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Kelly Clark, right, explains the benefits of the Comrex Access.

FCC Enforcement: What's the Buzz?

Tolling Agreements and Compliance Basics Are in Ascendancy; Indecency Appears on Hold

by Randy J. Stine

WASHINGTON FCC enforcement actions seem to run in cycles. New issues created by technical advancements or rule changes sometimes overtake concerns that had been hot buttons at the commission.

For instance, radio has not been fined for indecency since March of last year, and legal experts believe the outcomes of two cases are expected to decide the fate of the FCC's broadcast indecency policy.

Elsewhere, broadcast industry attorneys tracking compliance issues at the FCC are noting a steep rise in the number of so-called "tolling agreements" and a perceived policy shift on license transfer liability as the FCC attempts to strike a more cooperative chord with broadcasters.

A tolling agreement clears the way for the commission to grant a license renewal, which in turn clears the way for

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World Radio History

NEWSWATCH

XM-Sirius Shareholder Vote Set for Nov. 13

Shareholders of XM and Sirius Satellite Radio will vote Nov. 13 on their proposed merger. Regulators are still reviewing the deal.

In a filing with the Securities and Exchange Commission, Sirius revealed the date. Under the proposed deal, shareholders of each company would get approximately 50–50 ownership in a combined company.

XM shareholders would get 4.6 Sirius shares for each XM share, and XM would become a wholly owned subsidiary of Sirius.

Harris Seeks New Broadcast HQ

MASON, Ohio Harris Broadcast is seeking new headquarters and has put up its facility in Ohio for sale or lease.

$16 million is the published price tag for 4393 Digital Way in Mason. That's been headquarters of the broadcast division since the late 1990s.

"Since we exited the truck build business over five years ago, we have significant excess space in Mason," Broadcast Division President Tim Thorsteinson said. The building "has been up for sale/lease for quite a while. We are looking for a more suitable location in close proximity to the current Mason site as we plan to stay in the Mason area long term."

Harris maintains separate manufacturing facilities in Quincy, Ill.

The company has been making a number of business changes under Thorsteinson, including elimination of some positions last winter in Quincy and Mason, a move blamed on a drop in TV transmitter sales; and, more recently, the shedding of its dealer resale business and the establishment of a channel partners program.

"The transmission business has been turning for us and just finished another good quarter," Thorsteinson said in October. "We are starting to see a steady flow of new products to drive the business forward. Moving the folks in Mason into a new facility more in line with today and tomorrow's business should be a positive." Last winter Thorsteinson estimated the broadcast division's annual sales at about $625 million a year.

Cincinnati Capital Properties is listing the 160,000-square-foot Mason facility as available for sale or lease, in full or in part.

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New Microsoft Zunes Coming

SEATTLE Microsoft is introducing the next generation of Zune portable media players, software and related online store. The devices compete with the Apple iPod.

The company also introduced Zune Social, a beta online community Web site.

The two new models of Zune portable media players feature the Zune Pad, a touch-sensitive button for navigating on the device, as well as wireless sync, a feature that allows Zunes to sync over an owner's home wireless network when connected to an AC adaptor, in a dock or speaker dock accessory.

Current Zune owners will receive new software features, the redesigned PC and device software and access to the new Zune Marketplace when everything is released to the public in mid-November, according to Microsoft.

The Zune portable digital media players are a Zune 80GB hard-drive model, listing at $249.99, and Flash models the Zune 4GB at $149.99 and Zune 8GB for $199.99.

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The 7 Habits of Highly Successful Ratings

by Leslie Stimson

Programming practices intended to persuade listeners to tune in longer than a quarter-hour will need to change once stations adopt the Arbitron Portable People Meter as their ratings measurement methodology. PPM promises minute-by-minute ratings.

Mercury Research President Mark Ramsey has developed preliminary guidelines to achieve good ratings in the PPM world, although he believes his suggestions would work for stations that use diaries, also.

He cautions that his suggestions are based on the results from "a handful of stations" in two PPM markets, Philadelphia and Houston. What may be true now may not be true in the future, or for all stations, as PPM evolves.

Ramsey credited Arbitron and WBEB(FM) in Philadelphia for their assistance with his findings.

#1) Recall *Does* Matter — With tactical marketing, you're doing specific things for a specific day, giving the listener a specific benefit. Results may be temporary, but measurable.

In strategic marketing, you're building success over time, not for the moment. Strategic marketing reinforces recall and reminds listeners you're there. Stations need both kinds of marketing.

"Listeners can turn on and off the radio. We have no power over this," Ramsey says. Listeners develop habits as the result of past experiences with a station.

#2) Ride the High Tide — Listeners listen to stronger dayparts, not weak ones. For example, at KYW(AM) in Philadelphia on the day of the Virginia Tech shootings, listeners didn't tune in at midday, right after the shootings; tune-in spiked later that day.

#3) The "One" Rule — How many diarykeepers can you affect this week? At best 8 percent. Ramsey said, as opposed to 100 percent of PPM panelists. The rule: Move as many people as possible to one place, at one time, for one reason.

#4) When Your Direct Mail Drops, the Game Is On — In a WBEB case study, three mailings went out twice a month for "5,000 Thursdays with the 'Phrase That Pays.'" Listening rose when the piece went out, *not* when listeners were asked to change their behavior.

Ramsey believes that with PPM, we'll find that listeners are "just like us."

"They do what we do. They pay attention because they receive something in the mail and not do something just because we tell them to."

"If you start a game days after the piece is in the mailbox, it's too late. Your mail piece should work even if your instructions are ignored."

#5) "Tactical" Is the New Black — Why didn't your plan work? You expected long-term results too fast, or maybe the message was wrong. Or maybe it *did* work because your ratings didn't go down.

"We are moving into an age where marketing will need to be more accountable," Ramsey said.

#6) Events Drive Ratings (Up or Down) — At a KRBE(FM) weekend ticket giveaway in Houston, the station's AQH increased 50 percent on the contest weekend after a week of promotion. Yet at cross-town religious noncom talker KSBJ(FM), retention was down after the station aired bits from a gospel music show, showing "the audience is pissed."

If something breaks format, don't assume it's an event. It's more likely what Ramsey calls an "anti-event" that could cause listening to drop.

#7) Fulfill Expectations — If your station normally plays music but then stops, what happens?

Mercury Research looked at music and non-music minutes from PPM data, excluding commercials. It discovered "mic flight."

"People leave when the mic is open. Listeners are almost four times as likely to tune away when there's no song," Ramsey said, offering tips to fight that trend — although he's not suggesting jocks "just shut up and play the hits." Stations that do so would be "the worst iPod, especially in the future."

Bonus habit: "Monday is the new Thursday" — Choosing to affect listener behavior starting on a Thursday or Friday will cause you to lose momentum over the weekend. Monday is when habits are set.

Mercury Research says early PPM results show 'mic flight' is a problem for music stations and offered tips to fight it.

People leave when the mic is open. Listeners are almost four times as likely to tune away when there's no song.

— Mark Ramsey

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World Radio History

'Bellwether' BE Makes Some Changes

Broadcast Electronics is approaching its 50th anniversary in 2009 and I was pleased to see BE plan a salute to Larry Cervon, its retired president, in October, with a ceremony in Quincy and a live Webcast.

Good for BE for honoring its history. We'll have more about Cervon's tenure in an upcoming issue.

BE is going through some less pleasant changes right now. Within a few weeks' time the manufacturer of transmitters and digital audio and data products lost its global sales VP; it laid off some of its employees; and it announced the retirement of its CEO of eight years, John Pedlow — news that came, at least to me, suddenly.

Because these developments emerged in a flurry and because BE is one of the "bellwether" manufacturers in our industry — it calls itself the largest radio-only broadcast manufacturer — I asked Neil Glassman, vice president of strategic marketing, to talk about what these changes might mean.

"We did have a reduction in staff over the summer," Neil confirmed. "But the company still has more employees today than a year ago. You hate to get rid of people; but this was more a correction of an 'over ramp-up.' Everything was being built up a little too fast. We'd been building in every department for growth and had to correct for a little too much enthusiasm."

Glassman declined to say how many people had lost their jobs; he said the cuts came in several departments. He said BE still has more than 150 employees, that it continues to use the recent 20,000-square-foot expansion to its main facility in Quincy, Ill., and that delivery and customer service response times have not been affected by the cutbacks.

Separately, Michael Burgett recently resigned. BE had welcomed Burgett with fanfare in late summer of 2006 when it created the position of vice president of global sales; officials said then the hire was important because BE was expanding in new overseas markets and also integrating digital media with RF transmission activities, studio with over-the-Internet and HD Radio activities.

Glassman said Burgett left for personal reasons unrelated to other changes and that the sales position is now open. BE's international sales efforts have strengthened, he said, including good growth in AudioVault sales outside of the United States.

Growth

The departure of Pedlow is unfortunate because he's an executive I've always found to be affable and accessible; but it also seemed notable in part because it came right after the layoffs and because it felt sudden. Glassman said it had been in the works for a while behind the scenes.

"We collectively decided [John] could retire when he found his replacement ... after almost nine years in which the company grew tremendously." In announcing the change, BE called Pedlow's tenure successful and noted that during those years, BE had "set a course for the future of terrestrial radio with ground-breaking HD Radio products," achieved double-digit revenue growth for four consecutive years, increased manufacturing capacity and acquired The Radio Experience product line.

Pedlow will move back to his home state of Washington to pursue boating, among other interests, and will continue to consult to BE.

Meanwhile new CEO Joseph W. Roark is getting his sea legs. He's former president of four Weir Group PLC companies and two Danaher companies; BE describes him as strong in industrial business experience with an emphasis on converging technologies. Roark — pronounce it "ROH-ark" — will relocate from Salt Lake City to Quincy. He and Pedlow issued mutually supportive statements in announcing the change.

'Bit of a null'

Glassman said BE has been through many such departures in its 48 years.

"It's really cool in a way that BE is both a personality-driven company, with people who are visible like John Pedlow, Jerry Westberg, Richard Hinkle, Tim Bealor and others, but that it is enough of a company that it transcends people's life transitions. It has a personality and force of its own."

The whole industry is in a bit of a null in the HD transition. But I don't think anyone's long-term plans have changed.

— Neil Glassman

But while not connecting business trends to Pedlow's departure, Glassman didn't pretend that BE's equipment market has not softened.

"It's probably no secret that the rate of HD Radio adoption has slowed in the United States. There are new opportunities that exist in other countries; Mexico and Brazil come to mind; sales there are few but promising. The whole industry is in a bit of a null in the HD transition but I don't think anyone's long-term plans have changed."

I asked Neil if he remains optimistic about the longer-term uptake of digital radio here at home.

"Absolutely. We continue to see increasing dialogue with people in the middle markets; we're getting more people who are beyond 'Uh, I'm not interested' to 'Hmm, should I do this?' and starting to go toward, 'OK if I'm going to do this, when is the right time?' We're seeing more middle-market stations and/or mid-sized groups inquiring. Even if it's just 'I'm buying a new analog rig but want to be sure I'm not going to be painted in a corner.'"

Though BE is not relying only on business in the United States, he said, "right now, we're still bullish on the U.S. market. I can't speak for the owners; but the way they're continuing to support us, it seems the owners are also bullish about the future of radio." Since early 2006 BE has been owned by the Audax Group in Boston, a private equity firm that also owns the Boston Herald, among other holdings.

As you know from previous columns, BE is not the only company that has had to scale back its workforce in light of business trends in broadcasting. And CEOs do change from time to time. I wish BE and its new leader well and wish for it more growth ahead. A healthy broadcast equipment marketplace is good for equipment users and for trade publications, of course; but it's also reflective of the underlying radio industry.

We'll continue to watch and root for a vibrant manufacturing sector. Glassman, for one, is optimistic that smart broadcast owners will do what's necessary to redefine what "radio" means. Our medium is now a multiplatform environment, he said; and Glassman is bolstered by seeing entities much bigger than BE, companies that own stations and produce programming, continuing to invest in it.

From the Editor

Paul J. McLane

World Radio History

FCC

▶ Continued from page 1

approval of a license transfer, with the caveat that the FCC can eventually come back and levy fines within a set period, typically two or three years.

Meanwhile, the FCC's Enforcement Bureau, which enforces the Communications Act as well as the commission's rules, orders and authorizations, has made no progress on the suspected thousands of pending indecency complaints against radio and TV broadcasters. The commission appears to be awaiting further clarification of its powers to fine broadcasters for slips of the tongue, industry observers said.

The backlog of indecency complaints in FCC files likely will remain unresolved until the commission finds out "if they have the power to punish for profanity," said John King, a communications attorney with Garvey Schubert Barer.

"The FCC just is not sure where to go with it. They had their hat handed to them by the appeals court," King said.

The Bush administration in September said it would ask the Supreme Court to reverse the lower court decision, which invalidated several indecency decisions and raised serious questions about the continuing validity of the commission's broadcast indecency policy.

In June, the Second U.S. Circuit Court of Appeals struck down the FCC's nearly zero-tolerance policy covering the broadcast of certain expletives, even if they were fleeting and unscripted. Now the U.S. solicitor general will seek a Supreme Court review of the decision, according to several accounts.

The FCC increased the maximum indecency fine it could hit broadcasters with $325,000 per violation in 2006.

A new policy that appears to be in play is the granting of license transfer only after a purchaser agrees to assume responsibility for fines pending against the old owner.

Indecency remains in play

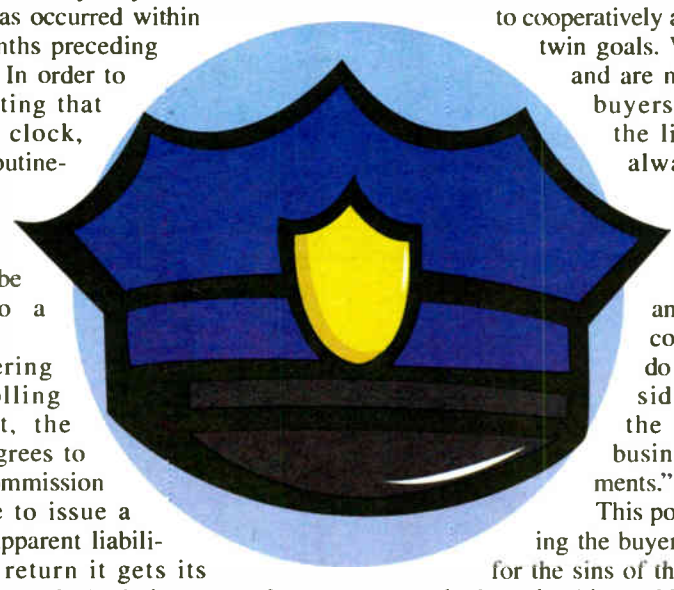
"The indecency issue is still very much in play and the commission is understandably quiet on that front because they are not sure what their rules are right now," said Harry Cole of Fletcher, Heald & Hildreth, a Radio World contributor.

The Senate Commerce Committee in July passed the "Protecting Children from Indecent Programming Act." The legislation is intended to overturn the Second Circuit of Appeals ruling and return to the FCC the right to fine broadcast stations for airing incidental words or images deemed indecent. However, the court also suggested that the FCC's policy is unconstitutional, a flaw which legislation would not be able to correct.

The legislation specifically allows the FCC to establish that a single word or image in a given context may be considered indecent and levy fines against the broadcaster. A companion bill was introduced in the House in September.

While fines for filing a late license renewal form are still fairly commonplace, some industry insiders view the rise in tolling agreements between the FCC and individual broadcasters as a sign that the FCC is more willing to work with broadcasters to resolve complaints and allow license holders to transfer their station licenses.

The commission can penalize a licensee for misconduct occurring at any time during a license term as long as the licensee's pending renewal application has not yet been granted. But as soon as the renewal is granted, the commission can issue a notice of apparent liability only for misconduct that has occurred within the 12 months preceding the notice. In order to avoid starting that 12-month clock, the FCC routinely doesn't act on renewals that might be subject to a penalty.



By entering into a tolling agreement, the licensee agrees to give the commission more time to issue a notice of apparent liability, but in return it gets its license renewed. And since transfer and assignment applications can't be granted unless the underlying licenses have been renewed, the tolling agreement also opens the door for getting such transfer deals approved.

"These agreements are becoming much more common, especially throughout the most recent re-licensing cycle. Pending indecency complaints are at the heart of most of the requests from broadcasters. The agreements benefit broadcasters by granting their license renewals and placing a deadline on when the FCC can fine them," Cole said.

However, in several recent cases the FCC has tried to insist that the proposed buyer of a station agree to assume responsibility for any fines pending against the existing owner, Cole said.

"The old policy was that a person buying the station was never liable for outstanding complaints against the existing owner. The FCC hasn't made any kind of official announcement in this regard about the change in policy, but it is happening in some cases," he added.

'Deal breaker'

Cole concludes that "such a stipulation by the FCC would most certainly be a deal-breaker for many suitors."

Several other industry observers familiar with commission operations confirmed that several examples of the new policy have come to light.

"I think it is mostly the commission wanting to protect itself in scenarios where the existing owner will no longer own broadcast properties after the sale and therefore not be beholden to the FCC to pay any subsequent fines," one observer stated.

Meanwhile, the commission says its interest is to maintain jurisdiction and access to the licensee responsible for any misconduct reflected in unresolved complaints.

"However, we want to avoid unnecessary delays in broadcast transactions. To that end, we work with parties to determine how we might preserve our cause of action without delaying or stalling the transaction altogether," an FCC spokeswoman said.

"We have been able in some cases to cooperatively achieve these twin goals. We have not and are not requiring buyers to assume the liability. We always need to balance the need to enforce our rules and respond to complaints but do so with consideration for the real-world business requirements."

This policy of holding the buyer responsible for the sins of the seller may not be long for this world. Reportedly the FCC may be backing off in response to considerable resistance to that policy from the communications bar.

Consent decrees are another popular alternative for broadcasters faced with possible FCC violations, said John Garziglia of Womble Carlyle.

"The FCC seems very willing to entertain consent decrees. They like this option, particularly if the FCC rule violations are multi-faceted and the commission might otherwise spend a lot of its resources in considering the alleged violations," Garziglia said.

With a consent decree, in return for a clean bill of health the broadcaster agrees to make a voluntary contribution to the U.S. Treasury and take remedial steps to fix the problem, Garziglia said.

Technical violations

Communication attorneys point to several areas of compliance on which the FCC appears to be focusing.

David Oxenford of Davis Wright Tremaine LLP said, "Technical operations continue to be an issue, especially EAS equipment and tower site fencing and lighting. The FCC has been very diligent in carrying out these types of inspections and audits."

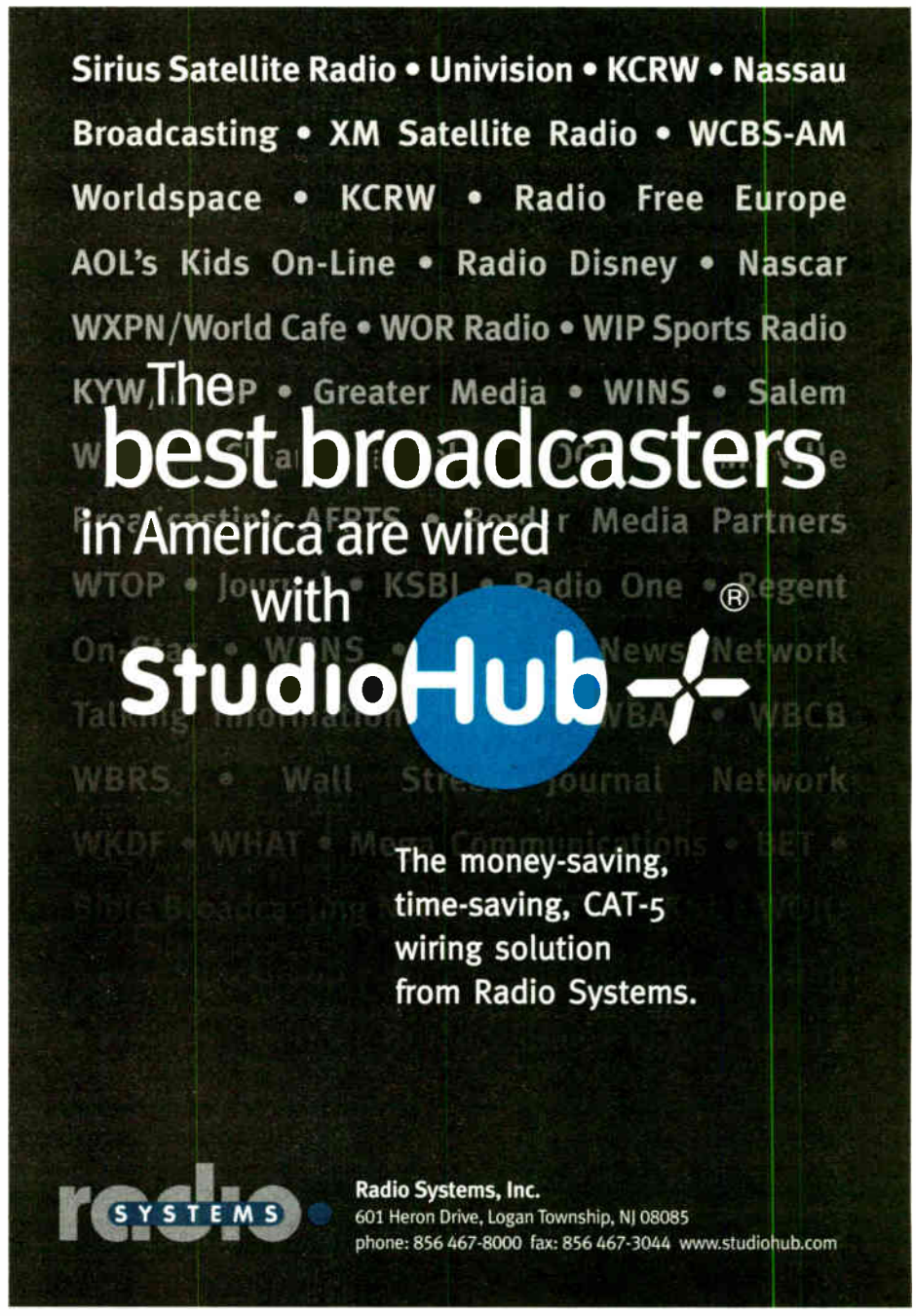
Sponsorship identification is another issue the FCC takes seriously, Oxenford added.

"If you have someone buying program time, you must have that identified as such with sponsorship announcements at the beginning and end of the program. In fact, any programming going out over the air for which the station has received some kind of consideration must be identified," Oxenford said.

"In the wake of the payola scandal, the commission is especially on the lookout for it."

Other attorneys listed problems like

See FCC, page 6 ▶



World Radio History

HD-R Data Enhancements on Horizon

by Leslie Stimson

This fall, software upgrades to HD-R transmission equipment will be available to enable the newest enhancements for IBOC data applications.

Data was one of the topics discussed at the SBE Radio Engineering Forum in September during the NAB Radio Show.

Ray Miklius, vice president of Broadcast Electronics, said, "Our competitive media environment has changed tremendously. We have media convergence and there are more entertainment options for listeners. The issue for radio is, how do we respond?"

New data display options as well as upcoming advanced features for HD Radio such as electronic program guides, iTunes tagging, advanced data channel services and conditional access offer benefits to listeners and advertisers, he said.

For example, non-program-associated data can be used for traffic or weather receiver displays. Stations can also integrate the data with RDS as well as use it to extend their Web presence, Miklius said.

The benefits of data transmitted by digital stations include linking data to commercials, promoting concerts and the enabling of e-commerce for listeners buying music. Such benefits increase the "stickiness" of a station brand, he said.

Photos by Jim Peck

Dan Mansergh of KQED(FM)

iTunes tagging for HD Radio is supported in many products that manufacturers are shipping now or will ship soon, he said. The ability of broadcasters' transmission systems to support iTunes tagging for HD Radio receivers is coming by the end of the year, Miklius predicted.

Clear Channel's Ben Brinitzer

Meanwhile, NDS, the company that has developed conditional access, the ability for a station to encrypt a multicast signal, now is offering its equipment for commercial sale in radio.

DRB

Clear Channel Radio Regional Vice President Ben Brinitzer discussed the pitfalls and procedures for HD-R measurements during the session. Many things can go wrong in measuring HD-R power levels, he said, including using the wrong tools or measurement location.

Separately, Ralph Hogan, chairman of the SBE's Digital Radio Broadcast

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FCC

▶ Continued from page 5

failure to maintain EAS logs and public files as particular subjects of recent agency fines.

"If there is a visible pattern when you look at the fines, it's back to the basics. Lots of focus and fines on technical and record keeping requirements, public file compliance, particularly Issues/Programs lists," said John Crigler, a communications attorney specializing in public media with Garvey Schubert Barer.

A lack of EEO file compliance was mentioned often by those interviewed for this story.

One reason for a rise in the number of technical violations could be that the FCC is being more responsive to complaints about over-power operation, Womble Carlyle's Garziglia said.

"It seems more likely today that such a complaint will result in a visit from an FCC inspector," Garziglia concluded.

Honesty is always the best policy when facing an FCC inspection, Crigler said.

"An issue that starts out as a trivial matter can sometimes become major trouble if the broadcaster doesn't fess up to the alleged violation. You can argue about fines and argue for a reduction later, but if the commission thinks you misled them at the beginning they are less likely to show any leniency," Crigler said.

In general, Crigler said, the number of FCC enforcement actions generally is in decline.

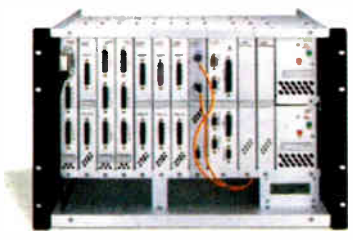
"The South has a lot of 'favorites' including barbeque, football and great hospitality. I'm adding Logitek to my list."

"Logitek was the solution for our consolidation in Birmingham. We wanted a system that was flexible and reliable. The most flexible systems are based on router technology, and after looking at the choices, I picked Logitek. Logitek lets me makes changes fast and seamlessly. It manages my satellite feeds, 'talks' extensively to my Prophet system and lets me add sources and outputs without ever changing a wire connection. My operators love the ability to get any source anywhere, too.

"When we built this facility we had four FM's and an AM. Suddenly, I had four additional HD streams to incorporate into the system. Logitek let me add the additional stations with a minimum of frustration.

"Logitek may not be as high on my list as great barbeque, but it gets my vote for a great audio platform."

Bob Newberry
Market Engineering Manager
Clear Channel – Birmingham



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World Radio History

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Broadcasting a live Phoenix radio program from out to sea would be challenging for even the most seasoned veterans. Not for Attorney and Certified Financial Planner® (and world traveler) Keith DeGreen. Keith is shown here using the Comrex ACCESS Portable as he and his ship, The Global Adventure, approach Koror Harbor In The Republic of Palau—450 miles east of the Philippines and 7,200 miles from Phoenix!

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Keith has been broadcasting his radio program, a unique mix of personal finance, economics, politics, and real-life "extreme broadcasting" adventure for 19 years. Listen live 8—11AM Sunday mornings AZ time on NewsTalk 550, KFYI, or catch Keith's archived shows, and enjoy the amazing videos, photos and blogs of his open-ended 'round-the-world journey at his website, www.theglobaladventure.com.

Keith DeGreen says "Whether I'm a thousand miles out to sea, visiting unusual ports of call or exploring remote inland places, my Comrex ACCESS Portable empowers me to project a broadcast-quality signal back home at anytime from virtually anywhere."

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World Radio History

Data

▶ Continued from page 6

Specialist Certification Committee, described the society's new certification.

The test for the new DRB Certification, Hogan said, covers HD-R importers and exporters, different signal combining methods, digital audio and data delivery, transmitter emission mask measurements, digital signal monitoring and AM antenna bandwidth requirements.

Why obtain DRB certification? With it, engineers can demonstrate to managers that they understand the latest digital radio technology and that they have knowledge of an entire system rather than just of a single plant, Hogan said.

KQED(FM), San Francisco Director of Engineering Daniel Mansergh discussed the practical implementation of data displays for HD Radio. That same data can also be used for RDS receiver displays and station Web sites.

How can stations manage the workflow without burdening current employees or hiring new ones?

"Taking the long view, there's no easy answer. A consolidated approach to managing data is warranted," said Mansergh.

He recommended that stations take small steps and get some data onto receiver displays, information that is consistent with what listeners expect. A station's system for managing such data can always be improved as time goes on, he said.

Photo by Jim Peck

Ray Miklius of Broadcast Electronics discusses the deployment of iTunes tagging.

WAMU Adds HD3 Channel, Live HD2 Hosts

WASHINGTON WAMU(FM) is among the first stations in the nation to offer live programming for a multicast channel.

The American University licensee added news and information programs to its Sunday schedule and shifted bluegrass programming from there to its HD2 channel. WAMU also launched an HD3 channel devoted to news and talk.

For six years, Bluegrass Country was pre-recorded and could be heard online and during a 15-hour block on Sunday mornings. On Sept. 17, bluegrass moved to WAMU's HD2 channel, which now features live hosts during drive times.

Moving bluegrass to a multicast channel means WAMU's main analog and digital channels are strictly news, talk and information.

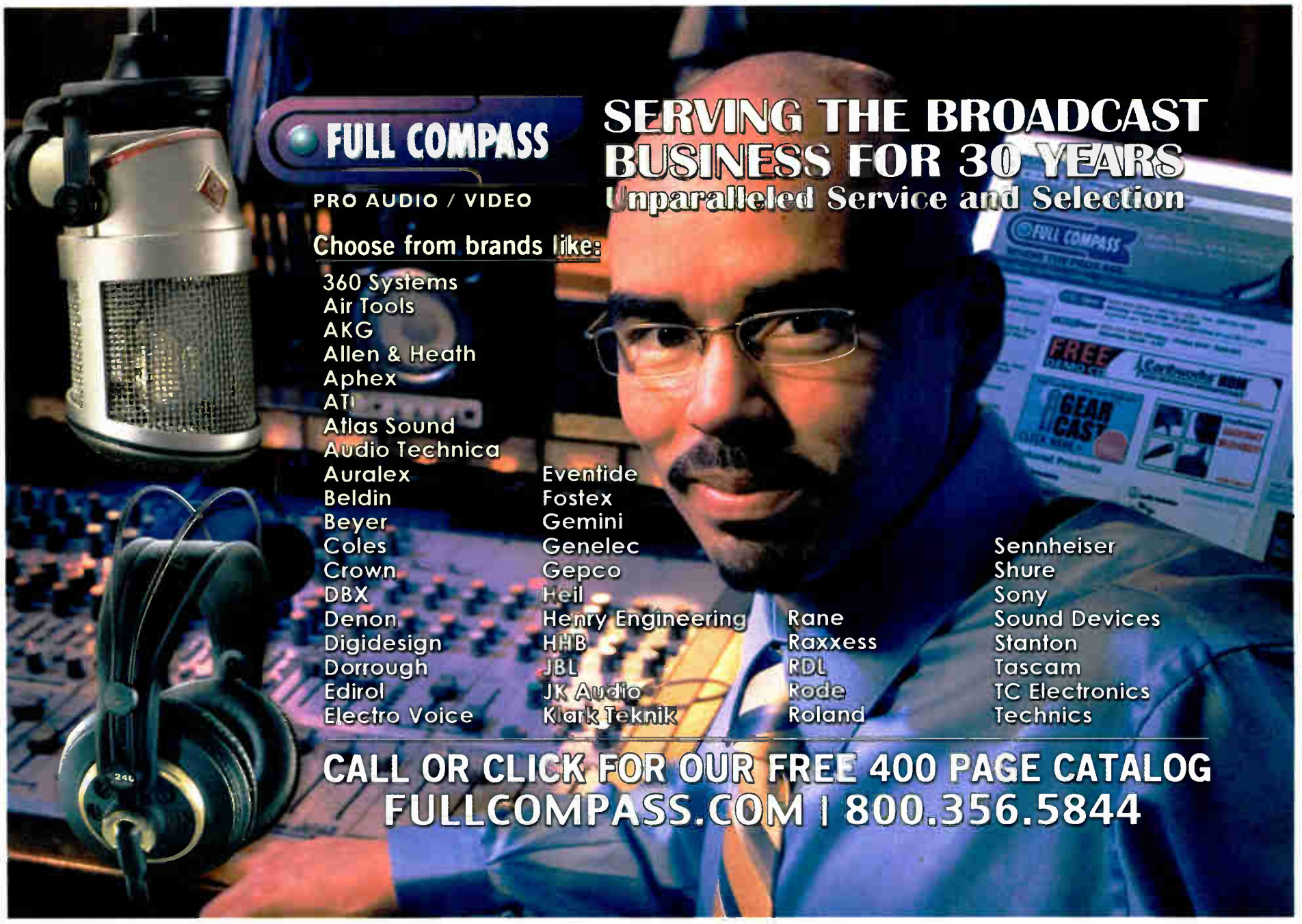
The HD3 channel will have public radio news programming not found on the main channel; additionally, the station's partnership with Towson University's AAA-formatted WTMD(FM), will continue on weekday overnights as well as early evenings and weekend overnights.

Station GM Caryn Mathes stated it was "time to begin treating HD Radio multicasting as 'real' radio. HD Radio is becoming eminently accessible to the general consumer, and we believe it is the future of terrestrial radio."

The station is giving away 1,000 Radiosophy HD 100 receivers to listeners who currently support the station's bluegrass programming with donations "regardless of their giving level."

Since WETA(FM) dropped much of its news and returned to a classical format, WAMU is the only station carrying NPR, PRI and American Public Media news programs in Washington, the nation's eighth-largest radio metro, according to Arbitron.

— Leslie Stimson



World Radio History

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Go (con)figure • The folks at MPR say they really love being able to configure and administer an entire building full of consoles and routing equipment from the comfort of their own offices. Put an Internet gateway in your Axia network and you can even log into Element (or any other part of an Axia system) remotely from home, where there's plenty of Cheetos and Pepsi. Great for handling those 6 P.M. Sunday "help me!" phone calls from the new weekend jock.

Who are these guys? • Why buy a console from Axia? Element was designed by Mike Dosch and his team of ex-PR&E renegades (who know a bit about consoles). And Axia is a division of Telos, the DSP experts.

Perfect timing • You can't have too much time. That's why Element's control display contains **four different chronometers**: a digital time-of-day readout that you can slave to an NTP (Network Time Protocol) server, an elapsed-time event timer, an adjustable count-down timer... and there's also that big, honkin' analog clock in the center of the screen (Big Ben chimes not included).

Screen play • Use any display screen you choose, to suit your space and décor. Get a space-saving 12" LCD, or go for a big 21" monster. (This is Dave Ramsey's favorite Element feature, by the way. Anyone want to bet he bought his monitors on sale?)

Lovely Rita • LED program meters? How 1990's. SVGA display has lots of room for timers, meters, annunciators and more — enough to show meters for all four main buses at once. Reboot to 5.1 surround mode and the light show is even cooler, with surround audio and associated stereo mixes all going at once.

Memory enhancer • We know how forgetful jocks can be. That's why Element remembers their favorite settings for them. Element's Show Profiles are like a "snapshot" that saves sources, voice processing settings, monitor assignments and more for **instant recall**. Profiles are easy to make, too: just have talent set up the board the way they like it, then capture their preferences with a single click for later use. (Hey, make *them* do some work for a change.)

Black velvet • Some things **just feel right**. Like our premium, silky-smooth conductive plastic faders and aircraft quality switches. We build Element consoles with the most durable, reliable components in the industry — then we add special touches, like custom molded plastic bezels that protect on/off switches from accidental activation and impact. Because we know how rough jocks can be on equipment. And nothing's more embarrassing than a sudden case of *broadcastus interruptus*.

Split decision • No, you're not seeing double. Element gives you the choice of single-frame or split-frame configurations of **up to 40 faders.** Perfect for complicated talk or morning shows where the producer wants his own mini-mixer, or to give talent space for copy, newspapers and such. Solomon would be proud.

Swap meet • Element modules hot-swap easily. In fact, the **entire console** hot-swaps — unplug it and audio keeps going; an external Studio Engine does all the mixing.

Stage hook • This button activates the emergency ejector seat. OK, not really. It's the Record Mode key; when you press it, Element is instantly ready to record off-air phone bits, interviews with guest callers, or remote talent drop-ins. One button press starts your record device, configures an off-air mix-minus and sends a split feed (host on one side, guest on the other) to the record bus. Like nearly everything about Element, Record Mode is **completely configurable** — its behavior can even be customized for individual jocks. Sweeeet.

How many? •
How many engineers does it take to change these light bulbs? None... they're LEDs.

Talk to me • Need some one-on-one time with your talent? Talk to studio guests, remote talent, phone callers — **talk back to anyone** just by pushing a button.

Missing features • Did we forget something? Program these **custom button panels** with any macro you want, from recorder start/stop to one-touch activation of complex routing and scene changes using PathfinderPC™ software. You could probably even program one to start the coffee machine (black, no sugar, thanks).

Great Phones • With Element, jocks never have to take their eyes or hands off the board to use the phones. Element works with any phone system, but really clicks with the Telos Series 2101, TWOx12, and new NX-12 that connects four hybrids plus control with a **single Ethernet cable.** StatusSymbols™ (cool little information icons) tell talent at a glance whether a line is in use, busy, pre-screened, locked on air, etc. Even dial out with the built-in keypad.

The Busy Box for jocks • Element comes standard with a lot of cool production room goodies you'd pay extra for with other consoles, like per-fader EQ, aux sends and returns and custom voice processing by Omnia™ enabling you to quickly build and capture compression, noise gating and de-essing combinations for **each and every jock** that load automatically when they recall their personal Show Profiles. Context-sensitive Soft-Knobs let production gurus easily tweak these settings while simultaneously satisfying their tactile fixations. (Don't worry, for on-air use you can turn off access to all that EQ stuff.)

Mix-plus • If constructing a complicated mix-minus on the fly brings a big grin to your face, you're excused. But if you're like us, you'll love the fact that Element does mix-minus **automagically**. Forget using all your buses for a four-person call-in, or scrambling to set up last-minute interviews. When you put remote codecs or phone calls on air, Element figures out who should hear what and gives it to 'em — as many custom mix-minuses as you have faders.

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Element

Shown: 16-position split-frame Element, nicely equipped, $12,558.00 US MSRP. Not shown but available: 4-, 8-, 12-, 16-, 24- and 28-position Element. Dual exhaust and whitewalls optional at extra cost.

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World Radio History

Radio World, November 7, 2007

Past columns are archived at *radioworld.com*

Tackle the Cell Phone Interface

by John Bisset

Darren Morton is the radio director for Grove City College's WSAJ(FM) in Pennsylvania.

The station covers a lot of high school football games, and most of the schools don't have an extra phone line in their press boxes. This relegates Darren and his staff to the dreaded cell phone interface for many of the games.

A couple of years ago, the college switched cell phones, purchasing a Nokia unit that offered much better RF performance. Its only drawback was a goofy four-pin mini plug for audio interfacing.

Darren bought an adapter to convert the standard 1/8-inch TRS (tip, ring, sleeve) plug to the Nokia four-pole. It quickly became a point of failure due to intermittent contact issues. The intermittent adapter also would not reliably keep the phone in ear-set mode, further interrupting broadcasts.

Darren tore that adapter apart — completely destroying it in the process — and found a tiny PCB with a couple unidentifiable parts on it. Some experimenting with the trusty Fluke 177 on the broken parts and pigtails into the phone revealed that the mic element was balanced, hence the extra pole on the connector.

He grabbed an old Nokia ear-set and lopped the mic and ear piece off. Inside the jacket were a red wire with shield, and white wire with a shield.

The send audio (mic input) was white, and the receive (Cue audio) was red. Darren used the new pin out and made a 1/4-inch / XLR-to-4-pin adapter to plug into their JK Sport Mix but had no luck.

The next step was to check another Nokia ear-set and put the Fluke to it. As it turns out, there needs to be a 10k resistance across the white wire and shield in order to put the phone into ear-set mode. With a resistor in place, the adapter worked fine.

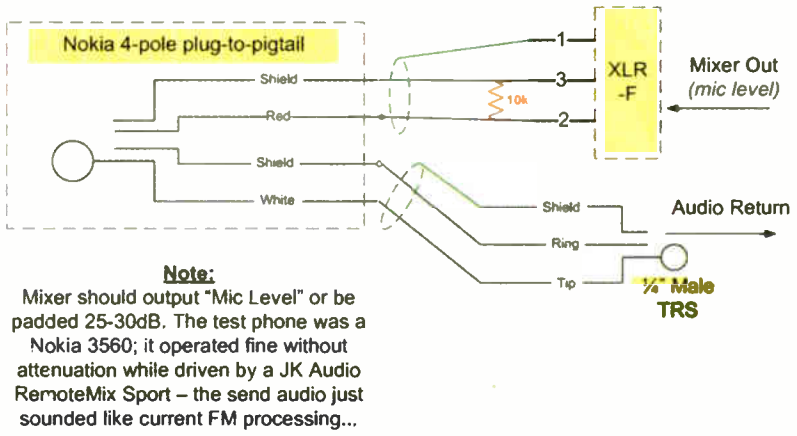

Fig. 1: Here's the adapter Darren Morton prepared for the Nokia Cell Phone.

The only adjustment needed after that was a 10 dB pad on the JK's output, which fed the cell phone. Darren's modification schematic is seen in Fig. 1.

Darren admits to a certain amount of pleasure in hacking apart and/or destroying anything related to cell phone "technology," but the efforts paid off. Thanks for the tip, Darren.

Morton can be reached at *djmorton@gcc.edu.*

★ ★ ★

Mike Heim is an engineer for the Youngstown, Ohio, Clear Channel cluster, and a VHF amateur operator. He's been active over the years in dealing with VHF propagation and wanted to share some points with *Workbench* readers.

Darren admits to a certain amount of pleasure in hacking apart anything related to cell phone 'technology.'

There are a number of propagation modes that have the possibility of affecting FM broadcast radio. Tropospheric enhancement is only one of them, but it usually occurs mostly in the summer and fall.

The Hepburn maps discussed in the Sept. 26 column are predictions of these conditions, and are sometimes accurate. However, Mike also uses another tool as "evidence" that tropo is actually happening in real time.

The web site is *www.mountainlake.k12.mn.us/ham/aprs/path.cgi?map=na*

This map uses actual amateur radio beacons which crisscross the nation and southern Canada. It displays real-time enhancements on the 144 MHz amateur band, and is a reliable indicator that tropo is occurring in your area in real time. The nature of tropo is such that it occurs on higher frequencies and works its way downward.

There is another effect that affects the FM broadcast band, and it is confused with tropo, but it is entirely different. Hepburn's map will not show this type of propagation, but the above site may. Mike is referring to a condition known as "Sporadic E," which affects lower frequencies and moves upward.

This propagation occurs in the springtime months. When the effect is in full swing, it produces extremely strong signals from distances of about 800–1,200 miles. The effect is strong enough that DX stations have the strength of a local station. This propagation is really not predictable, except that it occurs usually between May and July.

Signals are typically much stronger on the 100 MHz band than a typical ducting opening. They can occur anytime, but from about 10 a.m. to 10 p.m. local time the effect is the most intense. It is caused by an ionization of the E region of the ionosphere (about 60 miles in altitude), and its causes are unknown. There is no relationship to sunspot activity that causes ionization of higher ionospheric layers.

Many interference complaints are confused with tropo, but depending on the time of year and time of day, we may be dealing with something totally different, and the Hepburn maps may show flat conditions, but yet we hear stations coming in from all over the country.

Therefore, Mike uses both tools to determine what is really going on.

See PROPAGATION, page 12 ▶

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World Radio History

RFR Fines Can Burn You

This is the third in a new series of Q&As with Richard Strickland about RF safety. Past questions are archived at radioworld.com.

Question: What are typical RFR fines and what recent trends do you see?

Answer: The FCC started out by using $10,000 for virtually all RF radiation-related fines, and all of the NALs (Notice of Apparent Liability for Forfeiture) were directed at individual licensees.

To my knowledge, every one of the NALs issued to date has been directed at a broadcaster — AM, FM, and television stations have all received NALs for RFR violations.

NALs have been issued for exceeding both of the FCC's exposure limits. The FCC's higher limits are referred to as the Maximum Permissible Exposure (MPE) limits for Occupational/Controlled (occupational) exposure. The MPE limits for General Population/Uncontrolled (public) exposure are set at one-fifth the field level above 3 MHz. The MPE limits are the same at frequencies below 1,340 kHz.

A common misconception is that all workers and situations on site qualify for use of the higher occupational limits. The FCC requires that only workers that are *fully aware* and *able to exercise control* over their exposure can be exposed to levels above the public MPE limit.

To be fully aware, workers must have received both verbal and written instruction in RF safety that includes information on a variety of topics. To be able to exercise control over their exposure, they need to understand how to use time averaging and RF hazard protection equipment such as RF personal monitors and RF protective garments.

There have been two relatively recent cases where the FCC has gotten away from fining individual stations $10,000.

In late 2004 the FCC issued NALs to four broadcasters operating at the big antenna farm on Mt. Wilson northeast of Los Angeles for each exceeding 5 percent of the public limit in an area that the FCC determined had a total field level of 160 percent of the public limit.

Although some 22 stations contributed significant amounts of energy to the spot of the violation, the FCC exercised the commission's "5 percent rule" for the first time. The FCC inspectors decided to use 10 percent as the criterion so that it could claim that measurement uncertainty was not an issue.

One FM station was cited for contributing roughly half of the total amount of energy, i.e. about 80 percent of the public limit. Two FM stations and a UHF TV station were cited with contributing energy levels in the range of 10 to 13 percent.

All four licensees received $10,000 fines and appeals by three of the stations were denied.

A more recent case involves a two-level roof on a tall office building in Tampa. The FCC cited, "Accordingly, we believe a significant upward adjustment of the base forfeiture amount is warranted." The TV station was fined $25,000 for exceeding both occupational and public MPE limits in different parts of the two roof areas.

In addition, enforcing its 5 percent rule, one of the two FM stations operating on the same rooftop was fined $20,000 for contributing about 70 percent of the public MPE limit to the area of the violation. Although the FM station was contributing only about 5 percent of the amount of energy as the TV station, its fine was 80 percent of the record-setting fine issued to the TV station and twice the amount of all previous RFR fines!

A common misconception is that all workers and situations on site qualify for use of the higher occupational limits.

Richard Strickland has presented more than 150 public and private seminars on RF radiation safety and has written numerous articles on this topic. Spotlight on RF Safety appears regularly in Radio World. E-mail questions or suggestions to the author at rstrick@rfsafetysolutions.com.

Propagation

▶ Continued from page 10

We appreciate the additional resource. Heim can be reached at *kd0ar@sbcglobal.net.*

★ ★ ★

Hal Kneller of Harris has been a friend to this column for years, providing troubleshooting, maintenance tips and interesting photos. Fig. 2 was sent to Hal by Chuck Lakaytis, director of engineering for Alaska Public Radio.

Because it's almost impossible to get concrete work done in rural communities, like the one in which KOTZ(AM)/Kotzebue is located, engineer Ron Zastro came up with this deck design to keep the new Kintronic 10 kW antenna tuning unit out of the mud. Adjustable Arctic legs will be installed next spring, making the installation permanent.

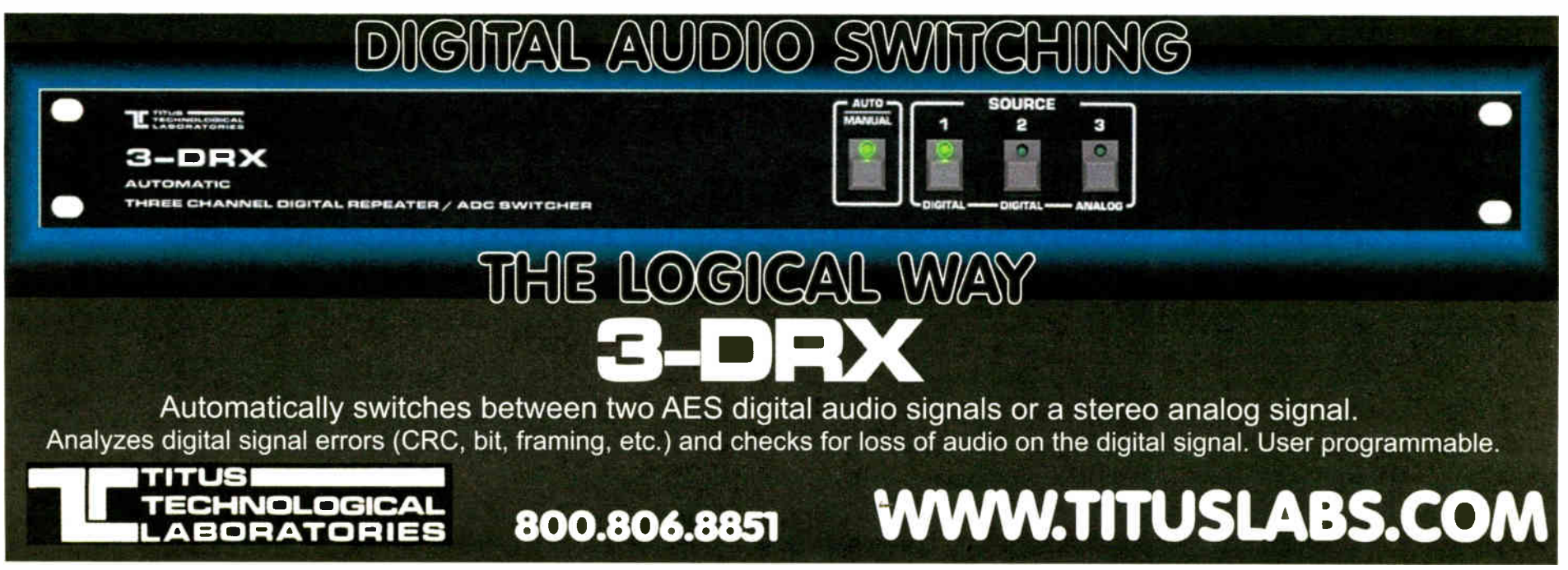
The ATU includes phase rotation for proper load matching and best HD performance on AM.

The design certainly keeps the ATU out of the mud, but we agree that Ron has a great "second career" designing and building decks, should he so desire.

Fig. 2: A different method of mounting an ATU.

John Bisset, SBE's Educator of the Year, has worked as a chief engineer and contract engineer for 38 years. He is the northeast regional sales manager for Broadcast Electronics. Reach him at (571) 217-9386, or jbisset@bdcast.com. *Faxed submissions can be sent to (603) 472-4944.*

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



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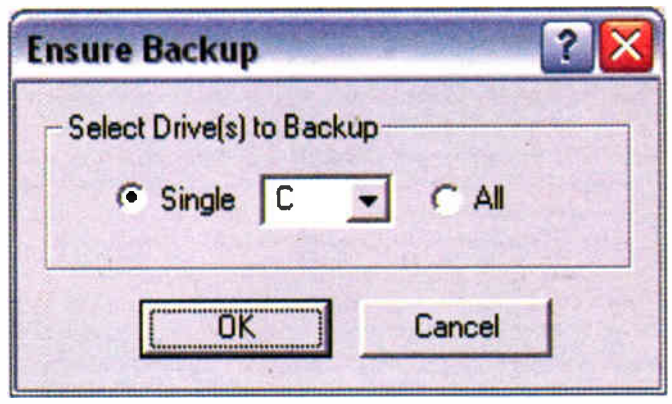
World Radio History

RADIO IT MANAGEMENT

Backup and Recovery of Digital Automation

Now Almost Invisible, This Hardware and Software Could Be Taken for Granted — at Your Peril

by Tom Vernon



"Always have a backup."

That phrase has been a cornerstone of good engineering practice since the earliest days of broadcasting. In the digital era, where information such as client lists, commercials and music libraries can be worth more than the hardware it runs on, backing up data should be an important part of every station's routine.

Basic concepts

Current storage technology for the music, commercial and log data in automation systems is based on hard drives.

As mechanical devices with moving parts, they are the most likely failure point in the system. Manufacturers quote a Mean Time Between Failures of over 1 million hours, or greater than 100 years. More frequent failures occur due to infant mortality and environmental conditions such as heat and vibration being exceeded during shipping or in the field.

In addition to bad sectors on a hard drive disk, the data on drives may also be corrupted by software glitches or computer viruses. The challenge for broadcasters is to make sound decisions regarding the tradeoff between performance vs. fault tolerance.

Tape backups have long been used to preserve data. Backup software is used to stream data from the hard disk onto some sort of tape cartridge, which is removable. The transfer rate of data is very slow when compared to hard drive speeds, and backing up takes considerable time. These backups represent a snapshot of data at a given time, and are always somewhat out of date.

Since tapes store the data in a linear fashion, recovering a particular file which has been corrupted or lost can be time-consuming. Despite some of the drawbacks, tape systems have been a convenient way to recover from catastrophic failure.

A more elegant system of backing up files involves disc mirroring or Redundant Array Inexpensive Drive systems. RAID systems have a multi-channel controller and three or more drives. Other systems provide full or partial backup of files on different machines throughout the station.

Storage, small, medium, large

Storage systems need not be complex or expensive, especially at the small-market level.

Jim Trapani, owner of JT Communications, notes that stations on a tight budget may wish to prioritize and backup only commercials and other locally-produced materials. "Music libraries are more generic, and can be easily replaced. Not so with local spots."

John Fulbright, director of studio applications development for RCS, adds that another popular scheme for low-budget operations is rotating portable USB hard drives. Backups can be done weekly, with one drive taken home while the other stays at the station.

Trapani feels there is a certain virtue in simplicity.

"Some vendors use proprietary schemes to write data to the hard drive, or use a special database to store it. If corrupted, either by a bad hard drive or a software glitch, it may need to be rebuilt."

He adds that proprietary software may be more difficult to upgrade, as it is harder to write the software. "This is really an area where keeping it simple can pay off. Systems that rely on off-the-shelf software such as Norton Ghost or Windows utilities are usually easier to maintain."

Criss Onan, AudioVault national sales manager for Broadcast Electronics, notes that when archiving small files such as seasonal music and commercials, the medium of choice still seems to be CD-R or DVD-R. He adds, "USB sticks are a great way for transferring small files to an external device, but won't hold enough WAV files for large archiving."

Automation systems with less than half a terabyte of capacity have several solutions. Onan notes a trend away from conventional backup/recovery systems. In their place, drive arrays with the associated software seem to be gaining favor.

"Multiple online drives are generally cheap, require no labor, are resistant to data corruption, are automatic and provide instant recovery." He said that most AudioVault configurations include distributed redundancy, so that all audio files are stored in more than one computer in the system.

Don Backus, vice president of sales and marketing at ENCO Systems, notes that in truly large systems with storage capacity in the 12 to 15 TB range, the use of removable media can be challenging. "Options are generally limited to redundant servers, or dual servers and tape carousels."

Best practices for backup also include preventive measures. Fulbright said some basic steps can keep viruses out of your system.

"Keep the audio and automation system on its own subnet, do not connect it to the business network. Don't enable Internet Explorer or other Web browsers, and use firewalls."

Off-site backup

At some point, backup systems should intersect with a disaster recovery plan. Off-site storage can protect the station from data loss when the studio building goes away due to fire, floods or other disasters.

For smaller operations, this can be as simple as backing up information to CDs or DVDs at the end of the week and taking the discs home. Larger stations with more resources may want to devise an automated system for off-site backup.

Onan said that as more stations implement HD, they have an IP connection at the transmitter site, so a backup computer with automatic file mirroring is becoming increasingly common.

Using an Internet connection is certainly possible, although Trapani and Backus caution that issues of access, reliability and security need to be considered. Best practice calls for a system that is completely isolated from other communications channels.

Fulbright notes another option for large users is Network Attached Storage. NAS is a form of hard-disk storage that has its own network address, rather than being connected to the same computer that is delivering audio or performing other administrative tasks. This system can be faster because it is not competing with the server for computing resources.

Sometimes it takes a close call to remind stations about the importance of a backup plan. Fulbright notes that events like lightning strikes or the loss of a server can make believers out of casual users quickly.

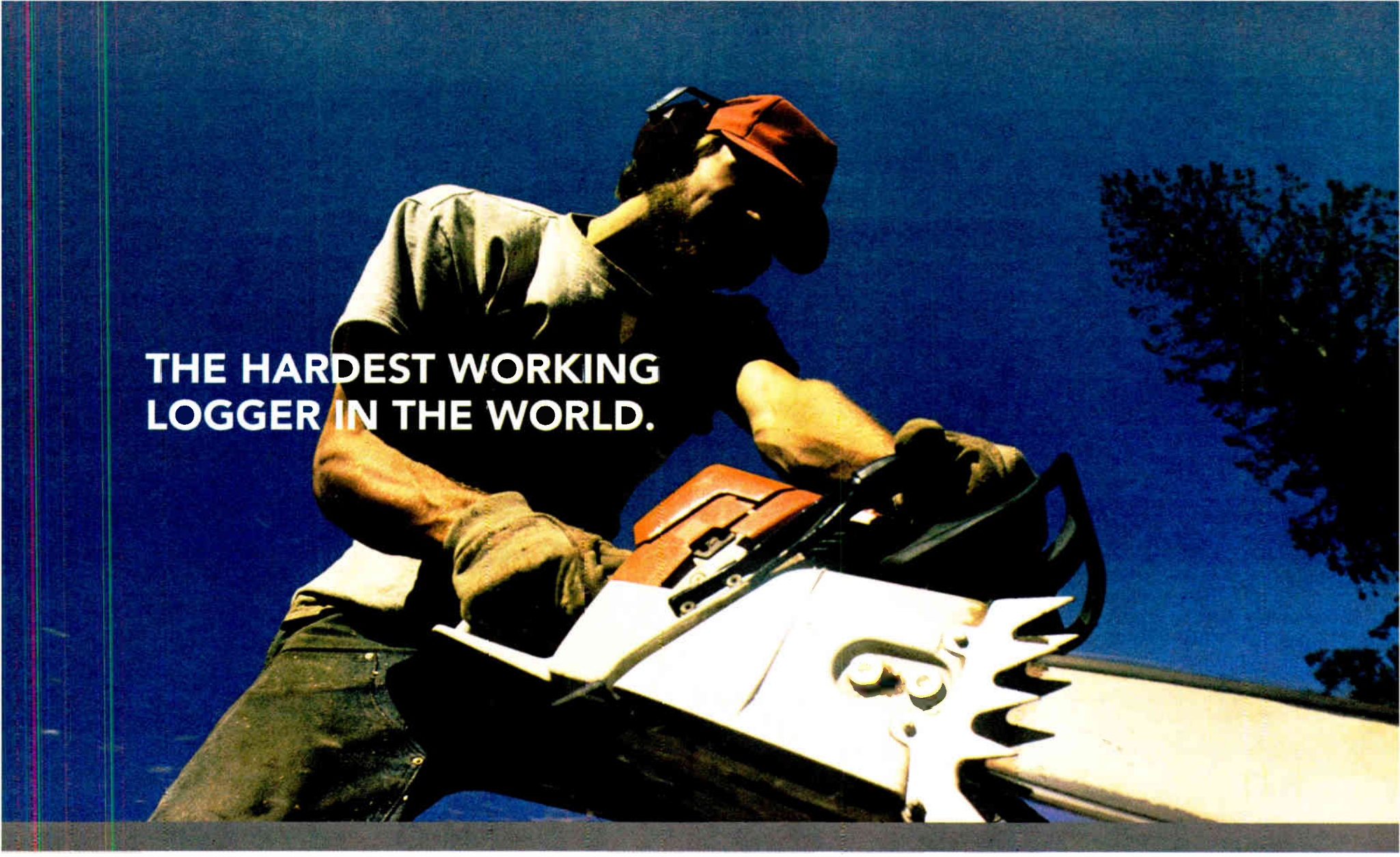
While the future can be difficult to predict, storage and backup operations may one day be the province of Software as a Service (SaaS). This is a delivery model where software is hosted by a vendor over the Internet. Customers pay for using the software rather than owning it. Google Earth is one well-known example of SaaS.

Richard Heitmann, vice president of product management for EVault, notes advantages for both small and large media operations.

See BACKUP, page 16 ▶

The challenge for broadcasters is to make sound decisions regarding the tradeoff between performance vs. fault tolerance.

World Radio History



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World Radio History

FIRST PERSON

To Catch a (Copper) Thief

by Josh Bohn

Sometime between Monday Sept. 10 at 8 a.m. and Wednesday morning at the same time, four bays of an ERI eight-bay SHPX antenna disappeared from the parking lot of Cumulus Broadcasting in Athens, Ala.

The perps took all the single bays along with loose hardware and all interbays that were disconnected. (They left two bays that had interbays attached; and two of the bays were on loan to another station.)

I called the Athens Police on Wednesday morning after I noticed the pieces missing. An officer came out that afternoon and we filed a report.

Make the ID

My general manager and I discussed the situation and resigned ourselves to the fact that we would probably never see our antenna again.

This was the old WZYP(FM) antenna and it had been sitting in our parking lot for over six years. In the last month, we had discussed using it as a backup to replace a Phelps-Dodge that is in place serving that function.

Doesn't it figure that as soon as you want to use something, someone swipes it?

On Thursday morning, a detective with Athens Police called regarding my missing antenna.

He was investigating the theft and planning to get in touch with the local recycling yards to see if anyone had brought it in for scrap.

I described it to him as a "rotor tiller" high-power broadcast antenna. The detective did an Internet search and actually found the ERI site and printed a picture of a Rototiller SHPX antenna. He took it to the recycling yard three miles from the radio station and asked if anyone had brought anything in that looked like it.

The man at the recycling yard said, "Yeah, some guy brought that in yesterday." Lo and behold, three of my antenna bays were there!

The detective called back and informed me that they had my antenna and needed someone to come identify it. I sent my maintenance engineer, Bob Hall, to the recycling center and he identified it as ours. The police then told me they knew the guy who brought it in and were planning to pick him up.

Quick work

Friday morning, back at the station, Mojo and Dana, the morning team on WZYP, were in the back parking lot of the radio station and noticed a gold van pulled into the rear of the lot. They observed the driver get out, grab two antenna parasitics from the pile and throw them into his van.

They called me and I immediately called the police and gave them a description of the van. The detective told me it was most likely the same guy who stole the antenna. They were sending an officer out to the station and sending a team to the recycling center.

Mojo, Dana and I then headed to the recycling center to see if we could find the guy. We got there and spoke to the manager, who was already on the lookout for the gold van.

We headed back to the station and spotted the van headed toward the recycling center. Upon arrival at the station, a police officer was waiting and asked us to follow him back to the recycling yard. The team in place there had apprehended the man.

The man at the recycling yard told the detective, 'Yeah, some guy brought that in yesterday.'

When we arrived at the recycling center, the man was in custody and in the police car. I identified my antenna and parasitics. The only things I lost were the center conductors from the antenna interbays and a few bullets.

The detective informed me that the man had already been on probation and would most likely be in jail for quite a while. He will be charged with a felony for stealing the antenna.

The reason the man gave to police for stealing it: "It was just layin' there."

It feels great to nail a copper thief!

The author is chief engineer of Cumulus Huntsville.

RW welcomes your tales about the challenges and joys of life as a broadcast radio engineer. Write to radioworld@imaspub.com.

Backup

▶ Continued from page 14

"For smaller organizations with limited resources, the SaaS model is attractive because they don't have to invest in infrastructure or time to do these things themselves."

"Larger operations with many remote sites may have the expertise for data storage and backup at the corporate headquarters, but it may not be available in the rest of the organization. For all users, SaaS provides an easy-to-use Web interface for managing storage and backup operations." EVault maintains seven data centers in North America.

Other advantages of an SaaS model are that sensitive data can by encrypted before being sent to the data center, and is stored that way, and that only new or changed blocks of data are sent to the data center, so the service is fast, and data is available for immediate restore in the event of a catastrophic failure at the studio site.

Heitmann said that in the case of EVault, the service is available as SaaS, a managed service or as traditional software. Customers frequently migrate between the three as they grow and needs change.

"We have a customer in the media industry that operates more than 50 radio stations in North America. They started with EVault's SaaS, and as their needs grew and changed, they switched to a licensed software model. Over 4 TB is protected and managed anytime, anywhere via the central management console."

Conclusion

The hardware and software for backing up and recovering files has undergone a revolution in the past five years. Once a series of manual procedures that had to be performed by someone with an understanding of IT, the technology has become almost invisible.

This can be a mixed blessing, and there is a real danger that it can be forgotten or taken for granted. As Backus reflects, "There are only two types of systems: those that have failed, and those that have yet to fail."

Tom Vernon is a regular contributor to Radio World.

For more about radio IT management, click on that tab at radioworld.com.

World Radio History

You're looking at a complete audio-over-IP routing system.

(Just add Cisco.)

Administer this • The beauty of the Web is that you can get information anywhere. Same thing with Axia: you can set up and **administer an entire building full of Axia equipment** – audio nodes, consoles, virtual routers, whatever – from your own comfy office chair. All you need is a standard Web browser (PC or Mac; we like 'em both). Put an Internet gateway in your Axia network and you can even tweak stuff remotely from home or anywhere there's a Net connection. Hey, isn't it time for a Mochachino?

It's not rude to point • Little kids tell mommy what they want by pointing — a pretty intuitive way of doing things. PathfinderPC software gives talent the same convenience. You can **build custom "button panels"** to execute complex operations with just one click. You can map these panels to controller modules on Element consoles or to turret mounted controls, place mini applications on studio computer screens, even run them on touchscreen monitors.

Automation station • Wouldn't it be cool to have a **self-monitoring air chain with silence-sense** that can fix problems then e-mail a status report? To be able to switch your program feed from Studio "A" to Studio "B" with one button? Or build custom switching apps and scheduled scene changes based on Boolean logic and stacking events? PathfinderPC software does all these things and more. But unlike HAL 9000, it doesn't talk back to you.

Nothin' but Net • Did you know you can plug a PC directly into an IP Audio network to exchange audio? Can't do that with a mainframe router. Well, you *could* add more input cards to the mainframe, buy high-end audio cards and run more wiring... but with Axia, you just install the **IP-Audio Driver** on any Windows PC to send and receive pure digital audio right through the PC's Ethernet port — no sound card required or additional router inputs needed. The single stream version is great for audio workstations; the multi-stream version lets you send and record **16 stereo channels simultaneously** — perfect for digital automation systems.

Put that in your pipe • How many discrete wires can a CAT-6 cable replace? Well, a T-3 data link has 44.7 Mbps of throughput. But Axia networks' Gigabit Ethernet links give 1000 Mbps of throughput between studios — more than 22 times the capacity of a T-3; enough for 250 stereo channels per link — the equivalent of a **500-pair bundle on one skinny piece of CAT-6**. Use media converters and optical fiber for even higher signal density. Think that might save a little coin in a multi-studio build-out?

Level headed • These green, bouncing dots built into every Axia Audio Node are confidence meters. One glance and you know whether an audio source is really active — or just playing possum.

Jammin' on the mic • Radio studios and microphones go together like Homer Simpson and donuts. Unfortunately, so do preamps, mic compressors, EQ boxes, de-essers — let's face it: most studios house more flying saucers than Area 51. Axia helps clean up the clutter by including mic preamps with our Microphone Nodes; not bargain-basement units either, but **studio grade preamps** with headroom enough to handle Chaka Kahn. Phantom power, too. And if you choose to use Axia Element consoles in your studios, you'll find world-class mic processing built right in: vocal dynamics (compression and de-essing) from the audio processing gurus at Omnia, plus three-band parametric EQ with SmartQ, available on every mic input. Rap on, Grandmaster.

Very logical, Captain • Routing logic with audio used to be as hard as performing the Vulcan Mind Meld. But Axia makes it simple, converting machine logic to data and pairing it with audio streams. So **logic follows audio throughout the facility** on Axia's switched Ethernet backbone. Eight assignable GPI/GPO logic ports, each with five opto-isolated inputs/outputs, are built into every Element power supply, so you can control on-air lights, monitor mutes, CD players, DAT decks, profanity delays, etc. Got more than eight audio devices? Add a GPIO node like this one wherever you've got gear.

AES yes • You like your audio to stay digital as much as possible, right? We get that: our AES/EBU Audio Nodes let you plug AES3 sources right into the network. Studio-grade sample-rate converters are inside; anything from **32 kHz to 96 kHz** will work. Oh, and there are 8 AES ins + 8 AES outs in each node. Digital distribution amp, anyone?

Heavyweight champion • This Axia StudioEngine works with our Element Modular Consoles (the fastest-growing console brand in the world, by the way) to direct multiple simultaneous inputs and outputs, mix audio, apply EQ, process voice dynamics, and generate multiple mix-minuses and monitor feeds on-the-fly. To make sure it delivers the reliability and ultra-low latency broadcast audio demands, we powered the StudioEngine with a fast, robust version of Linux — so fast that **total input to output latency is just a few hundred microseconds.** How can one little box do so much? There's a blazingly-fast Intel processor inside, with enough CPU muscle to lift a small building. Strong *and* fast: Ali would approve.

Brains in the box • The typical radio jock cares for studio equipment about the same as a five-year-old cares for a puppy: haphazardly, if at all. That's why we **took the CPU out** of our Element modular console and put it in here, with the power supply and GPIO ports. That means a greatly reduced chance of being taken off the air by a Coke spilled into the board. Because we know that you have better things to do on a Sunday night than trying to dehumidify circuit boards with a hair dryer.

Push to play • Axia Router Selector Nodes are **really advanced selector and monitor panels** that you can put anyplace you need access to audio streams. Like newsrooms, dubbing stations, or even the station's TOC, so you can monitor any of the thousands of audio streams on your network at a moment's notice. The LCD screen scrolls through a list of available streams; the eight Fast Access keys let you store and recall the streams you use most. There's even an input, for convenient connection of an analog or AES device. Sweet.

Quick Connect • Axia I/O is presented on RJ-45 and adheres to the StudioHub+ standard. A couple of clicks and you're done.

You got to have friends • Delivery system providers like ENCO, Prophet, BSI, BE, iMediaTouch, DAVID Systems and more all have products that **work directly** with Axia networks. So do hardware makers like AudioScience, International Datacasting, 25/Seven, Telos and Omnia. Check out the whole list at AxiaAudio.com/partners/.

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Routing

World Radio History

Will Radio's Inertia Be Its Savior?

Given the Volatility of New Media Today, Radio's Relative Consistency Could Be an Asset

The Big Picture

Photo: Gary Hayes, BBC

by Skip Pizzi

Seems like every week or so someone announces the addition of another ring to the new media circus, and everyone's head turns toward it ... briefly. Then our eyes quickly shift to the next new entrant, and so on.

If you look back a bit later, most of the fresh players will already have quietly exited, replaced by other, more recent offerings.

There are many reasons behind this instability, including the resurgence of venture capital investments, the decreasing reluctance of traditional media firms to try new things, the aging of the first "digital natives" consumer generations, and the still-increasing deployment of broadband connectivity — the latter fueled by growing competition and falling prices in the telecom sector.

Although these are not the heady days of the dot.com boom, the number of *media-oriented* introductions per se is far higher today than it was in the late 1990s.

To help understand why this is happening, it's important to recall that the original Internet gold rush occurred in the dial-up era, when 56 kbps was considered high-speed. Consumer broadband remained on the horizon throughout that period, and IP multicast was seen as the best real hope for streaming media to take hold at the time.

Obviously a lot has happened in a few short years, and much of it unexpected.

Churn and burn

There's a reason they call it "venture" capital; it's always a gamble, and the odds are stacked against success. Once in a while something breaks through, but it has to offer a near-perfect storm of compelling values or improvements to do so.

For media offerings, the three Cs apply: *Content, Convenience and Cost*. Considerable improvement has to be shown in all three areas for the new entrant to gain any consumer traction, and in radio's case this is pretty hard to do.

Looking closer into these components, though, broadcast radio is most vulnerable today in the Content sector, where many consider the medium to be lacking in variety and overburdened with commercials.

This is how satellite radio has gained its foothold, but its higher Cost and somewhat lower Convenience have kept it from becoming a true killer (i.e., replacement) application. It also remains unclear whether satellite radio will remain a sustainable service, even with its premium consumer pricing.

The category of Convenience actually involves a number of sub-issues when applied to radio, including receiver form factors, features, ease of use, service availability and reliability. Naturally, terrestrial radio (or as NAB now prefers to call it, "local radio") ranks strong in this area, as it also does in the Cost category, where receivers are cheap and service is free.

So judging prospective competitors to analog terrestrial radio against this "3C" metric makes the hill a very steep climb. A win in one area is countered by a loss in another, and so far no one has come up with a new offering that can assemble a net victory over regular ol' radio.

Wireless

Internet radio may actually hurt satellite radio more than it does local radio.

© iStockphoto.com/Danijela Pavlovic Markovic

Another element of the mix is the fact that new systems inherently are more complex than their predecessors.

Many involve bidirectional, interactive components, and they may appear as just one part of a multipurpose device. For many consumers, such complexity is a disincentive, particularly when it is positioned as a replacement for an intrinsically super-simple legacy format like radio.

The "pocket convergence" concept that bundles multiple media functionalities into a single device (e.g., phone, radio, camera, e-mail client, Internet browser, gaming device, etc.) is clearly not for everyone.

There is also a natural reluctance to jump into new services when they first launch — particularly if there is a cost involved (for hardware and/or service). The typical predilection — even among relatively open-minded early adopters — is to "give it some time" to stabilize, mature, work out the kinks, etc., by which time many such new offerings have already given up the ghost.

Extrapolating the trend

Even among relatively established new-media services, flux remains high.

Consider how the industry is currently moving towards deprecation of subscription music services, or tossing out DRM-protected music downloads. Even satellite radio's future hangs in the balance, as lawsuits, increased music royalty rates and possible rejection of a proposed merger all loom on its horizon.

One thing satellite radio has done right in this analysis is to make itself a relatively simple consumer proposition — in fact, it attempts to model the familiar operation of local radio as much as possible. In this respect satellite radio differentiates itself quite well from Internet radio, but its service availability and robustness still lag a bit behind local radio, and of course its cost is significantly higher. So on balance, even satellite radio has an uncertain future in this analysis.

Next up is wide deployment of wireless broadband (WiMax, etc.), which brings substantial portability and otherwise increased availability (i.e., higher Convenience) to Internet radio. It is unlikely that wireless Internet radio will ever match local radio's user friendliness, however, particularly in terms of one-button, instant access.

Yet wireless Internet radio's proliferation of portable, narrow music formats may actually hurt satellite radio more than it does local radio. Is the enemy of my enemy my friend?

Ultimately, the fragmentation and complexity of the new media marketplace could become local radio's strongest unintentional allies. Being old school isn't necessarily bad here. This is not to say that radio should not explore and embrace change where it makes sense, but while doing so it should always remember the fundamental values of simplicity and stability that put it where it is today.

Skip Pizzi is contributing editor of Radio World.

World Radio History

Newswatch

▶ Continued from page 2

FCC Clarifies Notification

WASHINGTON The FCC ruled that stations operating in hybrid digital/analog mode and that have a Special Temporary Authorization for dual antenna systems are considered to have already informed the commission of their operation status, and need not do anything else to tell the agency the stations are operating in digital.

In fact they're already listed as hybrid digital stations in the Media Bureau's Consolidated Database System.

The effective date of new notification procedures for FM broadcast stations operating in hybrid digital IBOC/analog mode with dual antenna systems was Sept. 14.

The technical information requirements for STA requests for dual antenna operation are substantially the same as those required for dual antenna IBOC notifications under the new IBOC rules.

The FCC said it's treating FMs that are operating digitally using STAs as if they had provided notification — so those stations won't need to file a new notification unless there's a change in the technical parameters of the IBOC operation or technical contact information.

News Roundup

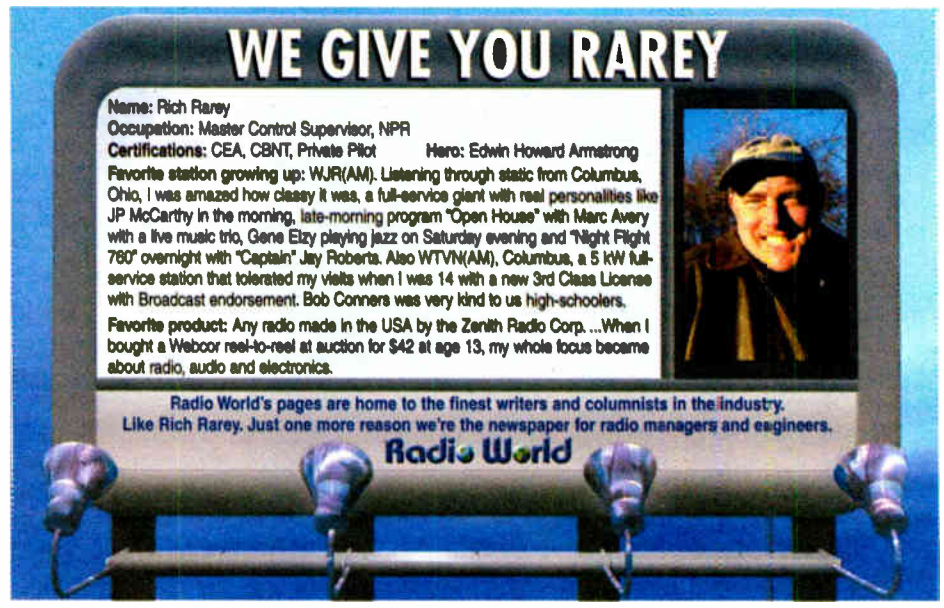
NO SUPPRESSION: The FCC inspector general said evidence did not substantiate allegations that two draft research reports of staff economists in the Media Bureau had been suppressed by senior managers or that managers had ordered one of the reports destroyed. FCC Chairman Martin asked the IG to look into these matters after several senators and representatives urged the review. The senators also asked the IG to investigate whether it was, or had been, a pattern or practice of anyone in senior commission management to suppress similar information. The Inspector General found no evidence there had been a pattern or practice of suppressing research at the commission.

BE PRESIDENT: Following the retirement of John Pedlow, the board of directors of Broadcast Electronics appointed Joseph Roark as CEO. Roark joins BE after having served as president of four Weir Group PLC companies and two Danaher companies. Roark and his family will move from Salt Lake City to Quincy, Ill. Pedlow is retiring after eight years at the helm of BE. He will remain as an advisor.

NAB'S DAVID REHR sent a letter to House Intellectual Property Subcommittee Chairman Howard Berman, D-Calif., asking that additional hearings be held to explore the relationship between recording artists and record labels. "If the goal is to improve the circumstances of performers and build the cadre of music into the future, the relationship between performers and record labels also bears examination," wrote Rehr. Berman plans a bill that would require over-the-air radio stations to pay performance royalties for the music they play. NAB opposes the move.

FREE RADIO ALLIANCE: A new lobbying group fighting performance royalties on radio stations launched. It counts NAB, NPR and several other broadcast groups as members. The group states: "The Free Radio alliance has been formed to provide a united force in opposition to the recording industry's efforts to subsidize their failing business model on the back of local radio stations and others that publicly air pre-recorded music."

TAGGING: CBS Radio, Clear Channel, Cumulus, Cox, Entercom and Greater Media formally announced they are in the process of installing iTunes tagging technology. As reported earlier Clear Channel has begun adapting its automation system in all stations broadcasting in HD-R to prepare for tagging and that other HD Radio Digital Alliance member groups were discussing licensing agreements with Apple.



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World Radio History

THE NAB RADIO SHOW

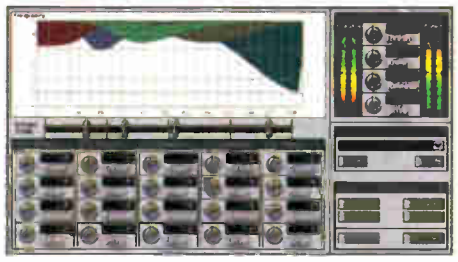
Holiday Shopping
NAB Radio Show Product Wrapup

What's New

Roughly 120 companies exhibited wares at the NAB Radio Show in Charlotte this fall. Here is a rundown of who showed what.

Neural Ratchets Down the Bit Rate

For broadcasters looking for revenue opportunities on the Internet, FM and now AM, Neural Audio and VoiceAge developed a high-



performance, low bit rate coding offering, Neural—AMR-WB+, which promises digital broadcasts and stereo music streaming at very low bit rates of 6 to 48 kbps.

This will help broadcasters offer specialized channels using a station's existing infrastructure, including digital radio streaming to consumer devices like mobile handsets and Wi-Fi portable devices.

Neural also showed capabilities of the hardware and software versions of its NeuStar Codec Pre-Conditioning solution. NeuStar 4.0 hardware ran in a transmission setup in front of an HD Radio encoder; while the NeuStar SW4.0 processed content streamed from a remote server. The Intensity screen from the NeuStar SW4.0 is shown.

The software can also be embedded as a pre-installed solution in the Harris FlexStar HDI-100 Importer.

The audio codec pre-conditioner NeuStar SW4.0 can be positioned ahead of Internet streams, 2.5-3G wireless audio encoding, DVB-H, DAB, DRM, satellite, compressed STL, ISDN and other audio services in the transmission chain for codec improvements and audio preprocessing, the company says.

"This software solution allows broadcasters to simultaneously process HD2, HD3 and HD4 channels or multiple Internet streams. This unique feature reduces broadcasters' rack space, equipment costs and the need for additional hardware," Neural stated.

Neural also demo'd its Neural-THX Surround DownMix and UpMix system, a surround sound approach for HD Radio that enables the mixing, editing, storing and broadcast of surround content within a radio station's existing stereo infrastructure.

Info: *www.neuralaudio.com* or *www.neuralsurround.com*.

RF Scout Detects VSWR Trouble As It Develops

Dielectric showcased its RF Scout monitoring system, which it says helps in detecting VSWR problems as they develop and before they affect operations, via continuous monitoring of the RF transmission system.

It comprises a rack-mountable unit with two power sensors, associated cables and a dual-directional coupler. The company says these components enable consistent monitoring of the antenna's forward and reflected power, and can be configured to monitor transmission line pressure and temperature as well.

RF Scout uses a 40 MHz single-board multiprocessor with non-volatile RAM to calculate true VSWR. Years' worth of data and alarm events can be stored within the system, according to the company.

Dielectric also featured its HDR Dibrid

Photo by Jim Peck

What will you plug into?

"The PR40 is THE BEST mike I have ever used."
-Art Bell

"I suddenly realized that my old studio mics had just become overpriced hammers. These Heil mics blew my mind, but left my budget in great shape." -Dave Hines, US 97, Clear Channel

"I just put in some of the Heil PR 40's replacing Neumann's and I have to tell you man, that's the best sounding microphone I have ever heard for broadcast. Sure made a believer out of me." - Jay Rose KVEG, Las Vegas

"Nobody ever said anything nice about my voice until I started using this (PR 40)."
-Leo Laporte

"The Heil PR 30 presents the smoothest and most articulate speech audio from any dynamic microphone I have ever used. Congratulations to the Heil team for bringing large diaphragm dynamics to the marketplace." -Mike Dorrough, company founder and President, Dorrough Electronics

HEIL SOUND

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PR40

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combiner; Matt Leland is shown talking with Randy Woods and James Hoge of WPOZ(FM) about the FM switchless combiner for HD Radio. The company also showed the HDR Plus series of interleaved FM arrays, which allow broadcasters to simultaneously transmit analog and digital signals, with high isolation between the two inputs. The interleaved antennas also provide redundancy, as both arrays are capable of supporting either the digital or analog signal.

Info: *www.dielectric.com/broadcast.*

RadioGuard Is Commercially Available

NDS announced commercial availability of its RadioGuard solution for HD Radio broadcasting.

The company's approach allows HD Radio listeners access to "preferred musical content," pay-per-listen events and other opt-in broadcasts.

The launch follows an agreement with Ibiquity Digital to integrate with and secure the service. RadioGuard is based on NDS' VideoGuard technology that is in use in 75 million TV set-top boxes.

The firm says its system enables broadcasters to offer customers more choice, including a broader selection of content. "Additionally, it facilitates more segmentation opportunities for advertisers and makes other revenue-generating services possible." Examples include pay-per-listen options for international events and concerts, radio-reading services for the visually impaired, public works and emergency services channels, and "opt-in" events sponsored by advertisers.

Info: *www.nds.com/conditional_access/radioguard.html*

Axia Element Goes v2.0

On display in the Broadcasters General Store booth was Axia Element v2.0 software.

The Element is Axia Audio's modular broadcast console.

New features include a "SmartSharing" feature. Intelligent audio source management works with Element's automatic mix-minus to lock control of sources with backfeeds or GPIO to a single studio, while still allowing other studios to listen in.

Controls for new Element Motorized Faders facilitate remote control of fader positions and allow faders to assume a pre-set gain when Show Profiles are loaded.

Element v2.0 also features a global Virtual Mixer section of 40 inputs divided into eight virtual submixers, which may be controlled using a Web browser or Axia PathfinderPC automated router control software.

And Caller ID and call status are now displayed on Element's main screen. New Split-Channel Recording options allow talent's mic and phone callers to be recorded on separate channels for post-production editing. The new Telos Nx12 telephone interface is integrated into Element as well.

Info: *www.axiaaudio.com*

PSAs Fight Drunk Driving

NAB distributed 90 drunk-driving prevention PSAs featuring the tagline "Friends Don't Let Friends Drive Drunk" to radio stations during the NAB Radio Show.

The campaign is an effort among NAB, RADD: The Entertainment Industry's Voice for Road Safety and the Ad Council, encouraging people to intervene in order to prevent friends from driving drunk.

It is targeted at the 21–34 age group, which NAB says represents more than half of alcohol-related fatalities. The PSAs feature entertainers like Gwen Stefani, Jeff Foxworthy and John Mayer. CDs were mailed to stations and PSAs can be downloaded from the NAB Web site; they are available in English and Spanish and contain PSAs that can be aired year-round as well as holiday-specific PSAs.

Info: *www.nab.org* under Resources/Public Service.

Dolby Pro Logic II 'Drives' The HD Experience

Dolby Laboratories exhibited a car equipped with a factory-installed system incorporating Dolby Pro Logic II and using content provided by NPR, so visitors could hear multichannel audio in that critical listening environment.

Photo by Jim Peck

Company officials position Dolby Pro Logic II as an ideal surround sound technology for HD Radio because "it enables the transmission of surround-encoded programs simultaneously over digital radio and analog FM signal paths." There are 69 million Pro Logic II decoders in the field. Dolby quoted NPR Labs' Mike Starling as saying, "Based on internal testing at NPR Labs, we see Dolby Pro Logic II as a natural format for future HD broadcast radio content."

With Dolby Pro Logic II, Dolby said, the surround soundfield remains intact, even while tuning HD Radio stations and during signal fades or other periods of blending to analog. HD Radio content encoded in Dolby Pro Logic II can be stored, edited and broadcast as a traditional two-channel signal, then decoded into surround sound by Dolby Pro Logic II receivers in car and home audio systems.

Shown: Dolby Senior Broadcast Engineer Stephen Lyman in the Volvo Dolby Surround Vehicle.

The company also displayed its professional encoding and decoding equipment.

Info: *www.dolby.com.*

Access Codecs Shipping With Firmware Upgrade

Comrex demonstrated its Access line of stereo BRIC IP/POTS codecs, as well as a recent firmware upgrade for them.

The company says version 2.3 for the Access Portable and Access Rackmount

Photo ©NAB

offers enhancements such as support for USB-based 3G modems; compatibility with other industry IP codecs using AAC; reduced delay over 3G wireless links; support for a greater range of 3G PC cards and USB modems; and improved network diagnostics like round-trip delay indication.

Kelly Clark is shown at right, demoing the Access to visitors.

The Access rackmount and portable versions are currently shipping with version 2.3.

Info: *www.comrex.com.*

Software Companies Join Forces

Traffic and billing company RadioTraffic.com is partnering with In a Box Business Solutions, a CRM provider.

The companies promoted a new interface and the collaboration of Chris Rolando, president of In a Box Business Solutions, and Dave Scott, president/CEO of Radio Traffic.

"Stations will benefit from the seamless integration between the In a Box sales system and RadioTraffic.com's traffic and billing because every aspect of the sales and ordering process now work together as one," Scott said. "Everything is faster and errors are virtually eliminated. All information is shared between the sales and log generating processes."

The companies said the integration means sales reps can write single to multi station orders, copy and generate presentations on the fly from any computer with an Internet connection. The order, once approved by management on a computer or Web enabled phone, goes into the traffic system with no order entry needed.

Info: *www.radiotraffic.com* or *www.inaboxonline.com*

LBA Introduces New RF Vacuum Contactor, AM Tower Isolator

LBA Technology is offering what it calls the first new generation of RF power contactors in years.

"These innovative RF contactors respond to the needs of broadcast, communications and industrial radio frequency users of heavy-duty RF relays," it stated.

The VC-1 high-reliability vacuum contactor system permits a range of operating voltages and can be configured at any time for 1PDT through 4PDT operation. "It goes well beyond the capabilities of most currently available mechanical RF contactors, but is a

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Contactor on the left is a master, model VC-1M-40. On the right is slave VC-1S-40.

direct replacement in many broadcast applications up to 50,000 watts," LBA stated.

Key features: 25 million cycle life, no open contacts; RF rated at 40A and 10 kV peak at 1 MHz: easy switching of 50,000 watts in a 50 ohm AM MW system; rated DC to 30 MHz; silent, vibration free switching; direct substitution for popular mechanical latching RF contactors; universal for 24, 110, 220 volts AC 50/60 Hz supply systems

LBA says the remote sealed contact modules permit the design of more functional and cost-effective directional antenna phasors and other equipment with reduced ongoing maintenance costs.

The company also showed the CAMI series of broadband medium-power isolators for AM towers, calling it a new concept. CAMI systems permit other antennas to be mounted on "hot" AM towers. They are targeted to isolate single auxiliary broadcast coaxial cables for STLs, FM translators, low-power FM and television translators.

"Unlike commonly used isocouplers, one CAMI fits all of these applications. They also have the advantage of passing AC or DC current to tower top amplifiers, and are more resistant to weather and lightning," LBA stated, noting that the FCC is considering approval of translators for AM daytime stations.

Info: *www.lbagroup.com.*

M2A Analog Mod Monitor Upgradeable to Full HD

DaySequerra introduced its M2A analog modulation monitor, which can be upgraded to a full HD Radio mod monitor. Features include adjustable channel spacing, de-emphasis and operating voltage selection.

The M2A provides off-air and direct monitoring capabilities for analog FM, including demodulated audio level, carrier modulation level, pilot and SCA injection level, incidental AM noise and RBDS decoding and display. Additionally, it has programmable opto-isolated alarms for audio peak, audio program, carrier loss and RBDS data loss.

Options include an off-air AM measurement package with C-Quam AM Stereo and Ethernet remote control with the company's Remote Dashboard, a PC-based application that features monitoring, logging, alarms via e-mail and scanning of up to 100 preset stations.

The M2A is based on the M2 HD Radio monitor. Existing features include LED metering displays; 20 FM presets and, optionally, 20 AM presets; Class-A biased analog audio outputs; and a powered front-panel headphone jack. A full-time digital output provides a continuous feed for additional monitoring.

Info: *www.daysequerra.com.*

Mainesource Shows Audessence Level Controllers

Mainesource Inc., a broadcast transmission and pro audio equipment supplier based in Richmond, Ind., and run by Chuck Maines, featured audio processors manufactured by Audessence, a new U.K.-based company.

The Audessence product launch includes audio level controllers for broadcast, Internet radio, satellite feeds and STL feeds. Available models are the ALPS-1, ALPS-2, ALPS-3 and PodBlaster, all of which provide feature sets that include GUI setup via USB, remote control via GPI or IP and audio quality whether using the analog or digital I/O, according to the company.

Photo by Jim Peck

Mainesource also displayed RVR FM transmission equipment as well as products from other pro audio manufacturers.

Additionally, the company said it has outfitted about 50 new FM translator sites, supplying turnkey packages for each site including off-air receivers, transmitters, feedline, audio processing, surge protection and antennas.

In photo, Chuck Maines, right, discusses Audessence with Howard Jones, chief engineer for Public Radio East, New Bern, N.C.

Info: *www.mainesource.us.*

AudioFile Performs Multiple Functions On 8 Channels

KLZ Innovations describes its AudioFile post broadcast suite as an all-in-one audio and GPI delay system; mic skimmer; audio logger; silence detector; and MP3 streamer and extractor. These functions also can be performed simultaneously on eight channels.

Users can choose from four, six or eight

the professional broadcaster's choice for

IP STLs

WorldCast Eclipse

At last! An IP audio codec that offers a reliable, DSP-based platform and automatic back-up for 24/7 reliability.

APT's WorldCast Eclipse is the ultimate in flexibility and choice offering IP, X.21/V.35 and ISDN interfaces and a selection of popular coding algorithms including Enhanced apt-X, MPEG Layer 2/3, MPEG 4 AAC, G.711 and G.722

All the features you expect from a professional broadcast codec are supplied as standard: analog and AES/EBU I/Os, adjustable silence detection, alarm ports, contact closures, speed dials, embedded auxiliary data and many more...

Configuration and control of the WorldCast Eclipse is straight-forward and simple thanks to APT's powerful and intuitive Codec Management System (CMS). Offering extensive real-time management of multiple codec units, the CMS enables alarm monitoring, logging and performance monitoring as well as configurable user and audio profiles.

To see the full functionality of CMS, download a trial version from www.aptx.com.

Also Available:

WorldCast Horizon
Bidirectional stereo audio codec offering Enhanced apt-X over IP

WorldCast Meridian
Multi-algorithm audio codec with both IP & X.21/V.35 interfaces

WorldNet Oslo
Professional, Modular Audio Multiplexing Platform offering up to 14 stereo channels over T1/ E1 or IP links with Enhanced apt-X or linear audio. Built-in redundancy, automatic bock-up and hot-swappable cards ensure round the clock reliability for multi-channel STLs.

APT Headquarters
Tel: +44 (0)28 9037 1110
Email: info@aptx.com

APT North America
Toll Free: 800 955 APTX
Boston Tel: 781 810 2260
Email: sales@aptx.com

APT

www.aptx.com

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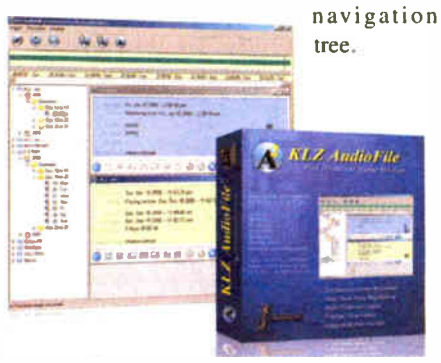
channels, which can be configured as Stereo, Dual Mono and Combinations. The mic skimming feature skims events or live segments, and extracts sessions to save to MP3 players. The live monitoring feature lets users listen to source audio at common bit rates. The MP3 audio logger/archive is a long-term MP3 audio logging system with a channel/date navigation tree.

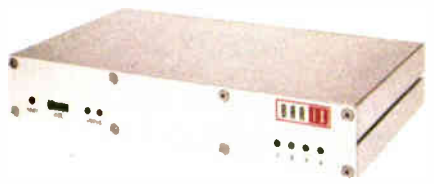


Regarding delay, audio is 48 kHz linear PCM. GPI delay requires a GPI interface, which includes four opto-coupled inputs and eight relay outputs. The user can set delay intervals, logging time span and I/O box actions with the AudioFile server configuration interface.

Info: *www.klz.com.*

Exstreamer 1000 Combines Siblings, Adds 8 Contact Closures

Barix introduced the Exstreamer 1000, a device that combines its Instreamer and Exstreamer into one box, adding balanced



inputs and outputs for the professional radio broadcaster, according to the company.

The Exstreamer 1000 also adds contact closures. Eight closures allow broadcasters to transport data with the audio to trigger and control local announcements, such as station identification, an EAS signal or local studio cut-ins to a national feed. Barix says the contact closures eliminate the need to use additional automation equipment to trigger local inserts.

Highlights include a signal converter with a higher dB level to reduce noise and improve audio quality; and an AES/EBU interface to capture a digital signal at the source and maintain it throughout the chain.

Baris also debuted the Annuncicom 1000, a sibling to the Exstreamer 1000 and suitable for integration into intercom and paging environments.

Info: *www.barix.com.*

'Eclipse' on the 'Horizon' at APT Booth

APT showed its WorldCast Eclipse IP audio codec in Charlotte, and distributed an updated version of "A Practical Guide to IP Audio Networking."

The WorldCast Eclipse, shown, is a multi-algorithm, multi-interface IP audio codec for studio transmitter links and remote broadcast applications. It combines IP, X.21/V.35 and ISDN interfaces with major coding algorithms on a DSP-based platform.

Also on the floor alongside the WorldCast Eclipse was the WorldCast range of IP audio codecs, including the WorldCast Meridian, a multi-algorithm codec with both IP and X.21/V.35 interfaces; and the WorldCast Horizon, suitable for professional-grade audio.

Other booth highlights included the WorldNet Oslo, a multi-channel audio multiplexer for audio delivery over E1/T1 and IP links, which now sends uncompressed linear audio for pure PCM quality, and compresses the audio using MPEG 1/2 Layer II or companding techniques such as J.57 and J.41.

Info: *www.aptx.com.*

Auto Mixing, Ducking Added to Logitek Line

Logitek showed its Console Routing Systems, including the Audio Engine router; Mosaic (shown), Remora and vMix control surfaces; and the vScreen customizable GUI for routing, control and display capabilities.

Automatic mixing and ducking capability has been added to the Logitek line, which the company says provides smooth transitions between live microphones.

A pop-up Mosaic fader display that places selected fader information on a user's VGA screen; and vSnapshot, a scene "capture and recall" feature that provides a pop-up GUI for a user's VGA screen, also were added to the product range. Scene information is saved in text files that can be edited by the user.

Info: *www.logitekaudio.com.*

Nautel Features Web-Based Monitoring For Transmitters

Nautel brought its line of HD Radio-compatible transmitters, including the V1, V10 and XR12; the Reliable HD Transport Suite; and the NxLink, a Web-based remote monitoring and control system for Nautel transmitters.

The NxLink can be operated with any Internet-enabled computer or IP-ready smartphone device, so operators can access transmitter information from anywhere, according to the company.

Nautel says its transmitters are designed for long-term reliability and easy maintenance, and that a broad selection of models ensures the right size/power transmitter for the application.

Info: *www.nautel.com.*

Burk PlusConnect Links Harris Z Tx, ARC Plus Monitoring

Burk showcased its line of remote and monitoring control systems, including the ARC Plus, GSC3000, ARC-16 and VRC2500, in addition to new products such as PlusConnect and Watchband.

PlusConnect, shown, provides a link between the Harris Z series of transmitters and the Burk ARC Plus remote monitoring and control system. It brings more than 400 transmitter parameters on board the ARC Plus system without parallel wiring, allowing broadcasters to manage the transmitter, ancillary equipment and IT infrastructure on a single platform.

Burk's Watchband remote receiver also was featured. Watchband delivers station and market monitoring tools to managers, engineers and programming departments. Broadcasters can compare field intensity and audio levels across the entire band, as well as log audio streams for remote playback.

Additionally, Watchband provides playlist data based on logged RDS text, allowing programmers to compare rotations and sales managers to generate proof-of-performance for Radio Text ads.

Info: *www.burk.com.*

ATM Lets Stations Pause, Insert Content, Catch Up

25-Seven Systems demonstrated its Audio Time Manager time compressor, which allows stations to pause a network feed, insert content, then return to where the program left off and catch up to real time.

Time compression rates can be adjusted on the fly, or the unit can be used to time shift programs up to an hour. The company says advanced algorithms leave speech and music sounding natural. The front offers two-button operation. Remote control is available through an 8 x 8 GPIO, RS-232 or over a LAN or WAN using a Web server.

Additional highlights include stereo analog and digital (AES) I/O breakout on XLR connectors, and linear audio processing at 44.1 or 48 kHz. Axia Livewire compatibility also is available.

Info: *www.25-seven.com.*

Harris Surveillance App Makes Site Thieves Think Twice

Harris debuted a video surveillance application for its Intraplex NetXpress audio-over-IP platform.

Video analytics capabilities at remote sites detect unauthorized entry while only transmitting video on alarm or on demand. Intraplex NetXpress sends multiple services including audio, data and PBX telephone communications over an IP connection. The surveillance application uses low-bit-rate MPEG 4/H.264

Protect your future with the Integrated Radio Solution from Studer

The acclaimed OnAir 3000 Digital Production/Continuity Console is now available with 5.1 inputs, and can be totally integrated with Studer's Call Management System for phone-ins and voting together with integral 1728x1728 audio routing capability.

5.1 panning screen

New features for the OnAir 3000 console also include Conference Multiplexing, direct outputs and limiters on both the AUX and N-X (cleanfeed) busses. Sophisticated downmixing facilities are included to allow simultaneous surround and stereo mix generation.

Multiple I/O formats including Dolby® E, SDI, AES/EBU and MADI make source management simple.

Together, all this results in a totally integrated On Air system that's ready for the future.

Find out more at www.studer.ch/TotalSolution

www.studer.ch

STUDER professional audio equipment

H A Harman International Company

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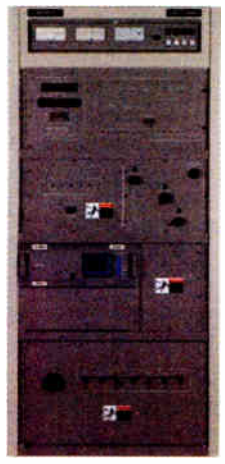
video compression to send and receive multicast or unicast video, which can be viewed on one or more PCs on the IP network.

Video analytics software in the new video encoding module for the NetXpress chassis detects people entering designated areas, or objects taken or left behind, and sends alerts with still images or full-motion video over the IP network to alert personnel at the studio or security office. Alarm logs maintain records of these events along with associated images.



Harris also hosted an HD Radio transmission display that featured HD Radio analog FM, high-power AM transmitters and FlexStar multicasting products for digital broadcasting.

The display highlighted the HT/HD+ tube transmitter, shown, a common-amplification, single-tube FM/HD Radio transmitter that evolved from the HT series of FM transmitters. It comes with the FlexStar HDX exciter, which offers Harris Real-Time Adaptive Correction technology.

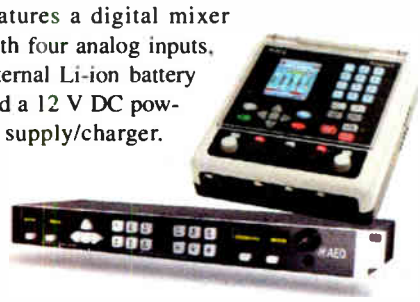
The company also displayed its ZX range of low-power FM transmitters with FlexStar; MicroMax FM exciter; and a transmitter from its 3DX line. 3DX transmitters are available in 25 and 50 kW versions for U.S. broadcasters; higher power versions are available for broadcasters in international regions that require AM transmission solutions up to 1 Megawatt.

Info: *www.broadcast.harris.com.*

AEQ Releases Phoenix Codecs for Mobile, Studio

AEQ showcased the two models from its newly released Phoenix line of IP audio codecs, Mobile and Studio.

Phoenix Mobile is for portable use, and features a digital mixer with four analog inputs, internal Li-ion battery and a 12 V DC power supply/charger.



Phoenix Studio is a 1 U rackmounted case with stereo analog and digital inputs and outputs, and a universal power supply.

Each codec has two slots for inserting optional communication modules. The company says POTS will be available initially, but ISDN, X.21, V35 and GSM are coming. In addition to the main program and return, Phoenix simultaneously provides a backup channel using the optional communication address.

AEQ also showed its Live and Arrow consoles for remote broadcasts, as well as the Bravo analog audio mixer, suitable for small- and medium-sized stations. Bravo features two program busses; four mic-line channels; eight dual stereo line inputs; dual telephone channel with integrated telephone hybrids; Cue bus with integral loudspeakers and headphone outputs; and an amplified monitor output.

Info: *www.aeqbroadcast.com.*

Wheatstone Releases Audioarts W-12 For the Little Guy

Wheatstone exhibited its Evolution series digital boards and debuted the Audioarts Engineering W-12 radio console, targeting small- to mid-market stations.

Features of the W-12, shown, include three stereo main busses, each with analog and digital outputs; 10 A/B dual source stereo line inputs, analog or digital; and two microphone preamps.

Additionally, Wheatstone's Vorsis division presented its latest additions: the FM-5 and AM-5 audio processors.

Products on demo included Generation surfaces; Wheatnet and Bridge digital audio routers; guest panels; 5200D news mixer; and Audioarts' D-75n/12 console and Net-8 router. Established signal processors on display from Vorsis included the AP-1000, HD-P3, AP-3 and M-1.

Info: *www.wheatstone.com.*

BE Talks Finance, Transmission Options

Broadcast Electronics came to the show with a concentration on the business needs of

radio stations.

The company had representatives available to discuss business applications of its and other broadcast solutions, including financing options available through BE's partnership with GE Capital Solutions.

Booth visitors found transmission options for small- and mid-market stations preparing

Able to leap tall buildings?

No distance or line-of-sight restriction makes **Starlink SL9003T1** the ideal choice for STL/TSL and intercity links.

Starlink T1's bidirectional high capacity significantly reduces communications costs compared to discrete audio, telephone and data circuits.

And **Starlink's** uncompressed digital audio will stand out above your competition.

STL over any distance or terrain...
...Moseley Starlink T1

- HD Radio™ and Multicasting
- Transmitter remote control
- RBDS data
- Telephone extension
- IP-based equipment control
- Internet and e-mail connection

Call the digital STL experts today.
Dave Chancey 805.968.9621
Bill Gould 978.373.6303
www.moseleysb.com

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for HD Radio, as well as multiplatform studio applications for managers wanting to profit from HD Radio multicasting, messagecasting and Internet broadcasting.

The company featured its HD Radio transmitters with ESP technology, and its analog AM and FM transmitters. Additionally, a new version of the AudioVault radio automation system and the latest features for The Radio Experience messagecasting system were on display.

Info: *www.bdcast.com.*

SafeAssured ID: Build Your Brand, Save a Child

SafeAssured ID is an encrypted family safety program. The company says it offers stations and their clients the opportunity to link their brand to the safety of children and the elderly.

The program helps families provide media

and law enforcement with immediate information unique to a missing person. The company says, "As part of a marketing strategy, hosting a SafeAssured ID event provides a high level of return in public relations, and a key differentiating factor from the competition."

The encrypted mini-CD in the kit contains digital fingerprints, a digital photograph, streaming video showing mannerisms and gait, voice track providing the youth's voice inflection and accent, general physical description, personal information (street address, date of birth, life-threatening medical conditions, identifying scars or marks, and tattoos) and family code word.

Families receive a color photo ID card and a Parents Guidebook, written with the National Center for Missing & Exploited Children. "Not only can families create missing person posters from the mini-CD, the valuable information contained on the mini-CD can be accessed by law enforcement within moments of the disappearance," the company stated.

Recent broadcast clients include Salem's Los Angeles cluster of stations and KUIK(AM) in Hillsboro, Ore.

Info: *www.safeassured-id.com.*

Clear Channel Adds New X-Digital Receiver

Clear Channel Satellite Services announced the release of the X-Digital XDS-PRO4-SG satellite receiver. The receiver is designed to support and operate on the Starguide or X-Digital XDS DVB-S broadcast carrier, which are used by radio syndicators.

"Through our recent acquisition of StarGuide assets, we have enhanced our product offering to encompass the traditional StarGuide platform," stated Ian Lerner, president of X-Digital. His company is partnering with Clear Channel Satellite Services for distribution and shared hub solutions.

Clear Channel Satellite President Don Harms said the XDS-PRO4-SG satellite receiver "is a form, fit and function receiver for our networks allowing clients to continue with the growth of their networks already in place on the Starguide broadcast carrier." The receiver will also support the XDS DVB-S broadcast carrier, allowing a transitional bridge when store and forward, copy split and record playback features may be a need.

Info: *www.clearchannelsatellite.com* and *www.xdigital.com.*

Audemat-Aztec Showcases Digiplexer 2/4, Ecreso

Audemat-Aztec featured its Digiplexer 2/4 "all-in-one" digital processor with stereo and RDS encoders plus audio backup and remote control, shown.

It is suitable for medium- and small-market stations, noncoms and network broadcasters who pre-process their program at the studio and need a processor and RDS encoder at every transmitter site.

The company said the 80 GB embedded hard drive will likely appeal to broadcasters looking for an audio backup solution for their existing air chain.

Also on display: the Navigator MA, a test and measurement standard for the FM radio broadcast chain, from audio source to RF signal.

Navigator integrates software that allows for easy viewing of the measurements and provides a summary view of the main parameters. The unit automatically generates reports of the measurements for analysis, and can be accessed remotely through IP. Command outputs to control signal generators or other equipment for automated testing also are available.

Additionally, the company showcased the Ecreso 1 kW Mosfet FM transmitter, which it says is suitable for LPFM and as a backup application. Ecreso is an Audemat company.

Info: *www.audemat-aztec.com.*

Airshift 2.0 Serves Cartstack, Playlist Production Styles

Airshift Media introduced an upgrade to its Airshift Radio suite.

The Airshift 2.0 advanced playlist manager now serves both the cartstack and playlist approach to program production. A new music clock and scheduling feature, and expanded keyboard and console interfacing possibilities, also were added.

Airshift Media says that while program content and technology are essential to keeping an audience, a radio station must generate increasing revenues. Airshift Radio 2.0 integrates with the Ericsson IPX brokerage system. The listeners' premium rate text messages provide additional content for the presenter and instant cash receipts for the station, leaving all administration with IPX.

Info: *www.airshift.tv.*

AudioScience Sound Cards Have 8 Stereo Outputs

AudioScience introduced the ASI6518 (PCI) and ASI6618 (PCI Express) sound cards, both of which have eight stereo outputs and one stereo input; are analog and AES/EBU; and simultaneously play up to

eight stereo or 16 mono streams of compressed audio.

The ASI6585 Livewire sound card also was on display, which can be used in Axia IP-based radio facilities. The ASI6585 plays and records up to eight stereo and 16 mono streams, with DSP-based audio acceleration available for compression, time scaling, mixing and sample rate conversion.

Info: *www.audioscience.com.*

RCPU's Lock Mechanism Redirects RF Signals

Jampro Antennas highlighted its RCPU patch panel, shown, as well as the JMPC-HD low-power FM antenna and RCBC-FM RF series of combine bandpass filters.

The RCPU is a quick-release patch panel with solid connections and low insertion loss, according to the company. A positive lock mechanism enables redirections of RF signal paths. It is suitable for patching RF feeds to emergency antenna, alternate main/auxiliary transmitters, filter bypass, master station combiner reroutes and test point insertions.

The RCPU requires no tools to make patches, and comes in several sizes with an optional signal-flow indicator panel, dual-line power splitter or power measuring VSWR.

The JMPC-HD antenna is suitable for medium-power FM stations for separate or interleaved broadcasting. Rated at 10 kW maximum input, each bay consists of a Penetrator-style radiating element with a 1-5/8-inch shunt feed line.

The RCBC-FM RF system series of combine bandpass filters use copper center conductors inside 4 inch aluminum cavities to ensure low passband loss.

Info: *www.jampro.com.*

Orban 9300 Delivers 'Fatigue-Free' Audio

Orban featured its digital 9300 Optimod-AM audio processor, which it says helps broadcasters achieve the highest possible audio quality in monophonic AM shortwave, medium-wave and long-wave broadcasts.

The Optimod-AM delivers loud, clean FM-

like audio with an open, fatigue-free quality that "attracts listeners and holds them," according to Orban. Processing is performed by mathematical calculations within Motorola DSP56367 digital signal processing chips, which the company says gives it stability over time and temperature that is unmatched by analog processors.

The Optimod-AM descends from the 9100 and 9200 Optimod-AM audio processors.

The company also exhibited the new Version 2 of Optimod-FM/HD 8500; it said improvements exploit unused DSP power in the 8500. New features include a smoother-sounding AGC plus independently controllable equalizer, high-frequency enhancer and multiband compression signal paths for the FM analog and digital radio processing chains.

"These improvements add to the 8500's existing dual signal paths for analog and digital limiting and output. This dramatically improves the 8500's versatility by allowing users to fine-tune the analog and digital processing chains independently," the manufacturer said, providing flexibility in adjusting the HD processing path to achieve goals such as minimizing audible artifacts in LBR codecs or making the digital channel sound bigger or more dramatic when an HD Radio receiver cross-fades between analog and digital.

Info: *www.orban.com.*

Control Solutions

Model RFC-1/B Remote Facilites Controller
- control transmiter from any telephone
- 8-64 channels of telemetry and control
- programmable control by date and time
- optional printer and modem adapters
- programmable telemetry alarms
- integrated rack panel

Model RAK-1 Intelligent Rack Adapter
- parallel printer interface
- internal modem for data transfer
- front panel status indicators
- battery backed power supply
- rack mountable chassis
- accessory package for RFC-1/B

Sine Systems, INC
615.228.3500
more information: www.sinesystems.com

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ERI MacXLine Nixes Burnout, Bullet Replacement

ERI highlighted its thermal expansion-compensating MacXLine rigid line with bellows, shown, as well as its Rototiller series of FM antennas.

The company says the solution to eliminating sliding-contact wear is to eliminate the sliding. Expansion of the MacXLine inner connector is taken up with a flexible bellows, once put into service. Burnout and bullet replacement are eliminated, according to the company.

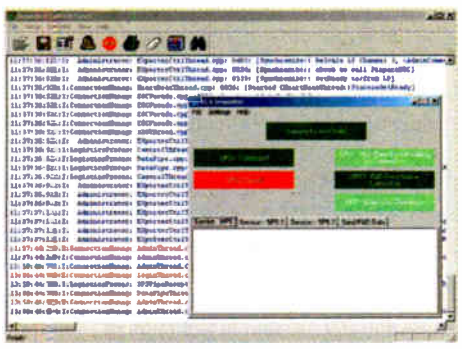
MacXLine is manufactured from high-conductivity copper tubing, outer conductors and PTFE dielectric disk insulators for mechanical alignment. Each section comes with a bullet/bellows assembly, stainless steel flange hardware and pressure-sealing gasket. Sizes range from 1-1/8 inch, 50 ohm to 8-3/16 inch, 75 ohm.

ERI says its Rototiller FM antennas offer an internally fed, fully pressurized system with welded feed connections, rugged brass material and TIG welding. The antenna's configuration and the large diameter of the radiating elements contribute to its bandwidth capabilities, inhibit corona discharge and have a high immunity to weather-induced VSWR.

Info: *www.eriinc.com.*

RCS HD Importer: Tag, Bag Your Favorite Tunes

RCS showed its RCS HD Importer, which supports the recently launched HD Radio application of iTunes tagging. Tagging allows listeners to select songs on HD Radio for later review and purchase on Apple iTunes.



The RCS HD Importer enables multicasting and datacasting. As a standalone module, it works with automation systems and integrates with NexGen.

"iTunes tagging takes music discovery on the radio to the next level. When a song plays on your HD Radio that you like, a simple push of a button will tag it and later give you the chance to preview, purchase and enjoy it on your iPod after purchase," said Greg Joswiak of Apple.

The Importer Control Panel is shown.

Info: *www.rcsworks.com.*

SAS Adds Show Control, Shared Auto Mix-Minus to Rubicon

Sierra Automated Systems exhibited its Rubicon connected digital network, offering enhancements such as show control and shared automatic mix-minus features.

Show control saves and recalls console settings including source select for each module, bus assignments, pan/balance and send level.

The shared automatic mix-minus feature allows a pool of mix-minus devices such as

ISDNs, codecs or four-way lines, to be shared by any console in the system. If a console is using a shared mix-minus device and another console accesses that device, it will get the message "ISDN 1 in use by Studio B"; it can access the incoming audio, but not create a mix-minus.

If a device is not in use and a console accesses that device, it automatically creates a mix-minus to the device, typically a mix-minus of Program 1 when the module is on, and a mix-minus of "off-line" when the module is off.

Additional added Rubicon features include remote source select, which allows a pushbutton panel located anywhere in the system to change the selected source on a console module.

The ICM32 control center for intercom, monitoring, IFB and talkback also was on display.

Info: *www.sasaudio.com.*

Digital Endec Supports Common Alert Protocol

Sage Alerting Systems developed the Sage Endec in response to 1996 FCC EAS rules and now offers the Digital Endec, which supports the required Common Alert Protocol (CAP), text to voice and attachment to any network or the Internet. The company demonstrated the Digital Endec at the show.

The FCC recently released a Report and Order specifying new EAS requirements that radio and TV stations must follow. Supporters of the changes say the rules eliminate weak links in the EAS system, and emphasize multilingual capability and a new requirement that governors must be given direct access to the airwaves.

The Digital Endec makes it easier to securely monitor and program the unit remotely, as well as use network printers to create logs. It works with analog and HD Radio stations and analog and HDTV stations, as well as in state and local command centers. The unit also interfaces with cable TV head ends.

Info: *www.sagealertingsystems.com.*

Cool Stuff: Daptor Three

JK Audio's New Bluetooth® Enabled Wireless Audio Interface.
You'll Be Smiling, Too.

At NAB 2007, JK Audio introduced Daptor Three, a simple, professional audio interface using Bluetooth® Wireless Technology. We knew we were onto something, but weren't really prepared for the exceptionally enthusiastic response we received!

Daptor Three allows balanced and unbalanced mono connections to your cell phone and connects like any other Bluetooth® Wireless Technology enabled headset. Simply press and hold the recessed button on Daptor Three to initiate pairing mode. If a connection to your cell phone is not available, it will connect to any other product, such as a laptop, that allows a Bluetooth® wireless connection. This wireless headphone mode offers a full audio bandwidth stereo connection. Simple and exceptionally cool. Now, if you want to go ga-ga, we understand completely...

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www.jkaudio.com

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OMT Adds to iMediaTouch v3, Demos Stream on Fiber

OMT gave attendees a first look at iMediaTouch version 3, which adds a split-screen on-air workstation, voicetracking and production and optional cart style display.

Highlights include an on-air recorder for phone bits, and long-file restore for satellite feeds and time-delayed recorded shows.

Additionally, the company demonstrated its Stream on Fiber streaming solution; and WebShout software, which generates classified ads for radio using a station's Web site. Non-traditional ad income is generated using "Shout Outs." Stations can earn profits of more than $30,000 annually from un-serviced local advertisers within the community, according to OMT. Shown: iMediaTouch On-Air Backsell.

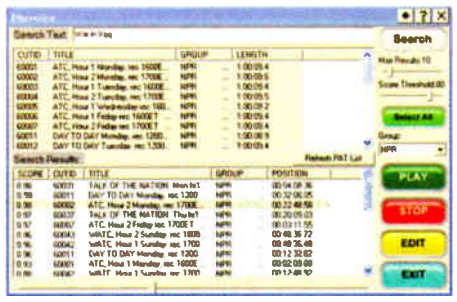
Info: *www.imediatouch.com.*

Phonetica2 Eases Search for Spoken Content

ENCO Systems released Phonetica2, a phonetic-based search system for digital audio targeted to the broadcast industry. It is available as a module in ENCO's DAD Digital Audio Delivery system.

The module allows users to search through a library of audio files containing spoken material and find specific words or phrases by typing them.

President Gene Novacek said the system lets broadcasters search libraries of news actualities or programs to locate material that would otherwise take hours or days to find. The system is suitable for news, talk and sports radio formats or any broadcaster who archives large amounts of audio, he said.



The user types the words into a search field; a list of audio cuts where the words appear is displayed. The user can press play to hear the audio, or click edit to work on the file.

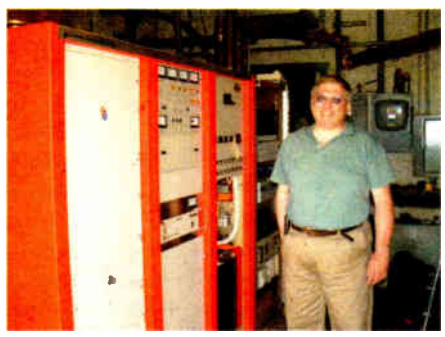
The company also showed the latest version of its DAD digital audio automation and playout system, and says it has made significant enhancements to its fourth-generation live playback user interface, AirPlay.

Additionally, the company displayed NewsBoss, a newsroom management system; and demonstrated PADapult, its PAD/PSD solution for HD Radio, RBDS and Web streaming data.

Info: *www.enco.com.*

Continental Notes 816HD Sales

Continental Electronics noted recent installations of its 816HD Digital HD transmitter.



WESC(FM) in Greenville, S.C., replaced an 816R2-B 21.5 kW unit and is broadcasting in digital from its site on Caesar's Head Peak; the station plans an HD2 channel as well. Jim Graham is chief engineer.

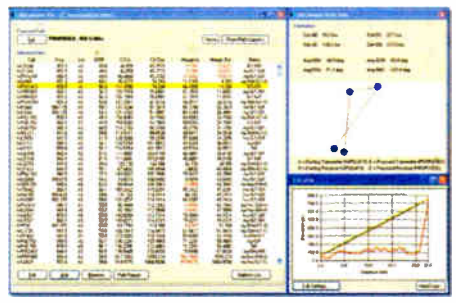
Separately, WUBT(FM) in Nashville added an 816HD to replace an 816R3-B 25 kW unit. It is airing HD Radio including an HD2 channel. Jeff Batten is chief and is shown.

Both stations are owned by Clear Channel.

Info: *www.contelec.com.*

Analyze BAS Band Hash With Microwave Pro

V-Soft showed Microwave Pro, a software program that allows the user to analyze interference caused and received by a proposed microwave link in the BAS band. It uses the FCC's ULS database as its source for existing microwave path data.



Microwave Pro can be used to search the ULS database, generate path profile graphs, create link budgets and compile address lists for PCN purposes. It performs frequency searches to find available frequencies given path endpoints and center of radiation heights. The program reports C/I ratios calculated using a terrain-based path loss and antenna discrimination pattern data, which can be loaded from a database of common patterns.

Info: *www.v-soft.com.*

BIAfn Signs DayWeather To ActiveAccess Desktop

BIA Information Network said DayWeather, a weather forecaster to the western United States, launched BIA's ActiveAccess Desktop application.

The private-label application offers local temperature, severe weather alerts and emergency warnings directly to individual PCs and laptops. It is available as a downloadable app from the DayWeather Web site and will send customized alerts and text crawls about report road detours, weather conditions and lodge closures to area skiers.

BIAfn promotes the product as a way for stations to help develop TSL and NTR via Internet branding.

Info: *www.activeaccess.com.*

WhiteBlox, Abacast Present Combined Platform

WhiteBlox exhibited with streaming provider Abacast. The companies showcased the integration of their solutions.

WhiteBlox's "Make Your Audio Visual" platform allows radio stations to broadcast audio and video of live and on-demand programming over the Internet, such as favorite shows, celebrity guests, behind-the-scenes action and on-location events.

Viewers can interact with one another and show hosts in real time using chat features, polls and surveys. When paired with Abacast's hybrid Peer-to-Peer video streaming technology, which WhiteBlox says provides a quality picture at a reduced price, the platform promises stations a cost-effective way to reach the audience.

Stations can monetize the solution by inviting on-air advertisers to be online sponsors in the media player.

Info: *www.whiteblox.com.*

MyPlay MPE Delivers New Music Straight to PDs

Destiny Media Technologies introduced MyPlay MPE, a service for independent record labels and artists that delivers releases over the Internet to radio station program directors, music directors and other users.

The self-serve automated system lets users post songs for consideration for airplay at a cost less than that of producing and shipping physical CDs, the company said.

Dean Ernst, vice president of MPE Operations, said as the company's Play MPE system grew, there was a need for independent labels to distribute tracks in the same fashion as the major labels.

"My Play MPE is an affordable distribution service that enables indie labels and artists to directly reach key decision-makers at radio stations throughout North America on a track-by-track basis, while taking advantage of the benefits of Play MPE," he stated.

Info: *www.myplaympe.com.*

GSS: 'Turn on That Chip'

Global Security Systems promoted its Alert FM digital alert and messaging system and urged the cellular phone industry to activate FM chips in its products.

© NAB

"Cell phone subscribers are unaware that they are only an FM chip away from having the ability to receive real-time hazard and alert information — including NOAA weather, Amber Alerts and other local notifications," it stated after the convention.

"More than 230 million Americans ... have a unique opportunity to receive alerts with the activation of a standard FM chip that exists in most handsets provided by a majority of wireless carriers," it said in a statement.

The company says its Alert FM can work in concert with wireless carriers to safeguard communities and enhance national EAS.

Info: *www.gssnet.us.*

MAC2 Units Speak Radio's Language

Davicom promoted its products that remotely monitor and control transmitter sites and unattended studios.

Photo by Jim Peck

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James Stagnitto

James Stagnitto was named director of engineering at WNYC (AM-FM). He replaces Steve Shultis, who was promoted to chief technology officer.

Mike Pluta was promoted to vice president of engineering and operations by NRC Broadcasting in Colorado. Pluta has been with NRC since 2002; he previously served as director of engineering and operations.

Rolf Taylor

Dan McColly was named operations manager, radio and television, for Boise's Journal Broadcast Group properties, adding KIVI(TV) and KSAW(LP) to his responsibilities. McColly had served as the operations manager for the six Journal Broadcast Group radio stations in Boise since 1995.

APT appointed **Rolf Taylor** to application support engineer for North America. He previously spent 12 years with Telos Systems, where he worked in various roles including customer support engineer, customer support manager, technical writer and product manager.

Kaushik Lodh

Broadcast industry veteran **Martyn Gregory** was appointed vice president, with overall responsibility for **Shively Labs** operations. He joined the company from Crown Castle International Corp. Mobile Media where he was vice president-service delivery. Prior to that he held positions with Richland Towers. ... **Kaushik Lodh** was appointed director of engineering for Shively. Lodh is a graduate of the University of Mumbai in India and holds a Master of Electrical Engineering degree from Syracuse University. He has more than 10 years experience in RF and microwave engineering. ... **David Allen**, director of broadcast sales, was promoted to vice president and chief operating officer of Howell Laboratories Inc., of which Shively Labs is a division. ...

Photo by Jim Peck

Bob Surette

Bob Surette, Shively's longtime manager of RF engineering, was promoted to director of sales engineering.

Meridian Design Associates, Architects, P.C. promoted **William Hallisky** and **Luis Roges** each to the position of vice president. Hallisky was previously a senior associate, while Roges was an associate.

MAC2 units include secure, 128-bit encrypted IP communications (LAN, WAN, Internet) and can accommodate two modems (one as a primary link using landline, and a backup using GSM, for example). Also, up to four users can connect simultaneously to the units. Units have 16 alarm-call lists for time-based or event-based alarms, and they are DST-2007 read.

MAC2 units are bilingual (one ASCII and one Unicode character set) and support two languages (English/Spanish, for example) for screen displays as well as for the voice response system, thus allowing each user to select the language of choice.

Each unit has 128 timers (to program AM day/night pattern changes, set up multiple alarm-call lists for day/night work shifts or vacations, etc.), 128 virtual logic gates and 16 mathematical functions (to program more conditional actions and complex logic operations) as well as up to 32 physical relays included in the chassis.

Clients include the CBC in Canada, the BBC and Merlin communications in the U.K., and Univision and public broadcast groups in the United States.

Shown, Rusty Burchfield of American General Media visits with John Ahern.

Info: *www.davicom.com.*

LEA Dyna System 30 Protects Critical Equipment

The LEA Dyna System 30 is a series-connected facility protector that provides protection of mission-critical equipment.

Photo by Jim Peck

It is a hybrid modular suppressor that combines fast-acting silicon avalanche diodes, MOVs and an LC filter made up of a 100 uH triax inductor and capacitors. The company said this series-connected unit is designed to provide the highest level of protection with low-pass filter technology available. The company says the product has more than 400 users.

The design is used in 300 amp services through 5,000 amps. Shown: Jason Koshy in the LEA booth.

Info: *www.leainternational.com.*

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TECH TIPS

LP Gas Generators for Standby Power

by Paul Kaminski

The same liquified petroleum gas that cooks a steak in the back yard might save your bacon when powering your plant's standby generator.

Liquified petroleum, also known as LP gas, or propane, is a clean-burning fuel that can power a standby power generator. You may be familiar with smaller tanks used with backyard barbecue gas grills. The cylinders or tanks used to power standby applications are much larger. Both large and small LP gas cylinders work on the same principle: the gas comes from the vaporization of the LP gas in the cylinder.

"LP gas vaporizes around 32 degrees Fahrenheit," said Michael Ketchem of Superior Commercial Services in Alva, Fla.

"The vapor is what powers the grill or the engine on a generator set." His company installs LP gas services and equipment in the southern part of that state.

Convenience

While most standby generators are powered by diesel fuel, many are powered by natural gas, the rest by LP.

LP gas has some advantages. It has a long shelf life, it is a clean burning fuel, and it is easily stored in small or large tanks.

Even in a worst case, an LP gas generator can run for a little time on one of the backyard-sized cylinders, which could be available during a wide electrical outage, where fuels that may have to be pumped electrically (fuel oil and diesel, for example) cannot be pumped. If an LP gas cylinder is ruptured, the gas is flammable; but unlike diesel, it will vaporize and not contaminate the ground around it.

LP gas has a most distinctive odor that helps users to detect leaks.

There are also limitations to using LP gas. The cylinder (of whatever size) is a pressurized cylinder of flammable gas. The fuel system is somewhat more complicated than one used on a diesel generator set, which results in a higher installation cost. The tanks are not aesthetically pleasing, and may present an unattractive sight unless buried.

A gas generator at Clear Channel in Binghamton, N.Y.

The size of the tank dictates the amount of run time. It also can prevent against freezeups. If the tank is too small for the application, the LP gas won't boil as quickly and release gas at the rate necessary to power the equipment connected to the tank. You can see this when the outside of the tank shows frozen condensation. The tank temperature affects the process as well.

Daniel "Bud" Larsen of Cummins Power Generation Business Development in Temecula, Calif., says the choice of fuel to power a standby generator "comes down to what kind of fuel is convenient for the customer. Propane generators, typically under 100 kilowatts, can be 30 to 40 percent less expensive to purchase" than diesel generators. "The price usually drives choices."

Larsen's company also sells diesel and natural gas-powered generators.

Auto fill

Jon Scaptura is the engineering manager for the six-station Clear Channel Radio cluster of stations in the Binghamton, N.Y., radio market; he has an LP gas standby generator, a reconditioned Onan powered by a carbureted V8 engine, outside his studio complex.

"We have all the studios, the rack room equipment and the studio air conditioning — everything needed to keep us on the air — connected to our generator." He has a 400-pound tank to power the unit, which gets unexpected exercise thanks to its location.

"We exercise our generator every week without a load, but this year we've had the generator kick on at least two times this year. Our power comes out of a (utility) substation, and we are at the end of a branch line."

Scaptura says one of the biggest advantages he found with an LP gas generator set is "not having to deal with adding anti-bacterial additives, stale fuel or water in the tank," which can plague users of diesel.

"Where we're located, you have to keep a circulator going to keep the engine coolant at the correct temperature so the unit will fire right up even when it gets cold." The unit is maintained under a maintenance contract and the fuel tank is on an automatic fill routine from the local LP gas supplier.

Know the rules

Ketchem says working on a LP gas installation isn't as easy as hooking a full LP gas cylinder to your barbecue grill.

"In Florida, people who work on LP gas systems and equipment must be licensed. It is a felony to do that without a license." His advice for planners: "Do your research and crunch the numbers. Prior planning prevents poor performance."

Both Scaptura and Larsen stress the importance of a regular test or exercising of a standby generator as well as proper maintenance.

"Don't let this become a 'set it and forget it' operation. The unit needs regular maintenance either from a local representative or from the factory," said Scaptura.

Larsen says that in Cummins' experience, the most common type of failure of a standby generator set is a failure to start and run because of a low battery charge.

Is LP gas the answer for your facility's standby power questions? It depends on location, availability and cost.

If your plant is near a neighborhood where diesel fumes would cause bad relations, it might be your best compromise. If you have two or more suppliers of LP gas who can compete for your business (perhaps one can be persuaded to trade gas for air time) and you can enter into an auto fill agreement, this is a consideration.

What often will drive this choice is the cost of a new or reconditioned unit with factory or local maintenance included.

Paul Kaminski is the news director for the Motor Sports Radio Network, contributor for CBS News Radio, and a RW contributor since 1997. His e-mail is motorsportsradio@ msrpk.com.

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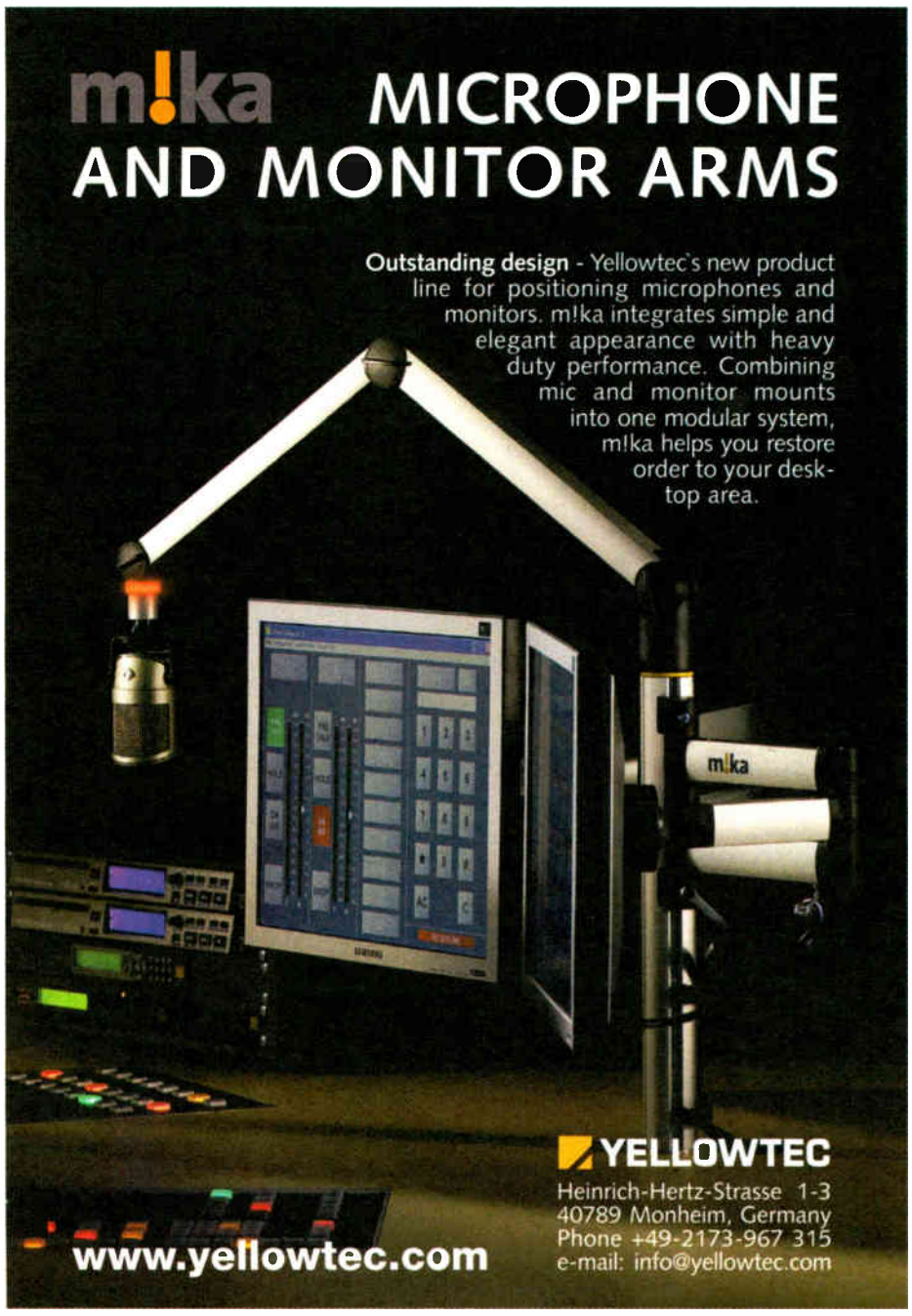
Scaptura says one of the biggest advantages is 'not having to deal with adding anti-bacterial additives, stale fuel or water in the tank.'



World Radio History

MARKET PLACE

Ecreso Adds Liquid-Cooled FM Transmitter

Ecreso, an Audemat-Aztec company, has a new 2 x 5 kW wideband, frequency agile FM transmitter.

The company said it uses a unique liquid-cooled design that allows a 2 x 5kW dual-drive liquid transmitter to occupy a 42 RU cabinet.

"More common in the TV industry, liquid-cooled technology has been adapted to the Ecreso FM transmitters," the company said. It said the units are suitable for broadcasters seeking efficient high-power FM transmitters that are cost effective and that feature long life and space savings and that are less damaging to the environment. It said the design decreases electrical costs of air conditioning use.

Audemat-Aztec recently purchased Ecreso, the only manufacturer of FM transmitters in France.

For information visit www.ecreso.com *or call the company in Florida at (305) 249 3110.*

Harris, National City Media Offer Financing

Harris Finance is a new offering from Harris Corp., which is working with National City Media Finance.

The manufacturer said the program will benefit its broadcast customers and channel partners. The various financing program options are backed by National City.

The programs are available for radio, television, cable, telecom and IPTV buyers and can help them amortize their costs over time. The offerings are available to customers in the United States and Canada.

Call (513) 459-3400 or visit www.broadcast.harris.com.

TH 594 Is High-Power Tetrode for IBOC

Thales has introduced its TH 594 water-cooled tetrode, designed for the high-power digital FM radio broadcast market.

The company said it is especially suited to the new in-band on-channel technology and other high-definition radio broadcasting applications. The product joins the TH 343 and TH 391 air-cooled tetrodes in the company's FM product line.

The TH 594 tetrode has 40 kW anode dissipation and delivers 35 kW of continuous wave power, or 60 kW peak power. The manufacturer said this makes the TH 594 one of the most powerful FM radio broadcast tetrodes on the market.

Features include pyrolytic graphite grids for mechanical stability, ensuring high-power performance, and a water-cooled anode (hypervapotron technology) for a high power dissipation rating.

The common grid cavity is compact and does not require adjustments to the neutralization circuit. "Used with the TH 594 tetrode, this cavity enables peak power of 60 kW with a gain of 15.5 dB. The TH 594 tetrode offers the high linearity, long life and ease of installation and operation expected by users," it stated.

Call (973) 812-9000 or visit www.thalesgroup.com/electrondevices.

GSS Says Alert FM Is CAP-Ready

Global Security Systems said its Alert FM digital alert and messaging system is in compliance with the new Report and Order from the FCC requiring EAS participants to accept messages using the open, non-proprietary Common Alerting Protocol.

The rule is designed to strengthen EAS by promoting development of digital next-generation technologies and delivery systems.

"This decision to require EAS participants to accept CAP messages will help ensure that a greater array of warning channels is available to government authorities and first responders, providing a better chance to deliver more effective, consistent and timely warnings to the general public," stated Matthew Straeb, executive vice president of GSS, which says Alert FM is an example of the next generation of systems that can put these improvements to use.

Visit www.alertfm.com.

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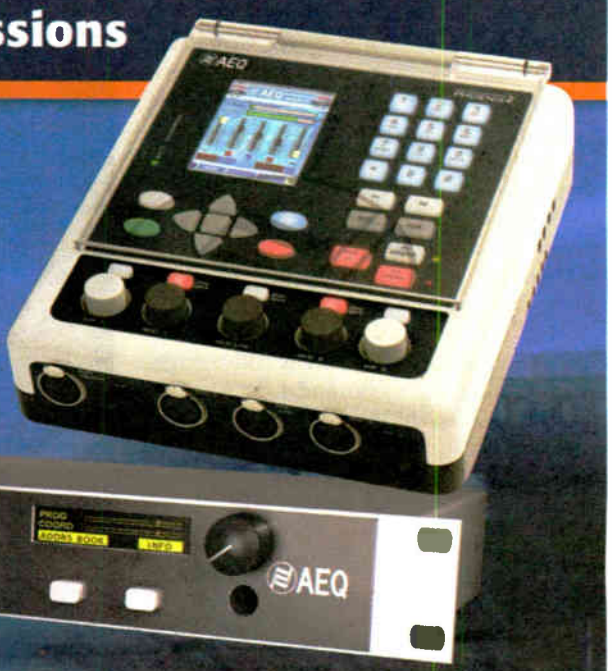

It offers as a standard feature an IP connection plus two slots for communication boards to operate simultaneously.

With the most advanced protocols allowing communication with other equipment manufactures that adhere to compatibility standards.

Design to be compatible with current and future equipment, it offers a wide array of encoding modes in mono and stereo.

Phoenix Mobile
- Powerful battery LITHIUM ION POLYMER with longer battery cycle.
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- Designed for tabletop or on-the-go shoulder strap carrying case.
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Radio World | Resource for Business, Programming & Sales | November 7, 2007

Jacobs Pulls Back Curtains on 'Bedroom'

Those Teens Who Thought 'Radio Sucks' Are Turning Into Adults. Now What?

by Scott Fybush

It sounds like something vaguely kinky to be sure — a bunch of guys in their 50s and 60s wondering what's happening in the bedrooms of people in their late teens and 20s.

But Jacobs Media founder Fred Jacobs assured a crowd at the NAB Radio Show in Charlotte that the intentions of "The Bedroom Project" were completely above-board: an attempt by his firm, with strong support from Arbitron, to learn much more, in detail, about how people aged 17–28 really relate to the many technology and media options at their disposal.

"Arbitron had the desire to dig deeper, to learn more about this demographic, which we all know are difficult to research," Jacobs said.

But getting into the heads of his research subjects — 31 men and women from Columbus, Ohio and Los Angeles — required more than the usual focus-group studies.

Instead, Jacobs turned to a growing field called ethnographic research, in which researchers spend extended periods of time with their subjects, interacting with them in their homes or other intimate settings.

"Ethnographic research is done by the Procter and Gambles of the world. This is the first time we've seen this in radio," said Steve Goldstein, executive vice president of Saga Communications, as he introduced Jacobs' first presentation of the "Bedroom Project."

"One of the keys to ethnography is making subjects comfortable," Jacobs said. To accomplish that, Jacobs and Arbitron couldn't use their usual — older — researchers. Instead, "The Bedroom Project" hired and trained a crew of interviewers in the same age group as their research subjects, sending them out to conduct two-hour videotaped interviews in the subjects' homes and vehicles.

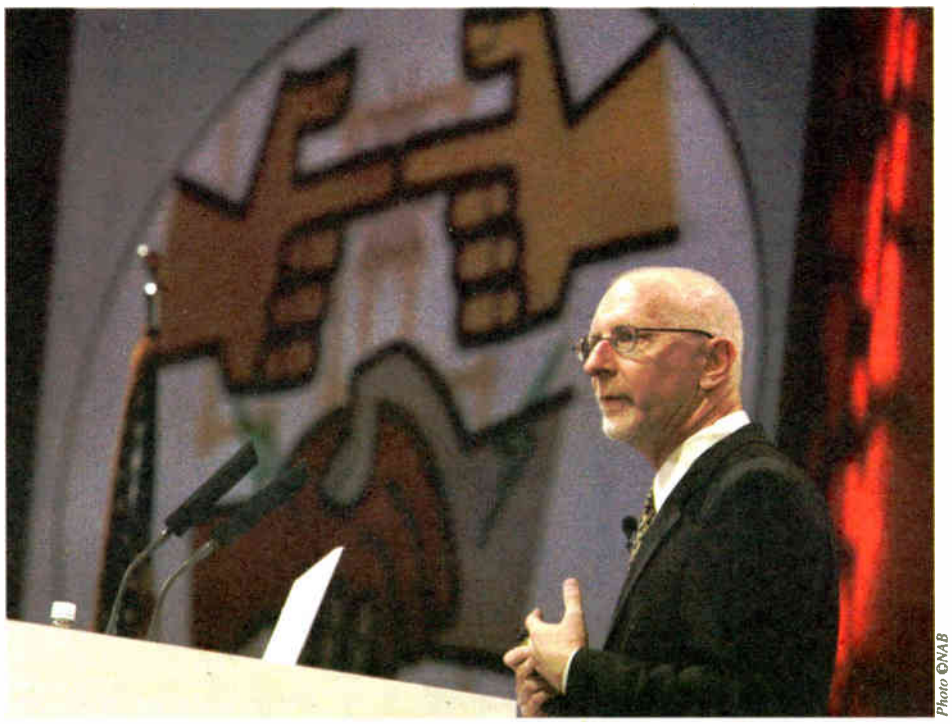

Photo ©NAB

Fred Jacobs speaks about how young Americans use, consume and interact with technology and media.

Immersed

In unveiling "The Bedroom Project," Jacobs recalled another presentation he'd given at an NAB Radio Show six years earlier, a panel discussion called "Your 14-Year-Old Thinks Radio Sucks."

"If you think about it, our Bedroom Project respondents now are those 14 year olds, six years later," Jacobs said.

Before even asking them about radio itself, Jacobs drew broader conclusions about the ways in which his survey subjects relate to today's high-tech world.

"They are immersed in media and technology," he said. "They frequently multitask."

Jacobs identified three factors that "Bedroomers," as he dubbed them, seek out when choosing technology to adopt: control, variety and convenience, or "CVC."

"Media that have those attributes have the most value," he said.

For the Bedroomers, one device more than any other combines all three of those attributes — and it's not the radio.

"The mobile phone, to the Bedroomers, is the Swiss Army Knife of gadgets," said Jacobs. He says there's a clear generational divide between the way the Bedroomers' generation uses their phones and the way older cell phone owners use theirs.

"Many of them tell us that they text as much as, if not more than, they talk," he said. "Texting on mobile phones may be usurping instant-messaging online."

The old-fashioned landline phone, by contrast, is quite literally yesterday's technology for many Bedroomers. Even older participants in the project, including a married couple in their later 20s, shunned the landline in favor of the ubiquitous mobile phone.

From a researcher's perspective, Jacobs says that's bad news, making it harder to track down people under 30 to take part in ratings and other surveys.

'E-mail is for old people'

The news gets even worse — or at least more disorienting — for radio people who thought they were pretty hip just by virtue of e-mailing (perhaps even on a BlackBerry) on a regular basis.

To the Bedroomers, Jacobs says, e-mail and Web browsing isn't for recreation. It's just the way they conduct whatever business they need to conduct.

"Many of them go online for more business or utilitarian functions," such as paying bills or hunting for jobs, Jacobs said. As for the social function e-mail served a few years ago, it's been usurped not only by text messaging but social networking sites such as Facebook.

That perception that, yes, "e-mail is for old people" reflects on Webcasting as well. Jacobs says few of the Bedroomers spent much time with streaming audio on the Web, a reflection of what he says is its lack of those critical "CVC" attributes.

Ironically, even as 20-year-old e-mail gets tagged with the "fogy" perception, a medium more than three times as old is finding new life.

"A really great example of old media fighting back is television," Jacobs said.

See BEDROOM, page 33 ▶

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Bedroom

▶ Continued from page 32

Jacobs says TV retains its importance by serving as a social medium — not just as background for other activities, but as a destination.

"TV is groups," he said. "They plan their activities around shows."

The news for marketers is still mixed, though; the Bedroom Project research found that while TV shows hold Bedroomers' attention, the ads they contain are still widely ignored, thanks to digital video recorders.

"If I want to watch something live, I'll go away for 15 minutes and come back so I can skip the commercials," said one of the Bedroom participants in one of the video clips that Jacobs screened as part of the presentation.

Now for the really bad news

With an audience of radio owners and programmers primed for the worst, Jacobs turned to the Bedroom Project's findings on radio itself, beginning with satellite radio.

"They all know about it, a few have it, some aspire to become subscribers," he said. "But the majority have yet to pull the trigger."

As for good old terrestrial radio, "Often times we really had to probe to generate a discussion about radio," Jacobs said of the Bedroom interviews.

Only when the chats moved from inside the participants' homes out to their cars did the discussion perk up, and not always in the way radio insiders might have anticipated.

In an era of voice-tracking and jock-free "Jack FM" and its siblings, Jacobs said the topic that got Bedroomers talking was talk and personality.

"Making that connection with listeners was what really stirred passions among Bedroomers," he said, with many citing favorite morning shows that they tuned in while commuting.

"Music is becoming a commodity, but personality value is real," Jacobs said.

What was missing, conspicuously, was any use of radio at all outside the car. Audience members cringed visibly as Jacobs screened a series of responses in which Bedroomers were asked whether they had radios in their homes, with answers ranging from "a broken clock radio" to "my grandma has one in her room upstairs."

"If you don't have radios in certain locations," Jacobs observed, radio essentially has ceased to compete in those venues.

But while identifying the problem is fairly easy, solving it is a bigger challenge, one Jacobs says radio needs to meet by broadening its horizons.

"Content distribution via mobile phones is imperative," he said. "It is *the* device."

Jacobs says radio stations should also be reaching out to listeners through texting, especially for active rock and CHR formats that target younger audiences.

The Bedroom Project collected more than 60 hours of video, which Jacobs says is still being edited and analyzed. Portions of the video are being made available through a new Jacobs/Arbitron Web site at *www.thebedroomstudy.com*, with additional segments to be made available in coming months.

Scott Fybush is a frequent contributor.

'Newsweek On Air' Turns 25

"Newsweek On Air" recently celebrated 25 years on the air.

The 60-minute news and public affairs program was saluted in a reception at The Washington Post Building. The program is distributed by Jones Radio Networks. It debuted in 1982 as "RKO Presents Newsweek."

The show is hosted by Newsweek contributing editor David M. Alpern, a former reporter, writer and senior editor who launched the program in 1982.

The program aims to blend print and broadcast journalism in a radio magazine covering hard news and features.

Shown from left: WTOP's Jim Farley, State Department escort/interpreter Margot Fox, WTWP's Greg Tantum and Mike Lubell, political director of The American Physical Society.

Photo by Steven C. Tuttle

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World Radio History

'Radio Diaries' Shares Personal Stories

by Ken R. Deutsch

Thembi Ngubane is a young woman in South Africa who has HIV/AIDS. New York radio producer Joe Richman gave her a tape recorder in 2005; over the course of a year, she produced a personal audio journal.

These 50 hours of tape were edited down to 23 minutes and aired as part of the series "Radio Diaries," heard on National Public Radio's "All Things Considered," among other outlets around the world.

Compelling programming through people documenting their lives. That's the kind of content "Radio Diaries" seeks.

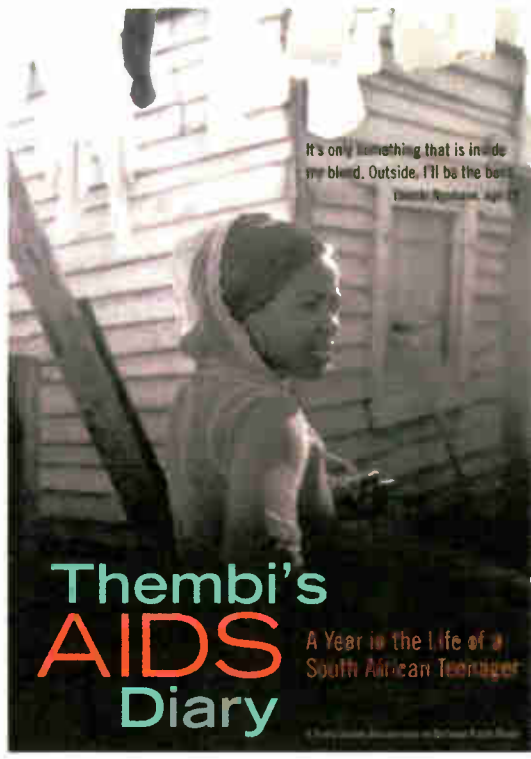
"Radio Diaries is a non-profit production company," said Richman. "After being a freelance reporter for NPR for years, I started the company in 1996 with a series called 'Teenage Diaries.' We've just expanded since then."

Joe Richman. 'We want to produce material that is evergreen and rises above the normal rhythm and sound of the news.'

Working mostly on his own with help from part-timer Anayansi Diaz-Cortes, Richman has no deadlines and no regularly scheduled air times for his spoken-word documentaries. There may be a new product every several months, depending on the amount of research required. Each segment is timed to either 13 or 23 minutes to fit NPR's segment windows.

"We don't work with a script," said Richman. "On every story we just take all the audio from interviews and archival material and put it together like a puzzle.

"There are two types of productions we do: audio diaries, in which the diarists record their own stories over a long period of time, and non-narrated stories such as historical portraits. In these, we conduct interviews, gather audio from archival sources and assemble a documentary without a scripted narration."



Thembi Ngubane in South Africa carried a tape recorder to keep an audio diary of her life with AIDS.

Rather than cranking out segments on a set schedule, Richman prefers to take his time and cover topics in-depth.

"Radio is really in need of this kind of programming," he said. "Public broadcasting has become more and more like a news service, and long-form, sound-rich work is harder to find. We want to produce material that is evergreen and rises above the normal rhythm and sound of the news."

The New York-based Richman sees a new generation of young people interested in this type of radio.

"I teach part time at Columbia School of Journalism and students come in obsessed with public radio," he said. "There aren't many places where you can tell three-dimensional stories anymore. Part of this interest in documentaries is derived from the fact that we tell real stories and give people a voice. When I'm working on these shows, I like to give my subjects the space to finish their sentences, rather than just grabbing sound bites."

"Radio Diaries" has explored the murder of Michael Farmer in New York 50 years ago; that program featured voices of an historian, a criminologist, a former

See DIARIES, page 35 ▶

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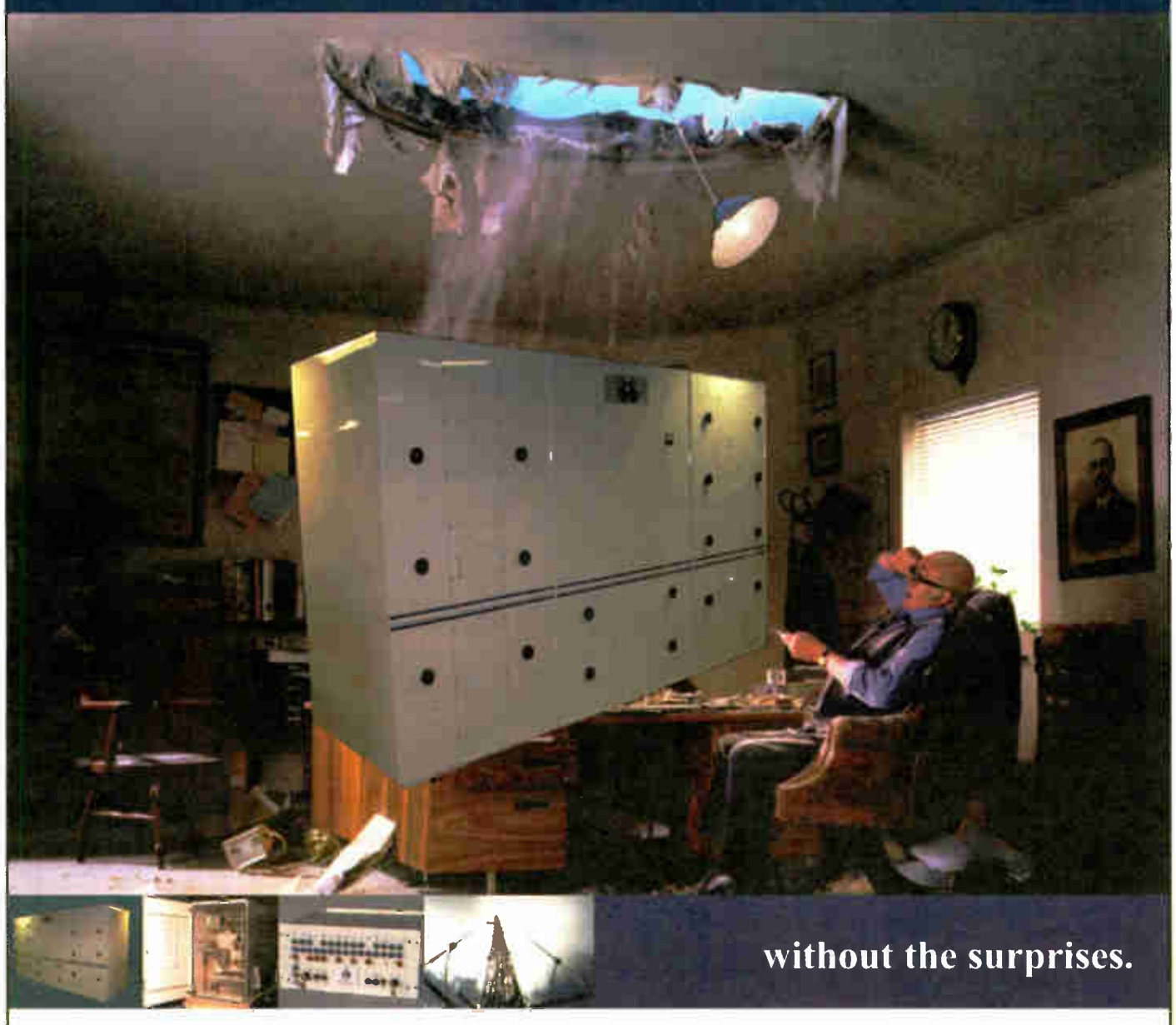

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World Radio History

Diaries

▶ Continued from page 34

gang member and the brother of Farmer. Richman also has looked back to a 1906 exhibit at the Bronx Zoo that displayed a man inside a cage, a member of the Batwas, pygmies who lived in the Belgian Congo.

This September, "The 10th Mountain" reported on experiences of the 10th Mountain Division in World War II, which led daring assaults against the German army in Italy and had one of the highest casualty rates of the war. Back home, many of the soldiers also helped create the modern ski industry in America.

Stories can be heard at *www.radiodiaries.org.*

Making radio stories human

Although cassettes have been passé in much of the broadcast world for years, Richman lets his amateur diarists use them because of ease of operation. He himself uses a DAT recorder. He also notes that in areas of the world where the power supply is unreliable, replaceable batteries are more useful than rechargeable ones.

Once Richman acquires all the needed field audio, he assembles his documentaries in Pro Tools, using plug-ins for processing. His assistant is Anayansi Diaz-Cortes, who began working with Richman as an outreach coordinator during the production of "Thembi's AIDS Diary."

"In retrospect, my interest in 'Radio Diaries' had less to do with radio as a medium and more to do with working around a great story that brought a pressing issue to the forefront in a humanized way," said Diaz-Cortes.

"I fell in love with the story-telling power of the radio documentary. After working on many podcasts and radio pieces I became fully interested in, and somewhat mystified by, the production process. So while 'Radio Diaries' will always involve outreach and audience building, my current involvement has definitely integrated the production aspects in a more meaningful way."

I fell in love with the story-telling power of the radio documentary.

— Anayansi Diaz-Cortes

Diaz-Cortes has a background in documentary film making. For her, the key is in the humanity behind the technology.

"The types of stories we tell are extremely appealing to my social justice nerve," she said. "The nature of social justice work is to get the demands and voices of those that are rarely heard from into the public sphere.

"In almost 10 years of existence, 'Radio Diaries' has been a platform from which to humanize those stories and give them life beyond piles and piles of policy paper. I feel that the stories aim to go full circle, beginning with aiming a mic in the direction of forgotten stories, then finding receptive ears for those voices, and ending with sparked dialogue, social or community impact and, in an ideal world, policy reform."

In any small company, e[illegible] wears many hats.

"Part of my job is to secure the [illegible]ing to produce the documentaries, and [illegible] run everything on a shoestring," Richman said. "Some money comes from NPR, and we get grants from the Corporation for Public Broadcasting and a few foundations. But the people who fund us have no editorial involvement and don't push any agenda. While certain organizations like to fund certain topics, they don't tell me what to say."

Richman is also his own Webmaster, with an assist from his wife Sue Johnson.

"With non-profit organizations like ours, you have to pull in favors," he said.

Ken R. Deutsch is a former broadcaster who says if he had any talent in that area he would still be doing it.

STATION SERVICES

ACN Provides Animated Videos For Station Sites

The American Comedy Network, owned by Jones Radio Networks, made its animated videos available to post on ACN affiliate station Web sites.

ACN's animated videos are visual recreations of the audio bits stations are playing on the air. The content is part of the ACN service and is available at no additional cost.

Company General Manager Joel Graham said, "Radio station Web sites should be platforms for exclusive and compelling visual content that compliments the station's audio."

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World Radio History

...ore Radio Leans on Volunteers

36 Ra...ne Needs of the Listeners Are ...ntly Considered and Filled'

...en R. Deutsch

When you visit a station Web site and the main headline is "It's Birding Season," you know you aren't in New York City.

In this case you are in Minnesota at WTIP(FM), a public station run by a handful of full-time employees and about 50 volunteers. Contract engineer Jeff Nemitz serves two radio and three television stations in addition to Cook County's two-way radio systems.

While many stations tout "a better variety of hits from the '80s and '90s" or some other format positioning, WTIP, with a 25 kW FM at 90.7 in Grand Marais and a translator, FM 91.7 on the Upper Gunflint Trail, uses few slogans. It doesn't need them because the community is well aware of what the station is doing.

This spring a fire on the Gunflint Trail burned tens of thousands of acres in the area and the station became an important outlet for news and information. Local officials were often on the air and important press conferences were broadcast live. Station personnel worked in shifts and they logged long hours helping neighbors communicate with each other.

When families were evacuated and telephone lines had been destroyed by the fire, WTIP was "must-hear" radio.

The meaning of variety

The license is held by Cook County Community Radio, conceived when a handful of people met, literally, around a kitchen table. "What started as a small crumb of an idea at a table in January of 1992 grew into a reality six years later," according to the station Web site.

The mission of the nonprofit community station: "to foster and build community connections, educate and inform the public and provide entertainment through its broadcasts." WTIP will note its 10th anniversary on April 29, 2008.

Development Director Melanie Steele talks with Robert Fenwick of Sawtooth Lumber, a local supporter of WTIP.

BarbaraJean Meyers, Kristy Johnson and Sue Gronemeyer, from left, meet with Station Manager Deb Benedict around the station's kitchen table.

When not tracking natural disasters, the station covers a lot of programming ground.

"We have two 'Calendar Shows' of community news and information," one that airs in the morning for two hours, another for an hour in the late afternoon, said former Kristy Johnson, program director and volunteer coordinator.

"But we play all different styles of music during the day including folk, Celtic, jazz and oldies." (Johnson left the station shortly before this article went to press, to pursue teaching.)

The station program guide lists some eclectic show titles: "WTIP's Women in Music," "Thirsty Boots," "Classical Music for North Shore Nights" and "Metal Maniacs." There are also shows on gardening and books.

If you can't find something that suits your taste, you're not trying. But even a community station far from the lights of the big city needs money to operate.

"We get some funding from the state and from local program underwriters, but most of our money comes from our listeners," said Johnson. "WTIP has over 600 members and anyone can join for as little as $10, or whatever they can afford."

Last year the station was accepted into the Corporation for Public Broadcasting Community Service Grant Program, which also accounts for a portion of its funding. WTIP has an annual operating budget of $236,000, up from $126,000 four years earlier, according to Development Director Melanie Steele; underwriting accounts for 38 percent of revenue, grants another 31 percent and membership most of the rest.

Listening to WTIP can be a new experience for those acclimated to commercial radio. This station is not slick or polished. In fact the people on the air sound like your neighbor Bill and your mother talking across the kitchen table. It is a reminder of what radio used to be, and what it can still be.

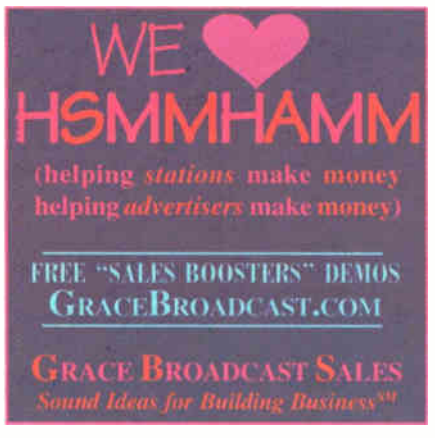
WTIP has dedicated itself to the original intent of the 1934 Communications Act: serving the public interest, necessity and convenience, its managers say. No voice-tracking here. WTIP is live all day, except when it rebroadcasts sister station KUMD(FM) from the University of Minnesota, Duluth. Overnight, a random-select CD changer entertains local night owls until the staff arrives in the morning.

"We want to increase our local programming but it is important to us to retain our integrity as we expand," said Steele. "Money is not the most important factor for us."

Many commercial broadcasters are driven by a desire for the fat bottom line, maximum return to their parent company and their shareholders. "WTIP is the opposite of that," said Steele. "We aren't here for profit; we aren't here to serve our own agenda. The needs of the listen-

See WTIP, page 39 ▶

STATION/STUDIO SERVICES



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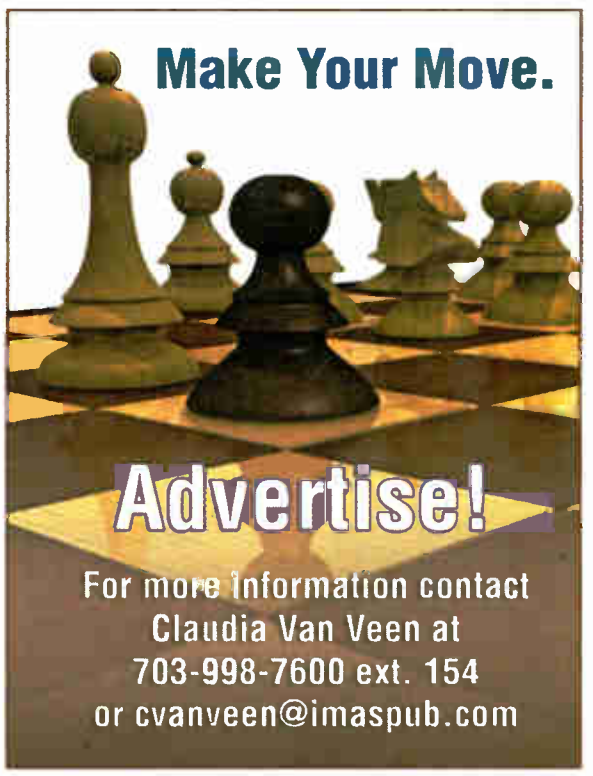

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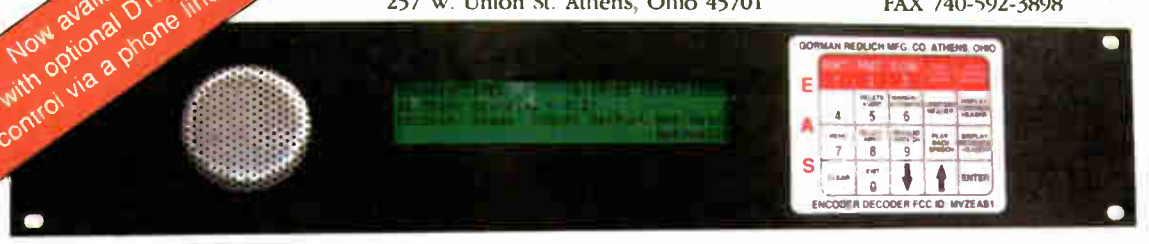

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World Radio History

WTIP

▶ Continued from page 36

ers are consistently considered and filled."

The station also is part of Independent Public Radio, the second-largest public radio network in the state of Minnesota and one of the largest of its kind in the country. It consists of 12 independently licensed and managed, "locally responsive," community-based public radio stations and covers most of the state. IPR cites a combined listening audience of about 300,000 listeners.

Former PD Kristy Johnson said volunteers typically donate 6,250 hours annually to produce quality news and entertainment. Their number has grown from eight to 52 since the station was launched.

Down-to-earth operations

How does the staff feel theirs is different from other public radio stations?

"WTIP is a community radio station, and in our case the community we serve is rural and spread out over a geographically large area," said Station Manager Deb Benedict.

"Whereas public radio stations tend to serve a specific demographic within a metropolitan area, we serve a diverse population within a rural area. We work to serve all aspects of the public, and include elements such as live local sports broadcasts and in-depth, timely coverage of local news and information."

Small stations find help wherever they can; WTIP relies heavily on its volunteers, a diverse group including a licensed psychologist and students who drop by to provide school news. In a small market, everyone is "hands-on."

"Volunteer hours are crucial to the operation of the station," said Benedict. "The staff, which has increased to five from two this year, must be flexible and pro-active."

"We have fun here, we are doing something important here and people want to be a part of that," said Johnson, the outgoing PD. "All sorts of people come in to visit us and fall in love with the station. Pretty soon they're doing a radio show."

On rare occasion the casual atmosphere of WTIP can get a host into trouble. During the big fire, Johnson was on the air interviewing someone.

"I wanted to play a particular Carlos Santana song, but I accidentally hit the button for "Smoke on the Water" (by rock group Deep Purple). That wasn't the best song to play just then."

Get a taste of the station at *www.wtip.org*.

Promo Power

by Mark Lapidus

Communicating Like It's 2008

Prior to 1996, it was difficult for most radio stations to receive mass communication from listeners. Our main points of contact were the telephone and the mail.

If a general manager or program director received more than 20 calls or letters about any one issue, it was perceived as being significant. Nobody was really sure that 20 people feeling the same way about an issue *was* significant; but when that many people called or wrote, many in management believed the reaction was noteworthy.

Now communication via e-mail, messages boards and text messaging is common and often happens in huge numbers; but we are still doing a poor job at determining what that communication means, or how we may better utilize it for our benefit.

By exploring these contact points briefly, perhaps you'll find the time to build a better communication plan for your radio station.

E-mail

Have you considered who receives the bulk of e-mail from listeners at your radio station?

If you've got a high-profile morning show, they are likely receiving more daily communication than anyone else. Do you have a way of reading the comments listeners are e-mailing them, or the responses they're receiving back from the morning show? Is it possible listeners are writing your morning show and not receiving a response at all?

If you have no access to those e-mails, you are depriving yourself of a window into the world of how very active listeners feel about your morning show.

After considering how to capture morning show e-mails, think about the rest of your on-air personalities and managers who may receive listener feedback.

It's likely your promotion department and Web department are receiving e-mails every day from listeners and that those are not being tracked in a meaningful way. By not tracking e-mails, you'll never see trends in thought about what you're broadcasting.

Each time a listener sends you a text message, they should receive an auto-response thanking them for the communication and promoting them to join your club — or perhaps listen at another time to generate more TSL.

Perhaps even more important, you are not asking those who are writing you for their views about anything else, or offering them a benefit to join your e-mail newsletter database or station listener club.

Once they write, you may respond to them without fear of spam issues. However, most legal opinions I've heard indicate that you may not just take

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World Radio History

2008

▶ Continued from page 39

these e-mail addresses and dump them into your database without consent. They must in fact sign up themselves.

By responding to their opinion or question with a real answer, you have the opportunity to insert a piece of text that prompts them to opt in to receive further communication.

You may offer them valid reasons to opt in like "You'll get breaking music news" or "You'll be able to purchase tickets to concerts before they go on sale to the general public" or "If you join our club today, you'll be eligible to win tickets to such and such event."

Develop a standard line to promote opt-ins that will be inserted in all listener e-mail communication — whether received by your on-air personalities or other staff members.

Message boards

I've witnessed station message boards begin with 20 active users and within a year explode into thousands of regular users. How? By doing as little filtering as possible.

Filters are set to keep obscenity and indecency out but permit honest expression of views. To host an open message board means that you must have an on-air staff that understands: Some people will love them while others dislike or even hate them. The greater the profile of the personality, the bigger the reaction.

The DJs either must not be concerned about the views being expressed, or perhaps choose to not read them. I know one high-profile morning show who couldn't stand the heat and demanded that the PD take down the message board after just one week. The PD refused. During the second week, other users came to the morning show's defense. By week three, the hate messages went away.

Blogs

Any air personality who has decent writing skills should consider doing a weekly or even daily blog.

This is a tremendous way for listeners to get to know the talent better in a multi-dimensional way. It's up to them whether they permit posted responses, but at the least they should accept e-mail comments, which gives you one more way to communicate with listeners.

Text messaging

Still not doing text? If your station targets 12–34, you are missing out on a lifestyle trend that only gets bigger every year.

When you begin, make sure you keep a watchful eye on what you're sending and receiving. Don't just turn this over to a DJ or promotion person and hope for the best.

It's amazing how much time people may spend planning an appearance or event for less than 50 people, but not invest time and effort into mass communication that may actually impact ratings. Text messaging is yet another way you can prompt listeners to join your database club.

Each time a listener sends you a text message, they should receive an auto-response thanking them for the communication and promoting them to join your club — or perhaps listen at another time to generate more TSL.

Finally, put someone in charge of your communication plan. Listeners are ready to tell you what they think — plus they're willing to read messages from you!

What's your plan?

Mark Lapidus is president of Lapidus Media. Contact mlapidus@cox.net.

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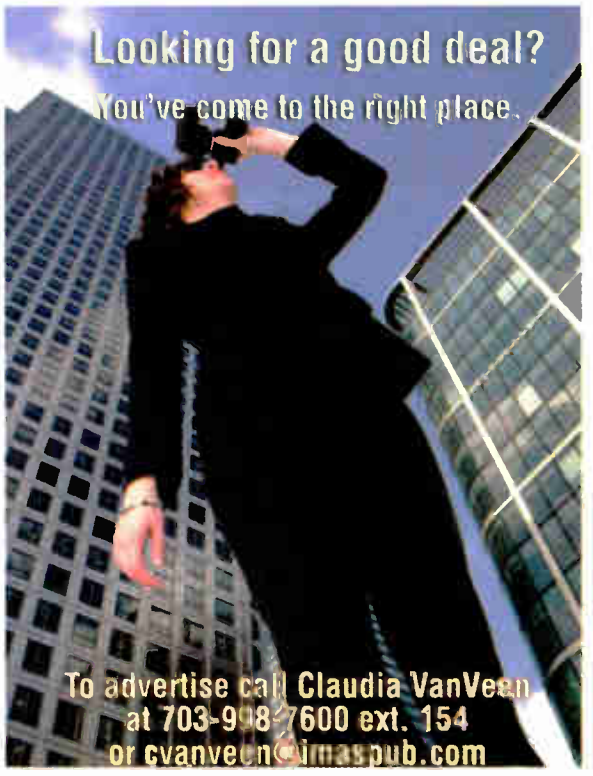

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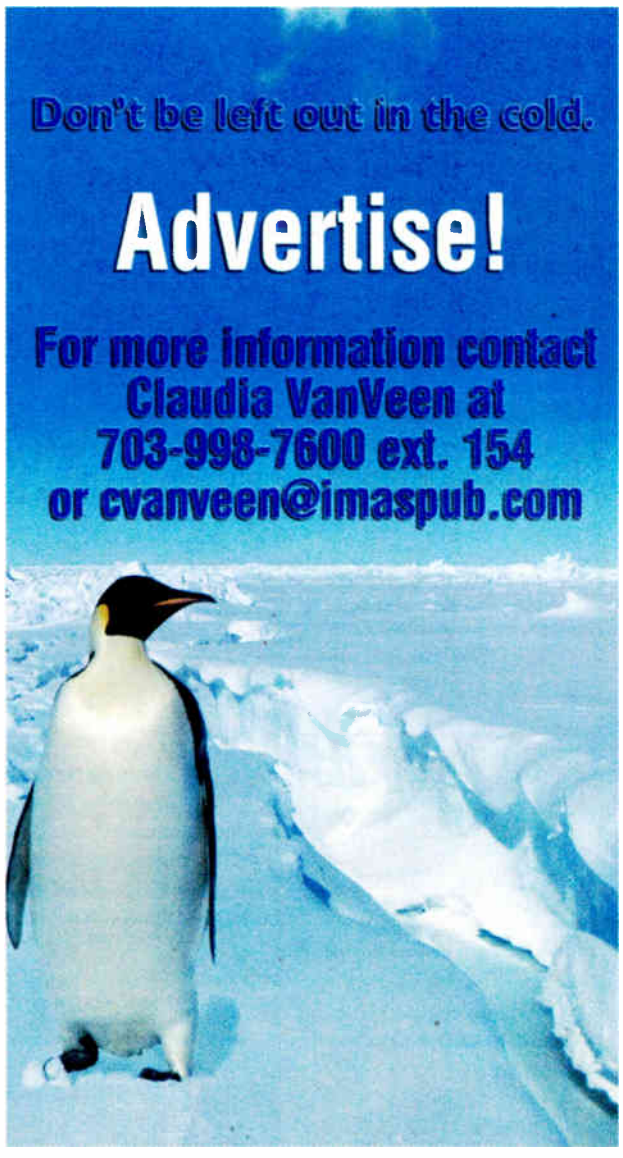

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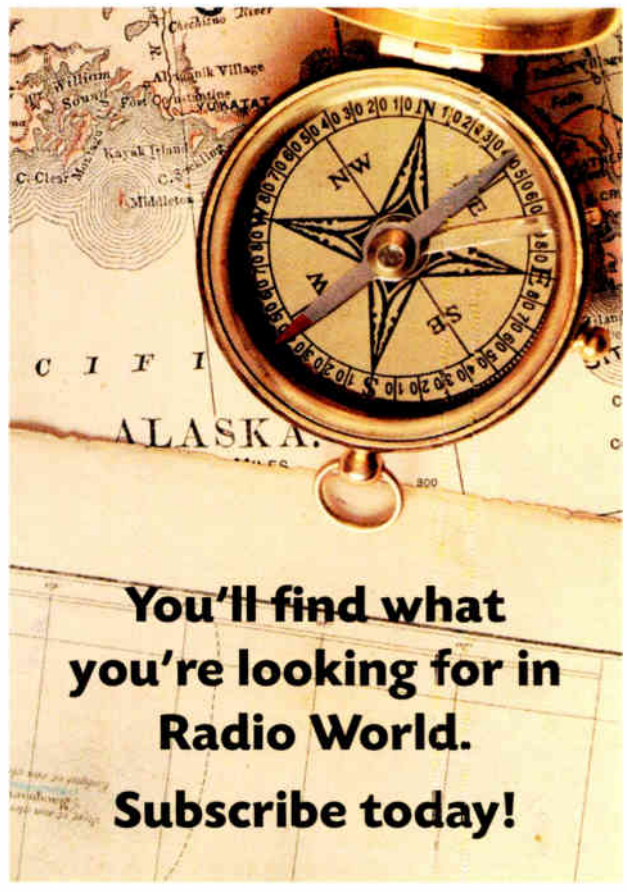

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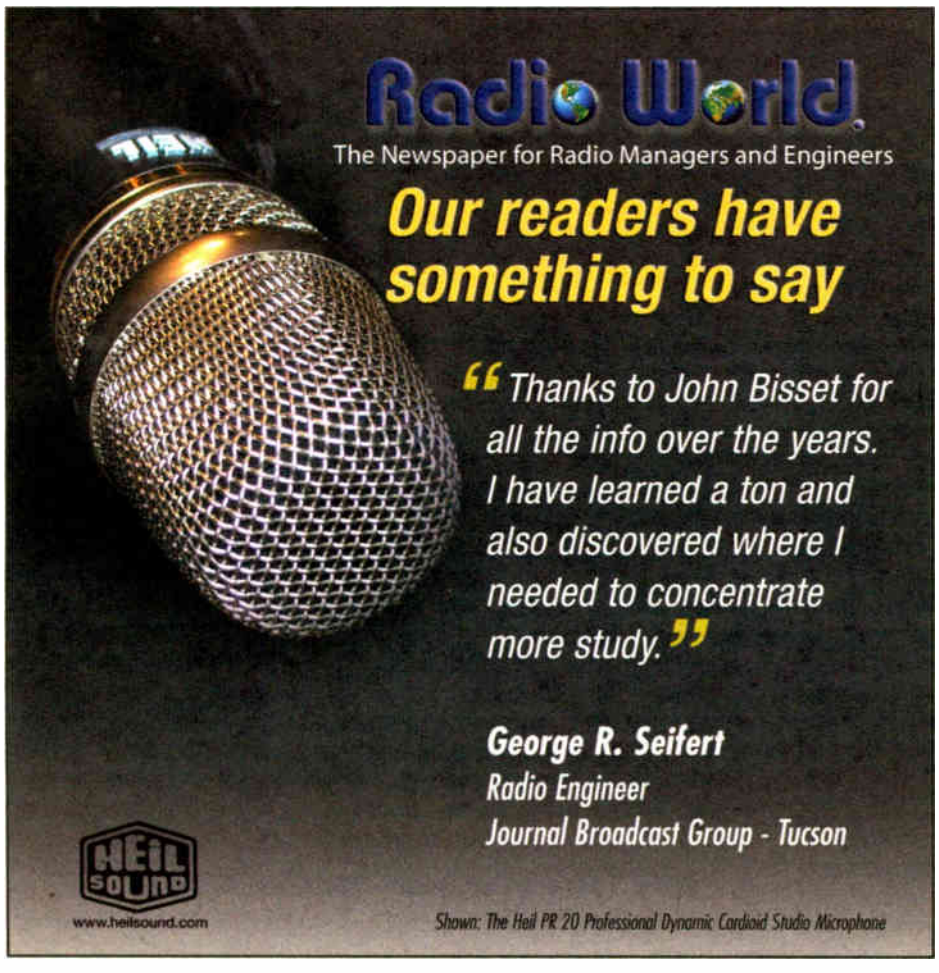

◆READER'S FORUM◆

Nighttime IBOC Interference

In any number of discussions I've had with AM IBOC promoters (equipment manufacturers and station personnel), there's a common thread that keeps surfacing when the issue of nighttime interference comes up. It goes something like this:

"You shouldn't even be listening to these distant stations. Their coverage is for their own markets. They're programming to local audiences. We don't care about the DX listener. Our salespeople are selling to local advertisers."

If this is the indeed the case, I would like to propose a couple of solutions to keep the peace as far as interference issues go. AMs wanting to run IBOC at night (and daytime too) should be allowed to do so with only a single caveat.

If you're not interested in serving other than a local audience, please power down.

— James O'Neal

Those broadcasters who truly desire to reach only their respective metropolitan audiences, and don't really care a fig for the poor unwashed millions of skywave listeners, should surrender their 50 kW license and request operation with just enough power to cover their city of license.

I don't believe that there is a city in the United States that couldn't be very adequately served (plain and with IBOC) with 5 kW (or less) of fulltime power.

On one of my trips to Russia, I visited the main radio transmission site for all of Moscow and was surprised to see the small physical size of the AM transmitters being used. There was nothing much larger than about 5 kW.

I asked why and was told that "unlike the situation in your country, we don't rely on high power for broadcasting to large audiences; each city is served by its own low to medium power transmitters."

From the information coming in so far, skywave IBOC reception isn't really working anyway. The digital receivers are able to lock onto the fading skywave signals for no more than a few minutes at best.

Station owners with IBOC and clear frequencies need to put their money where their mouths are. If you're not interested in serving other than a local audience, please power down. You'll save a lot of money on electricity and transmitter costs and keep things clear for the stations that do want to reach audiences beyond their city limits signs. You'll also qualify as a "green" station by conserving those great amounts of electricity just being wasted in warming up the ionosphere.

If this isn't satisfactory, I would propose another alternative: Request a move to a slot in that other savior of AM radio, the "expanded" portion of the band. I can practically guarantee you'll be able to operate round-the-clock IBOC with no complaints whatsoever, as no one seems to really be listening to or caring about what goes on above 1600 kHz anyway.

James O'Neal
Falls Church, Va.

O'Neal is a contributor to Radio World and employee of NewBay Media; opinions are his own.

I can't believe IBOC is legal. It has made a nightmarish mess out of the AM broadcast band. There's no escape from it, and it's ruining my AM listening. It's been bad enough hearing it in the daytime, but at night, stations are wiping each other out.

The bad joke of it all is that an IBOC signal is only useful very close to the transmitter. It's all marketing hype. If [Ibiquity] thinks I'll buy one of its blasted receivers, it's wrong.

Chuck Ermatinger
St. Louis

I can no longer receive New York's WOR(AM) 710 from my home in Vernon, Conn. It used to come in virtually perfectly day and night. Now it is still fine in the daytime, but at night is covered with noise; like a huge "beehive," evidently from IBOC stations on either side of it.

I also can no longer hear WBAL(AM) in Baltimore on 1090, which also used to come in almost perfectly most nights because of interference from my local WTIC(AM) 1080. But WTIC also has some noise on top of it from WBAL on 1090, and I'm only about 20 miles away from WTIC's towers.

Also, I can no longer hear WBZ in Boston at night. It's still okay in the daytime but at night, when it used to get even better than it was in the daytime, it is now covered in noise.

For me, IBOC has virtually ruined my nighttime AM listening.

Jay Policow
Vernon, Conn.

I'm in Brooklyn, N.Y., and nighttime IBOC broadcasts have made a dramatic, even shocking, difference to my listening.

I used to listen to a lot of stations in the Northeast corridor, but now I'm limited to a few local powerhouse stations. Upon tuning off of these stations, I hear only a strange buzzing and hissing sound in the background, and the buzzing is very strong; strong enough to peg the S-meter on my high-end portable receiver.

My AM dial now belongs to a handful of local players. The rest of the dial is a useless wall of interference.

I'm willing to complain about this and write a few letters, but I doubt it will do any good. I expect that, in a month or so, I'll miss listening to my radio at night and will break down and purchase a standalone Internet radio. I figure that's the next best thing to "real" radio. At least it will offer many programming choices and not limit me to stations just around the corner.

Steven Daniel
Brooklyn, N.Y.

World Radio History

GUEST COMMENTARY

Big Oil: Primary Issue Is Public Safety

The Author Signs Off on U.S. Oil's 'Unusual,' Complaint That KKOL's Signal Is Hazardous

by Jim Dalke

The June 20 edition of Radio World featured a story of KKOL(AM)'s battle to stay on the air ("KKOL Fights to Keep Transmitter Site") that provided some interesting views and comments from Salem Communications Senior Vice President for Broadcast Development Dennis Ciapura.

While U.S. Oil refused to grant an interview to the article's author Scott Fybush for legal reasons, it has made its views known in the volume of information in public documents filed with the FCC and the U.S. Coast Guard (*www.kkol.info*).

The oil company makes it clear that its primary issue is the threat to public safety it believes the KKOL operation has created. The oil company's complaint is unusual and unprecedented, certainly well beyond the usual "NIMBY." Anyone in the broadcast business has faced interference complaints from time-to-time, particularly those with AM facilities.

AM interference

AM interference can be challenging for several reasons.

Transmitter facilities for AM broadcasting operate most efficiently when most of the radiated signal is directed at ground level where there are people, homes and businesses. This is unlike the radiation from higher-frequency FM and TV transmitting antennas on towers on mountaintops. AM interference is often easily identified on telephones, stereo systems and other audio equipment.

Most interference complaints are simple annoyances that can be readily fixed with low-cost filters. Occasionally the interference can be more than a nuisance when it causes a business interruption, when for example, the interference interrupts an industrial control process that reduces or halts productivity. RF interference is even more serious when it creates a significant risk to life or property, as it apparently has in the case of KKOL.

The oil company has said in its statements to the FCC that its primary concern is that the signal from the KKOL transmitter be reduced at the U.S. Oil loading dock so that it is not a potential ignition source for the highly combustible materials being handled at the dock.

The oil company says that with measurements it has made on the cranes at its dock, the signal from KKOL should be less than 0.5 V/m to reduce the risk of an explosion to an acceptable level. At this level, the signal covering the city of license, Seattle, would be substantially less than the city-grade signal required by the FCC. Even with KKOL's licensed daytime power of 50 kW, the station needed a waiver of the FCC rules requiring the city grade signal.

The oil company arrived at the 0.5 V/m limit by actually measuring the energy induced in the cranes used in the off-loading process at the dock, and comparing the measurement with a published industry standard minimum required for explosive ignition.

The oil company also has expressed its concern for its refinery process and the potential that the KKOL signal could cause malfunctions in the complex control and monitoring system. The refinery operates continuously around the clock, and any interruption to the process flow could not only reduce product output, but cause a potentially disastrous situation. The greatest danger of fire and explosion in a refinery occurs as processes are shut down and started up as a result of planned or unplanned interruption.

KKOL Towers

Precedence

There is recent precedent for the FCC to rescind the license of a broadcast operation because of interference creating a threat to public safety.

In 2005, at the request of the FAA, the FCC ordered the shut-down of a KVMA(FM) transmitter in Oil City, La., because of interference being caused to radio navigational aids located at Barksdale Air Force Base. The station was unable to sufficiently reduce interference on an ILS frequency, making the landing system unusable.

In another case, the FCC has required station KIQI(AM) in Oakland, Calif., to reduce its power to 5 kW at the request of the nearby Army Terminal when unloading volatile fuel or explosives, and to reduce power to 1 kW in the event of a declared war or national emergency.

The U.S. Coast Guard has told the oil company it may not use the dock facility for tanker operations if the KKOL signal exceeds 0.7 V/m at the dock.

My interest in the new KKOL transmitter site in the Port of Tacoma is that of a broadcast engineer and journalist. I worked with KKOL as an independent developer when Salem Communications acquired the historic Seattle station in the late 1990s, and I was instrumental in creating the temporary KKOL shipboard facility in Seattle (*www.dalke.com/kkol*).

Known for many years as KOL, the station has a colorful history going back to its origins as one of Seattle oldest radio stations. The station went on the air in 1922, and for more than 60 years broadcast from its landmark tower on Harbor Island near downtown Seattle. (*www.1300kol.com/1300kolhistory.html*)

As a broadcast engineer and a member of the Society of Broadcast Engineers, I have a duty to be constantly aware of dangerous or life threatening conditions related to broadcast facilities. I also have a particular interest in the safety of life issues surrounding KKOL because my daughter and seven grandchildren make their home near the Port of Tacoma facility.

This case is far from over and the implications are major. The result could mean changes in FCC rules related to RF interference as well as changes in Coast Guard regulations related to dangerous cargo handling in local port facilities.

Jim Dalke, CPBE AMD, is the founder of Dalke Broadcast Services Inc.

This photo of the refinery was taken about 1/2 mile from the transmitter.

A tanker can be seen in the upper left, the refinery is center right with the tanks, and two of the KKOL towers are near the center in the middle of a car lot. The cars are new ones that have been off-loaded from cargo ships and are awaiting shipment by railcar.

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NewBay Media

Seeing Radio's Challenges Clearly

As the old adage goes, hindsight is 20/20. What radio needs is more clarity looking ahead.

"We need to do a better job of informing listeners about the great variety that radio already provides," said NAB President/CEO David K. Rehr in his keynote address at the NAB Radio Show in Charlotte.

His "Radio 2020" initiative is heralded as "a series of initiatives aimed at ensuring that radio's value will be recognized well into the next century." In preparation for the launch, NAB and two partner organizations, the Radio Advertising Bureau and the HD Digital Radio Alliance, conducted what they called an "unprecedented study involving thousands of Americans" to better understand what makes radio important to consumers.

It revealed, among other things, that the feather in radio's cap is its accessibility. It found that consumers demand the latest technologies, and that manufacturers are "getting it," making radio available wherever there's a speaker or a headphone. It also found that radio offers multicasts and more eclectic formats but needs to do a better job of educating the public on these developments and those of HD Radio.

An initiative such as Radio 2020 is great for radio and we support it. Rehr is right to call on everyone in the industry to be evangelical about radio's strengths.

But we are always leery of snappy marketing phrases that tend to disappear by the next convention cycle. We've heard in the past about initiatives such as nourishment of new technologies, playlist diversity, format variety and reigniting radio, topics Rehr listed as central to Radio 2020. What lies behind the latest catchy name and hip logo? What's to be done in these next 12 years to keep broadcasters abreast of the initiative's success or further research findings? Will radio leaders stick to this? Can the industry expect quarterly progress reports?

NAB, RAB and the HD Digital Radio Alliance say they will be "sharing the information [they've] learned through research, and developing a plan of action and marketing initiatives ... that will redefine radio into the future." But these organizations frankly have not produced outstanding marketing success for radio in the past few years.

We're anxious to hear more. We want more concrete and ambitious goals. We'd like to see specific targets that will provide a roadmap of industry improvement against which we can assess progress. We also suggest that NAB commit now to holding interim summits in 2010 and 2015, when industry can assess and update the 2020 effort.

More important, we fear that radio leaders really think what they're doing is good enough, that they only just need to market it better. Most programmers and commercial owners, we suspect, still don't hear what the market has been telling them about the lack of compelling content.

The name "Radio 2020" works well. It coincides with the 100th anniversary of a generally accepted birth date for commercial radio. (Radio 2009 or 2014 just doesn't have the same ring.) We're glad NAB is thinking far ahead. But it's also fair to say the industry can't afford to wait that long.

If Radio 2020 ends up being just about telling radio's story better, rather than improving our underlying product, it'll be DOA by 2008.

— RW

◆READER'S FORUM◆

WOR News?

Your publication is great — useful editorial content and ads. Thing is, Radio World is sort of the WOR News; WOR this, WOR that.

Sure, [it is] an accomplished station in a large market. But [it is] one of 13,000 radio stations. Please consider a bit less on it and more on other stations and issues.

Don Davis
Owner, Vanguard Media
Albuquerque, N.M.

XM/Sirius Merger

I just read Paul McLane's editorial in opposition to the proposed merger between XM and Sirius ("Merger? Two Words: Get Real," March 28, and archived at *radioworld.com*).

It is obvious that the last sentence sums up your real feelings:

"If satellite radio can't exist in even a minimally competitive environment, perhaps it shouldn't exist at all."

Every single person I know that subscribes to either satellite radio service is praying the merger goes through. You see, we the people *want* the benefits and programming choices the merger would provide. You also fail to address the a la carte options they are proposing, which also would greatly benefit many subscribers, and make the services more cost-effective for some.

We are not afraid of a lack of competition (within the single arena of satellite broadcasting) because we know we do have a choice: the choice of canceling our subscriptions if rates become too high or the relative value of the service deteriorates. There are plenty of other options; you stated what they were: iPods and terrestrial radio among them.

We the people *want* the benefits and programming choices the [satellite] merger would provide.

Right now, if we want the NFL *and* Major League Baseball, for example, our only choice is to subscribe to both services at double the cost. Not even a monopoly would be so foolish as to increase its rates to that extent. It still irritates me that as a Dish subscriber, I cannot get the NFL DirecTV package. It sucks, but you don't care because "... they knew what the rules were when they started."

Back off. Admit that your opposition is strictly selfish. You're pissed because somebody else is playing in your backyard (or sky). You wish satellite didn't even exist. Who [cares] what we want.

Tim Mahoney
Network Technician
Whitefish School District
Whitefish, Mont.

Not Forgotten

A comment about the "Roots of Radio" article on Loy Barton (July 18).

In 2003 I scanned and posted Loy E. Barton's, "A Plate Modulation Transformer for Broadcast Stations," University of Arkansas Research Station Bulletin 8, May, 1930. It's the classic paper Loy wrote on the subject of Class B modulation stages with transformer coupling to RF amplifiers.

The paper can be viewed at Harold Hallikainen's "Broadcast History" Web page under the Historical Papers folder: *http://sujan.hallikainen.org/BroadcastHistory/index.php/Historic%20Papers.*

It also is located on the "AM Window," a Web page with tutorial and historical papers on the AM mode of transmission, maintained by radio amateurs: *www.amwindow.org/tech/htm/tutor.htm.*

John T. M. Lyles
Los Alamos, N.M.

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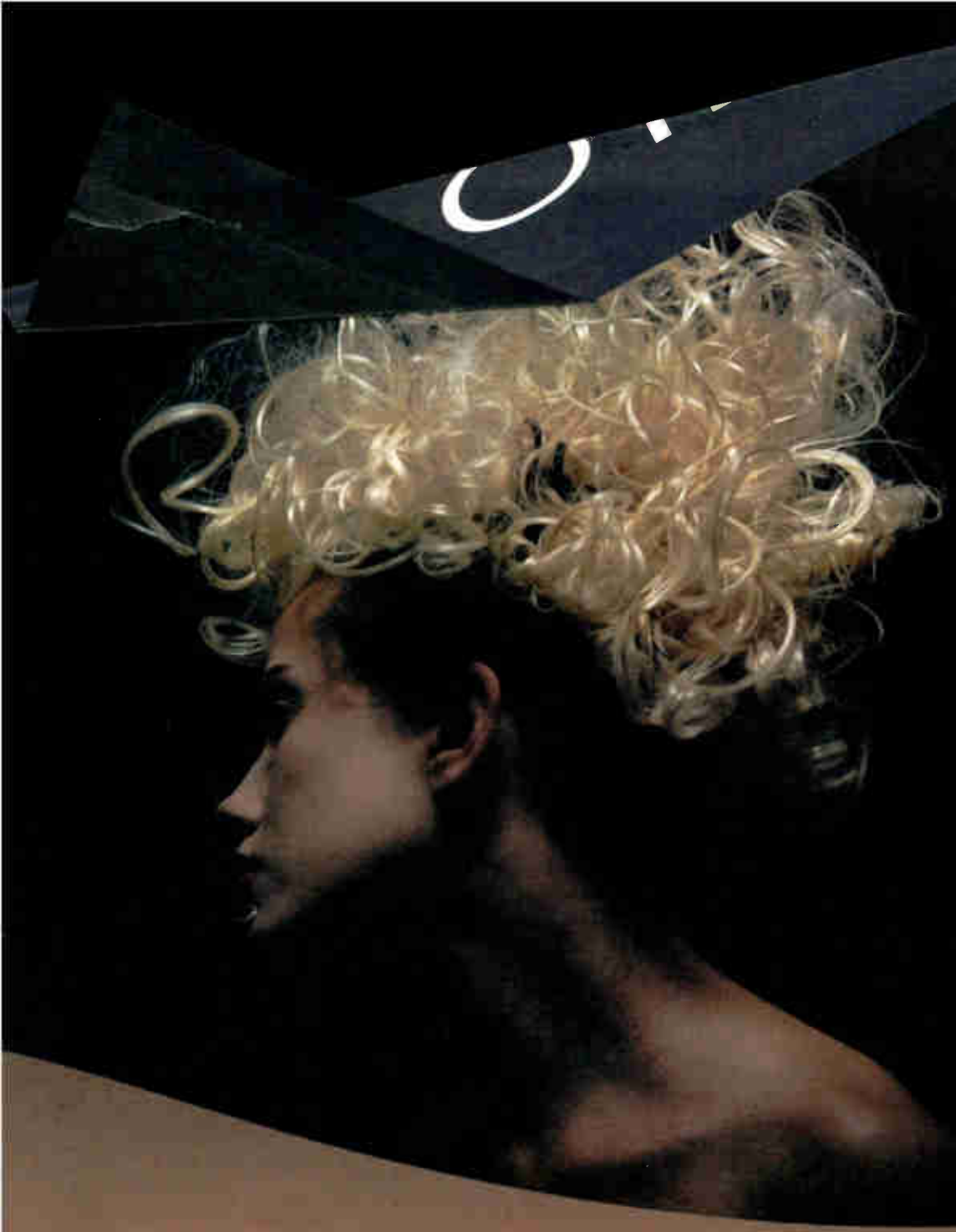

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