennen said the window is important to the whole feel of the operation.

"I wanted to capture the energy of today. So many stations just sit in a bunker. We're celebrities to our listeners so we should be visible. We're just steps off the main drag here in downtown Fargo."

Apart from the walls, everything else at the stations is brand new.

"I went to NAB and went shopping," Hennen said, realizing a dream of many a broadcaster. "We didn't have a Cadillac budget — more of a Buick budget — but we did pretty well."

Studio operations are centered around a Harris PR&E NetWave console and iMediaTouch automation. Other studio equipment was provided through RF Specialties in Kearney, Mo. The video component includes three Sony BRC 300 robotic color cameras and a studio lighting package from AVI Systems in Grand Forks, N.D. The chief engineer is Jim Offerdahl of Offerdahl Broadcast, who was assisted in the buildout by engineer Mark Borchert.

Opening storm

Sign-on day was even more exciting than it is for most stations. The Flag hit the air on Aug. 11, 2008 at 8 a.m. during a thunderstorm. First guest: Sen. John McCain, Republican nominee for president. Minutes later the tower, 10 miles away in Dilworth, Minn., was struck by lightning. The transmitter shack filled with smoke, Hennen says, but The Flag still flew — and remained on the air.

Moving forward, Hennen said: "We're very much Web 2.0. My Super Alerts with news and information I think people should know about go straight to their computers. We have AP News Video, blogs, on-demand audio, podcasts. Our advertisers can go on the radio but we also provide a lot of platforms for their messages."

Hennen said the two stations take their multi-platform capabilities seriously. Each has a .tv Web site — The Flag's is am1100.tv — and account executives are called integrated marketing specialists. "Our approach to clients is, 'Let's partner, let's co-brand, let's use our studio to produce content for your Web site.'"

"Most of all," Hennen said, "we have great personalities and lots of community service. We give our listeners the chance to ask questions to the powers that be."

Doug McLeod is a longtime play-by-play announcer, station manager and sales management consultant.

AM1100 The Flag Sample Equipment List

- Broadcast Electronics 4MX-50 transmitter
- Moseley DSP 6000 STL
- iMediaTouch on-air and production software
- Harris PR&E NetWave and StereoMixer consoles
- Harris PR&E VistaMax Envoy Networked Audio Management System
- Electro-Voice RE20 and RE27 microphones
- Vorsis M-1 Digital Voice Processors
- Yellowtec and Heil microphone and monitors arms and booms
- Telos TWOx12 telephone hybrids and controllers
- AirTools 6100 broadcast audio delays
- Sony BRC300 3 CCD robotic color video cameras
- Lowell video studio lighting package

Selling Cars? It's All About the Offer

Help Dealers Understand That Tough Times Call for Unique Offers

PROMO POWER
BY MARK LAPIDUS

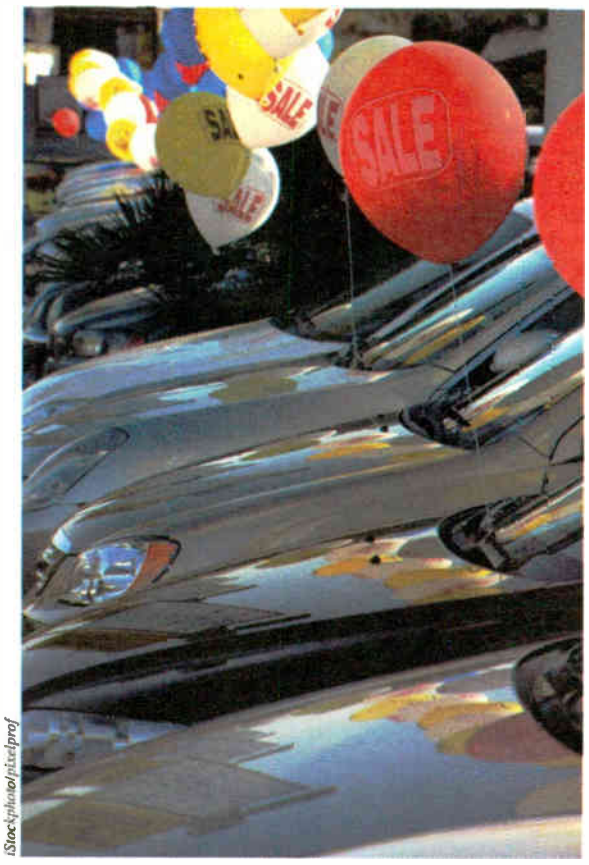
According to Bloomberg, there are now about 7 million new cars sitting in storage facilities around the United States. In rural areas, you can see the gleaming new autos sitting sadly in the sun on empty fields, awaiting buyers.

Many feel that it's only a matter of time until the auto industry acknowledges that dramatic times call for unusual measures in terms of offering deals people can't afford to ignore.

If this occurs, the radio industry is poised to be the best medium with which to alert consumers. Radio, locally and nationally, has the most cost-efficient way to combine reach and frequency to generate sales.

However, the right offer has to be offered to elicit action.

This is an excellent time for your sales team to start a dialogue with your local car dealers about how your radio cluster can help them move cars off their lots now — before the big guys make their move with national deals.



iStockphoto/pixelprof

This is an excellent time for your sales team to start a dialogue with local car dealers about how your radio cluster can help them move cars off their lots now.

Create action

The key is to remember that it's "the offer," combined with the correct advertising (and perhaps promotional) schedule, that will assist your local car dealers move their inventory, even in a slumping economy.

The most difficult answer to find is uncovering what offer is necessary to create action. In all likelihood, you will have to be inventive with dealerships to do a "test and measure" scenario, where they pick one offer for five days of a heavy schedule and another offer for the second flight.

It's vital that dealers understand that tough times call for unique offers — things they haven't been willing to do before for financing and leasing, or sale prices they haven't been willing to offer before, but will do so now to generate some cash flow.

They may want to reconsider how they deal with their pre-owned inventory. Competing dealerships on the same block may wish to actually pull their resources and have a one-of-kind "block party," with cooperation and offers never seen before in your city.

If you're part of cluster, utilize a road-block advertising strategy for these campaigns where you are airing the same offer on all five stations at roughly the same time, so someone tuning around will hear the same offer with even greater frequency.

If you're streaming, make certain to insert these same spots into streams.

If your station is making the creative (instead of an agency), be absolutely sure the commercials are clearly communicating the desired message. Don't leave this to chance. Play the spots to a lot of different people and then ask them to explain back to you what they thought the offer was about.

Bring 'em in

Maybe you need a few quickie promotions to convince dealers that you can still motivate listeners to walk through their doors.

Here are a few quickies that almost always work and any one of them will prove the point you need to make: It's all about the offer.

If you're a regular reader of mine, you know the $500 trick: Go on the air and tell your listeners that you are giving away five hundred dollars in cash — a dollar at a time — for as long as it lasts from the dealer's showroom. You will get 500 people into that dealership and in most cases, the money will be gone in 20 minutes.

Other benefits that will get people through the door:

- Hot sports or concerts giving away in a mass quantity in a short period of time.
- Memory sticks for computers. Buy 'em cheap and give them away in big numbers — first 100 people get a 2 gig memory stick with a free song from your format on every stick.
- Free oil changes if you bring the oil — we'll do the change for as many cars as we can do from 9 to 5.

Warn the dealer in advance that these promotional gimmicks will not necessarily sell cars. They will only prove that radio can produce action.

Finally, help your clients by doing research about what is succeeding in other markets. Talk to your sister radio stations to learn if they stumbled on concepts that have generated success.

Can you turn back the clock to 1995 when cars were flying off the lot? Maybe... if someone is willing to turn back prices to 1995 for a few hours.

It's all about the offer.

The author is president of Lapidus Media. Write him at marklapidus@verizon.net.

Career Déjà Vu

Air personality Déjà Vu of Clear Channel station WWPR(FM) in New York talks to high schoolers about careers in an event sponsored by the Riverside Church in Morningside Heights.

It's an annual event in which students in grades 7 through 12 take part in skills-based workshops, panels and seminars on topics such as animal care, business and finance, green jobs, alternative energy, digital media, health and healing and international careers.

While children are in workshops, parents attend seminars about how to finance their children's college education, the college admission process and life skills. This was the 18th annual career day.

COLE'S LAW

We Might Want to Keep an Eye on ION

by Harry Cole

As the chairmanship of Kevin Martin — whose dislike for the cable TV industry in general was readily apparent — limped toward its conclusion after the presidential election, a new and exciting way to poke the cable folks in the eye popped up.

As is often the case when the Law of Unintended Consequences is factored in, the proposal, if adopted, could have significant effects which weren't on the proponents' agenda — including effects on the radio side of the universe.

The proposal appeared in the form of an application filed by ION Media Networks and a new company, Urban Television LLC, controlled by billionaire and BET founder Robert Johnson.

Ion owns a boatload of television stations (here, "boatload" means 42). It is proposing the "assignment," or sale, of 42 television licenses to Urban. But ION would *not* be letting go of its stations in any conventional sense. Rather, ION is proposing to sell, and Urban to buy, "licenses" to operate on a second digital stream of each of ION's stations.

In other words, ION and Johnson are asking the Federal Communications Commission to treat non-primary digital streams as separate, and separately licensable, authorizations. The proposal contemplates that Urban would hold a separate license for its operations in each of the 42 markets, while ION would continue to hold its own licenses in those same markets.

What a deal for ION: You got it, you sell it, you still got it!

Should radio care?

Of course, the notion that digital streams might be treated as separately licensable "stations" is novel, to say the least.

But don't try to tell that to ION/Urban. To read their application, this is just a straightforward arrangement that falls comfortably under the commission's "share time" rule. (That rule may be found in Section 73.1715 of the FCC's rules — good luck finding any reference in that rule to digital streams, though.)

What does this have to do with radio? Maybe nothing, but maybe a lot.

If the commission embraces the notion that secondary digital streams really do constitute separate licenses that can be separately assigned, one could easily argue that radio stations that have opted to transmit digital streams (*i.e.*, "HD Radio") should also be permitted to sell those streams as separately licensed stations.

Indeed, if the "share time" rubric is the applicable regulatory touchstone here, it would arguably make more sense to apply that on the radio side, where it has historically come into play, than on the TV side, where there is little if any tradition of "share time" operations.

If the FCC embraces the notion that secondary digital streams constitute separate licenses that can be separately assigned, one could argue that radio stations that have opted to transmit digital streams (i.e., HD Radio) should be permitted to sell those streams as separately licensed stations.

So what happens if digital radio streams get mystically transmogrified into real, stand-alone stations?

For one, the number of radio stations could theoretically double or triple overnight. This might not have the cataclysmic effect of, say, the injection of nearly 700 new FM allotments through the notorious Docket No. 80-90 a quarter century ago, but you never know.

At a minimum, if the law of supply and demand were to hold true, the overnight doubling/tripling of stations would likely depress each station's value. And such a rapid increase in the number of stations would logically lead to a similarly rapid increase in competition for audiences and revenues. Are we all ready for that?

New entrant

On the regulatory side, it's not clear what the FCC might do.

It might seek to adjust its multiple ownership limits to take into account the sudden ballooning of stations.

The ION/Urban deal is being pitched in part as an opportunity to increase "diversity" in the ranks of broadcasters, since Johnson, who controls Urban, happens to be African-American and happens also not to own any full-power TV stations.

Because of those factors, Urban is being cast as a "new entrant" in broadcasting, despite the facts that (a) Johnson is clearly an established media mogul of considerable long standing and (b) ION, which is not a minority entity, owns 49 percent of Urban.

So would the commission adopt rules designed to induce sales to similar "new entrants"? Who knows — but certainly if the FCC is willing to accept Urban as a "new entrant," it would not be setting the bar particularly high for later claimants to that title.

A staunchly Democratic administration

See COLE, page 57 ▶

Cole

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might also see the potential for increasing the availability of certain types of programming which the FCC majority might deem desirable from some general "public interest" perspective.

In the ION applications, Urban is promising to launch a new programming format, including informational and issue-oriented programming targeted to serve the interests of African-American viewers and other "underserved" persons in the 42 markets. Details on exactly what that programming might consist of are sketchy as we write, and Urban's promise is somewhat porous. ("Urban will retain the flexibility to adapt its format to changing viewer needs and interests and other programming that is available in the marketplace.")

Still, the notion of minority-targeted programming in 42 TV markets provides a potentially irresistible sizzle — despite the fact that any FCC decision based on proposed programming would be subject to huge practical problems.

(F'rinstance, how would the commission define "minority-targeted" programming, and how would it define "underserved" persons, and what would happen if the licensee elected to abandon that programming — would the FCC attempt to impose its own programming preferences?)

If the new commission were to focus its attention on regulation of program content, the availability of a huge number of "new" radio stations would provide fertile ground with which to work.

Look before you bite

There are almost certainly many more possibilities floating around here, none of them particularly well-defined at this point. But that's what often happens when radical departures from well-established practices are proposed. And that's especially what happens when the context in which those departures are proposed is peculiarly narrow.

ION and Urban appear to be trying to force the commission to declare that Urban's stations — that is, the secondary streams that we would all be calling separately "licensable stations" — are all entitled to must-carry status on cable systems. The must-carry status of secondary DTV streams has been an open question for years, with the broadcast TV folks clamoring for carriage of *all* their transmitted streams and cable folks clamoring just as loudly to limit the carriage obligations to one cable channel per TV station.

The FCC has not seemed inclined to resolve that question directly in a rulemaking proceeding of general applicability, so ION and Urban have tried to force the issue in the narrow context of their application.

(Since the notion of expanded carriage requirements appealed to ex-Chairman Martin, sources indicate that he may have been instrumental in putting the ION/Urban application on a fast track that saw the release of a request for public comment on the proposal barely a week after the application was filed.)

As an innovative way of getting to their desired goal, there really is no harm in ION/Urban baiting up its hook and casting it into the regulatory waters. But before the FCC bites, the commission — and the industries likely to be affected if the proposal is adopted — should be careful to consider all the possible ramifications.

Harry Cole is a member in the law firm of Fletcher, Heald & Hildreth. Read his blog postings on regulatory developments at www.commlawblog.com. *Portions of this article appeared in a blog posted there by Howard Weiss, also of Fletcher Heald.*

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Gentner II Audio Prism, $375; Texar Audio Prism, $250. P Lopeman, 231-845-9666.

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WANT TO SELL

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Radio World Equipment Exchange

REMOTE & MICROWAVE

WANT TO SELL

STATIONS

WANT TO SELL

AM in Rome, NY, Xlators in Ocala, FL, Jacksonville, NC & Temple, TX. Email mraley@bbnradio.org for more info.

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100 Watt Henry Transmitter, 250 Watt Henry Transmitter, Inovonics 222 Processor, five Tapecasters and serveral hundred feet of 7/8" coax for sale in Arkansas. Call 479-234-5427.

Continental "Power Rock" 315R-1 on 670 KCS, 5KW. In Arkansas. Call 479-234-5427.

Harris MW-5, 5k day 1k night at 930AM, buyer responsible for removal, $300/BO; Moseley PCL 600 STL xmtr & rcvr on 949.00, built in Jan '88, $1000 + shpg.; TFT 8301 319-8 STL on 949.00, $900 + shpg. Mraley@bbn-media.org.

1985 Continental Power Rock 5kW xmtr for parts, no tubes, would work if it had tubes, $2150 firm. L Barker, 606-598-2445 or 606-813-1207.

BE FX-30, 30 watt FM exciter w/manual, $1000. P Lopeman, 231-845-9666.

McMartin BF 3.5kW FM, was backup in major market station, $2500/trade. P Lopeman, 231-845-9666.

CCA AM 10,000 D – Call John KQSS **928-595-0263** between 10 & 6 PM Pacific Time.

FM Translator at 104.5 – Manchester, KY Call Joey Kesler 606-843-9999.

WANT TO BUY

AM Phasors, Phasor Parts, Phase Monitors, Rf Switches, AM Transmitters. Continental Communications 314-664-4497, Contcomm@Sbcglobal.Net

TUBES & COMPONENTS

WANT TO SELL

4CX250B Econco tested good, $50; 4CX10000D Econco tested good, $500; 3DX3000A7 Econco tested good, $400. P Lopeman, 231-845-9666.

EMPLOYMENT

POSITIONS WANTED

C.E. postion wanted: Experienced with computers, transmitters, remote controls. Mortgage scandal caused layoffs. Call 217-363-1855.

Great persona, and reliable with strong on-air and commercial delivery/production plus digital skills. Promotional and Marketing experience. Excels with team or individually. Nick, 469-685-6985, or nick.ekong@yahoo.com.

Versatile and dependable copywriter, with strong digital production skills. Willing to relocate for a challenging career in the radio broadcasting industry. Shane, 469-417-9451 or shane_kelly@rocketmail.com.

Are you a small market station needing a good nuts & bolts engineer in the Los Angeles area? I will make your station shine! CET, fully FCC Licensed. Available for Full/Part-time/Contract work. Available immediately. Mitchell Rakoff, 949-916-6255 mitchell-rakoff@yahoo.com.

Extremely knowledgeable and articulate racing writer/talk show host Adam Amick is available for shows, correspondent, features, etc. Check out www.bleacherreport.com or www.rubbinsracingshow.com for samples. Call 214-384-5812 or email: adam@rubbinsracing-show.com.

◆READER'S FORUM◆

The Ignorance Of a Faculty

A recent story in The Daily Free Press, the student newspaper at Boston University, quoted the dean of the College of Communication with troubling comments about radio.

As workers were getting ready to take down a 50-year-old radio tower from a roof at the school, the newspaper quoted Dean Tom Fiedler as saying, "It speaks of old technology. It hasn't been used in 30 years. I think it sends the wrong message of where we want to go as a college. In 2008, radio is old, the technology of our grandfathers."

It also quoted journalism professor Anne Donohue, academic director for the student-run station WTBU, saying the radio tower is antiquated. The tower reportedly was not being used for an active radio signal.

Radio broadcasting is not a 'an artifact of a bygone era.'

— Mario Hieb

Removal of the tower is one thing, but the ignorance of this school's faculty and students is another.

Radio broadcasting is not a "an artifact of a bygone era." It is a $20 billion a year industry in the U.S. and is listened to by well over 90 percent of the U.S. population each week.

There are more FCC-licensed radio stations now than ever before and radio plays a critical role in public safety during emergencies. We have a wonderful public radio service in the United States called NPR that uses, as described by Dean Tom Fielder, "old technology."

As for the tower being antiquated, "vertical real-estate" values are at an all time high. If Professor Anne Donohue wants to be "progressive," she should push to use the tower to distribute Wi-Fi, WiMax and other new Internet technologies. Revenues such as those from cell phone companies could bring substantial income to Boston University.

Concerning the comments that the tower is an eyesore, the same was thought of the Eiffel Tower in Paris, and it was nearly demolished until its utility as a radio tower was discovered by the allied forces during World War I. Many radio towers, such as Mt. Sutro in San Francisco, have become architectural landmarks. Many great works of art, architecture and engineering are considered eyesores by some.

Regarding Dean Fielder's feeling that radio speaks for "old technology," yes, radio waves are old technology. Electromagnetic fields — radio waves — are one of the four forces in nature and have existed since time began and before matter was formed.

The mathematical equations that describe radio waves, Maxwell's Equations, are the foundation of electrical engineering and one-fourth of the world's economy. This work by Maxwell inspired a young scientist by the name of Albert Einstein to formulate his ideas on relativity.

All new technologies, including the computer, Internet, GPS, WiMax, MP3, cell phones and anything else electrical and digital, would be impossible without these old, outdated radio waves. Even light is a radio wave.

Instead of tearing down this tower, Boston University should have dedicated it as a monument to science and culture. It should have placed a plaque below the tower describing the scientific, historical, cultural and sociological importance of radio waves in our world.

Perhaps its students might be inspired each time they saw it, and unlike Dean Fielder and Professor Donohue, more informed of our scientific world.

Mario Hieb, P.E.
Consulting Engineer
Salt Lake City

Live Radio, Indeed

When Steve Hafen (Dec. 3 letters, page 45) says he wants suggestions *except* the one that will work ("Go back to live radio"), it makes me think of an article in which the writer said that the more "consultants" pan an idea, the more likely the idea is worth giving some serious thought to.

And just what is wrong with live radio? Yes, it costs more. But it is worth much more. It's called value. Listeners are looking for it.

Look at the major-market Arbitron numbers. Embarrassing, aren't they? No value. They achieve this wondrous result by following the management practice of cutting your way to profitability.

If your business plan is to make money, you will make neither money nor product. It's that simple. You can see this in any line of business where a company has lost sight of its original mission statement.

As Billy Joel sang, it's a matter of trust. Management needs to (but doesn't) hire people who understand and believe in the mission, then trust them to use their brains and creativity to make the station unique and good.

Dorothy ran across a lion in search of courage, a scarecrow in search of a brain and a tin man in search of a heart. They all discovered that those characteristics had been within themselves all along. Oh, if that were only true in radio. The holding companies are about as smart as those holding Chrysler. If they just had the "Courage" to use their "Brain" to put some "Heart" into radio, we would fly faster than Dorothy did clicking her ruby red slippers.

We would find there is no place like home — home being live radio.

Jim Jenkins
Owner/GM
WAGS Radio
Bishopville, S.C.

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Radio World Founded by Stevan B. Dana

◆READER'S FORUM◆

He Pays to Get Away From Radio

Concerning Dave Wilson's Jan. 1 commentary "We Should Buy Sirius XM Radio":

Dave, I'm an XM subscriber and have been for six years. I have four active subscriptions, one in my car, one on a tuner hooked up to my PC, one for a tuner in the bedroom and one portable that I bought for my girlfriend. I'm also a stockholder (plenty of lumps taken there).

Your article has proven to me that you Just Don't Get It.

Think about it for a moment. I have four radios that I've purchased. I've *retired* three other radios in those six years (replacing old radios with new models). Think of how much money I have paid to *get away* from the model that terrestrial radio provides.

To quote your article: "I think the answer to this is simple. We should model the business of the satellite operation after that of a cable company, except that we should forgo subscription revenue in favor of the advertiser-based model that has proven very successful not only for radio but for TV, Internet search, etc."

What planet are you on? Traditional advertiser-supported models are dying on the vine, especially on TV (look at the ratings). Internet search was dying until Google came out with the idea of *unobtrusive* text-based ads that were easy to ignore but easy to follow if that's what you were looking for.

You think that 20+ minutes of commercials on a radio station is unobtrusive?

I have paid thousands of dollars over the years to get away from terrible programming on terrestrial radio. I'm willing to continue to pay for *music* (and some other programming) that is unsullied by advertiser influences. I pay for uncensored comedy, cutting-edge and classic musical artists. Yes, I even pay for some talk where the ad breaks are just a couple of minutes an hour.

Right now, *I* am the customer of Sirius/XM. They listen to *me* — their advertisers are secondary, since the majority of their income is from subscribers like me. In your model, the advertiser is the customer and I am the "product" — my ears to be delivered to them.

Yes, I pay for TV (I have a high-def satellite setup) and I pay extra for uncensored quality with no commercials. I buy DVDs for exactly that reason.

When I use Google for an Internet search, I trust that the results were not paid for — the paid ads are off to the side, where they belong.

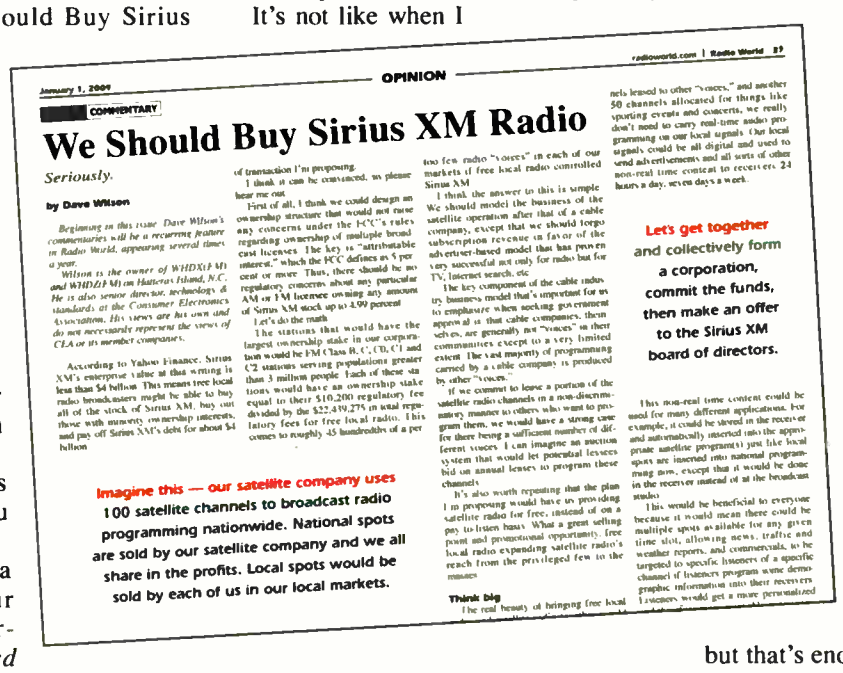
Consider this: Do you think satellite radio would have nearly 20 million paying customers if the "free" services were worth it?

I used to love terrestrial radio. Living in the Boston area, I had plenty of great stations to listen to. Now I pretty much have a selection of restaurant and car dealership ads to listen to. It's depressing.

It's not like when I was younger and we were all glued to stations like WCOZ, WAAF, WBCN and WCGY for music. A couple of generations of kids grew up with radio and loved it. Then radio stations were treated like commercial profit centers and the "customer" tag went from the listeners to the advertisers. Why do you think kids are glued to their iPods instead of their radios?

I honestly hope for the day of a terrestrial radio renaissance. But it won't happen as long as conglomerates continue buying up radio stations, firing all the local talent and running canned programming from their corporate headquarters, all the while claiming that satellite radio hinders local talent — the very local talent they fired.

David Long
Hudson, N.H.



January 1, 2009 OPINION radioworld.com | Radio World 27

COMMENTARY

We Should Buy Sirius XM Radio

Seriously.

by Dave Wilson

Beginning in this issue Dave Wilson's commentaries will be a recurring feature in Radio World, appearing several times a year.

Wilson is the owner of WHDX(FM) and WHDZ(FM) on Hatteras Island, N.C. He is also senior director, technology & standards at the Consumer Electronics Association. His views are his own and do not necessarily represent the views of CEA or its member companies.

According to Yahoo Finance, Sirius XM's enterprise value at this writing is less than $4 billion. This means free local radio broadcasters might be able to buy all of the stock of Sirius XM, buy out those with minority ownership interests, and pay off Sirius XM's debt for about $4 billion

of transaction I'm proposing.

I think it can be convinced, so please hear me out.

First of all, I think we could design an ownership structure that would not raise any concerns under the FCC's rules regarding ownership of multiple broadcast licenses. The key is "attributable interest," which the FCC defines as 5 percent or more. Thus, there should be no regulatory concerns about any particular AM or FM licensee owning any amount of Sirius XM stock up to 4.99 percent.

Let's do the math.

The stations that would have the largest ownership stake in our corporation would be FM Class B, C, C0, C1 and C2 stations serving populations greater than 3 million people. Each of these stations would have an ownership stake equal to their $10,200 regulatory fee divided by the $22,439,275 in total regulatory fees for free local radio. This comes to roughly 45 hundredths of a per

Imagine this — our satellite company uses 100 satellite channels to broadcast radio programming nationwide. National spots are sold by our satellite company and we all share in the profits. Local spots would be sold by each of us in our local markets.

too few radio "voices" in each of our markets if free local radio controlled Sirius XM.

I think the answer to this is simple. We should model the business of the satellite operation after that of a cable company, except that we should forgo subscription revenue in favor of the advertiser-based model that has proven very successful not only for radio but for TV, Internet search, etc.

The key component of the cable industry business model that's important for us to emphasize when seeking government approval is that cable companies, their websites, are generally not "voices" in their communities except to a very limited extent. The vast majority of programming carried by a cable company is produced by other "voices."

If we commit to lease a portion of the satellite radio channels in a non-discriminatory manner to others who want to program them, we would have a strong case for there being a sufficient number of different voices. I can imagine an auction system that would let potential lessees bid on annual leases to program these channels.

It's also worth repeating that the plan I'm proposing would have us providing satellite radio for free, instead of on a pay to listen basis. What a great selling point and promotional opportunity. Free local radio expanding satellite radio's reach from the privileged few to the masses.

Think big

The real beauty of bringing free local

nels leased to other "voices," and another 50 channels allocated for things like sporting events and concerts, we really don't need to carry real-time audio programming on our local signals. Our local signals could be all digital and used to send advertisements and all sorts of other non-real time content to receivers 24 hours a day, seven days a week.

Let's get together and collectively form a corporation, commit the funds, then make an offer to the Sirius XM board of directors.

This non-real time content could be used for many different applications. For example, it could be stored in the receiver and automatically inserted into the appropriate satellite programmers just like local spots are inserted into national programming now, except that it would be done in the receiver instead of at the broadcast studio.

This would be beneficial to everyone because it would mean there could be multiple spots available for any given time slot, allowing news, traffic and weather reports, and commercials, to be targeted to specific listeners of a specific channel if listeners program some demographic information into their receivers. Listeners would get a more personalized

Will the boards of directors be constituted? What claims/rights will those who don't buy shares have, considering the effect that the proposal would have on the industry? Will non-profit stations have the right to buy in?

Will the shareholders get to receive and retransmit the sat's programming? If so, who get's what in a fair way? Will the chains and powerhouse terrestrials control the corporation? Why must one have to be a broadcaster in order to share? Can't a station's shares be passed along to a non-broadcaster? What happens to the shares of a terrestrial owner that goes out of business?

I can think of a lot more stumbling blocks, but that's enough for now.

Oliver Berliner
General Manager
SounDesign Engineers
Bozman, Md.

Let's Think It Through

Dave Wilson's New Year's Day audacity knocked me out. Provided the whole plan isn't a put-on, I have a few thoughts on it.

It's a clever idea. I dig it. But the concept is fraught with imminent peril (read: complications).

First, one cannot buy-out a publicly traded entity for just its market price. You have to offer a premium, which increases the cost. (However, that still doesn't mean that you can't buy it on the cheap ... just not for its market value.) How are you going to get all of the potential stockholders to agree to commit the money to even consider making a buyout offer?

Converting it from subscription to advertiser support is probably the only thing that'll save it. But here you run the risk of eliminating one of the company's great features, without which it's no different than anything else that we're suffering with. Will the commission "buy it"? Will it be legal? Can a group own a competing group, that is?

And who's to say that the terrestrials will be willing or able to pay under the proposed formula, or any formula? How'll the board of directors be constituted? What claims/rights will those who don't buy shares have, considering the effect that the proposal would have on the industry? Will non-profit stations have the right to buy in?

Will the shareholders get to receive and retransmit the sat's programming? If so, who get's what in a fair way? Will the chains and powerhouse terrestrials control the corporation? Why must one have to be a broadcaster in order to share? Can't a station's shares be passed along to a non-broadcaster? What happens to the shares of a terrestrial owner that goes out of business?

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Oliver Berliner
General Manager
SounDesign Engineers
Bozman, Md.

Why Franken?

Great story. But I don't understand the headline reference ("Concerns Raised About 'Franken FMs,'" Dec. 17).

My first thought was Al Franken. I'm too close to the nonsense with the senate race in St. Paul.

Bob Rambo
Okoboji, Iowa

Ed. Note: RW used a phrase that appeared in the CGC Communicator newsletter. After RW's story appeared, the newsletter explained: "The term 'Franken-FM' (with a hyphen) was coined by Ed Tipler, P.E., of southern California who, after hearing a Channel 6 LPTV acting like an FM station for the first time, said, 'It upset me so much that I called it a name, Franken-FM, as in the famous Frankenstein's monster that was made up from miscellaneous body parts, in this case an unholy alliance of FM equipment and a TV license.'"

Zapped

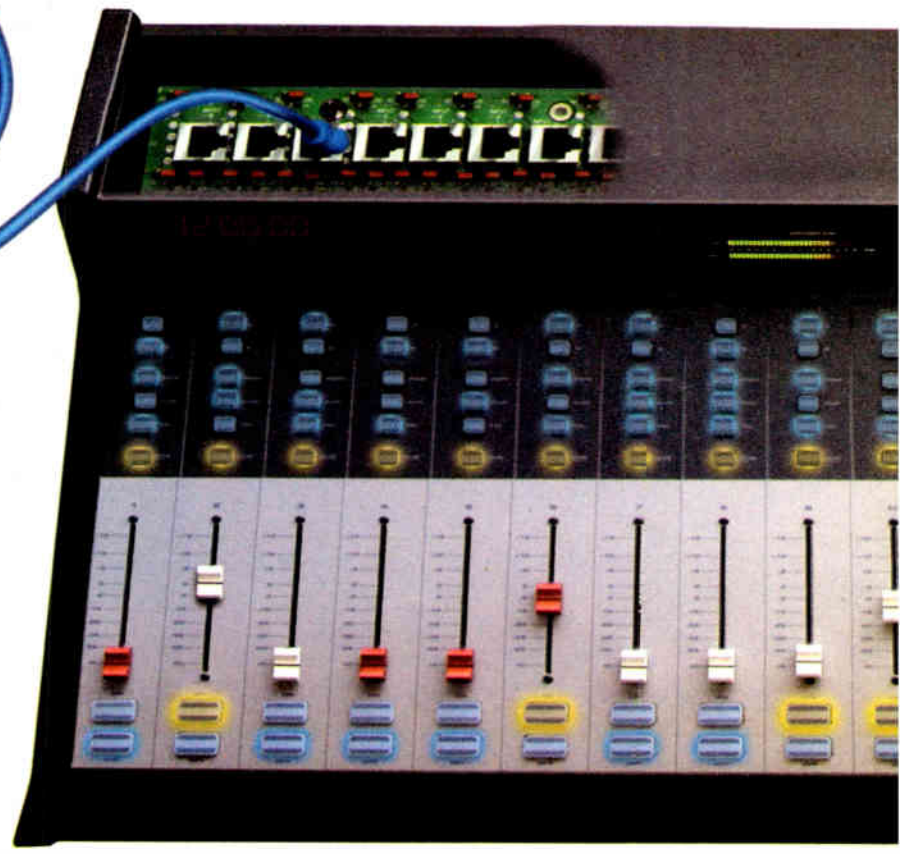
Waiting patiently for an update on the AM virtual antenna that you first mentioned in RW back around April Fool's Day 2008.

Thought this could be a great idea to prevent the problem I have at my AM site where the farmer who cuts the grass keeps getting his tractor zapped by the above-ground ground system (not to mention the considerable damage it does to the elevated ground system itself).

One would think he would learn by now.... but month after month it goes on ... and on ... and on.

Dick McGraw
CEO
McGraw-Elliott Media Group
Elkins, W.Va.

StudioHub+ Inside



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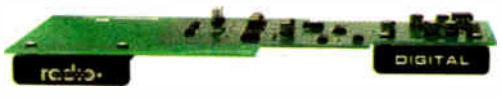

Going **DIGITAL** is a process. Radio Systems eliminates some of the stress with our NO CHARGE Digital upgrade program. For the life of your console we will swap any analog plug-in card for a digital one (or vice-versa) allowing you to gradually transition your studio to digital. You can even start out all analog and convert one channel at a time as digital arrives in your facility. But from day one your Millenium Digital console will out-put pristine digital audio to feed your air-chain processor and produce up to ten fully configurable mix-minus feeds.

At Radio Systems, our **NETWORK** is IP Audio by Livewire®. We've adopted this proven multi-channel standard from Axia® and installed it in our digital consoles. But we left local inputs as well to create the perfect hybrid of stand-alone and network capabilities. This way Millenium Network consoles easily mix local studio sources and connect to all Livewire enabled devices using standard Ethernet switches.

StudioHub+® is the glue of our entire console line. Use our award-winning CAT-5 wiring system to simply and quickly plug any source into any console channel. Or, easily configure custom talent panels and even interstudio tie line connections. And its value doesn't end after the installation is over. RJ-45 connectors allow new sources to be added at any time and makes trouble shooting easy.

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A SIMPLE CIRCLE GOT THE WHOLE WORLD ROLLING.

NOW SEE WHAT A SQUARE CAN DO.

Usually, the best inventions are those that are the most simple. There's currently a crop of Audio-over-IP studio hardware out there that just doesn't get it. It's complicated, it relies on PCs for mission-critical functionality and is, seemingly, in need of 24/7 support. Hmmm.

Wheatstone, known the world over for the highest quality networked audio and consoles, has a better idea. What about a system that does it all without complicating your life? Interconnect control room, studio and TOC audio seamlessly, all audio available everywhere without having to set network parameters and priorities. The sky's the limit.

Connect Wheatstone console control surfaces with a single cable. Interface your audio automation computers via Ethernet for audio and control, saving the cost of an expensive sound card. Sound good? It is.

E-SQUARE is an attractively priced system that's designed to be as easy to use as it is powerful. The only decision you'll have to make is whether you are interfacing analog, digital gear or both.

Every SQUARE knows its place in the network just by being plugged in and quickly set with the front-panel wizard. When it comes time to fine tune, plug a PC into your network and, using the highly intuitive E² Navigator GUI, do a little bit of naming and customization. Once set up, unplug your PC and put it away. No need for an IT degree or 24/7 service. Don't get us wrong — we're here for you when you need us. But like the Maytag repair man, we don't hear from panic-stricken people very often.

Make your audio networking decision the easiest decision of the day. Or make it a complete studio network, routing and console decision. Or a digital snake decision. Whatever. We just want it to be easy.

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