RICHARD ARSENAULT THINKS BIG — Page 4

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INSIDE

Sanders Keeps KNAU On the Air

Network Ops Manager Oversees Web of 13 Northern Arizona Signals

Brian Sanders examines the dish antenna for the AP wire service; the NPR receive dish and larger C-band uplink dish are at the back.

BY RANDY J. STINE

FLAGSTAFF, ARIZ. — With the nearest contract broadcast engineer sometimes a half-day away, Brian Sanders has been forced to learn his way around the old toolbox in order to help keep his stations on the air.

Sanders, network operations manager for non-commercial KNAU(FM) in Flagstaff, oversees a far-flung web of 13 stations across the mountains of northern Arizona, and among his current challenges is expansion of its new C-band satellite distribution system.

NEWSMAKER

"I'm a generalist. I know how to do a lot of different things in broadcast, from being on the air to rebuilding studio and fixing equipment. I've done this long enough to learn a few things," he said. "I'm the guy with the Rolodex. I know

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Radio Gets Back Some of Its Groove

Economy, EAS on Attendees' Minds at a Stronger NAB Show

BY LESLIE STIMSON

LAS VEGAS — What a difference a year makes.

There was a long line to register on the first day exhibit halls were open for this year's spring National Association of Broadcasters show; and before the convention was over, executives for the trade group were estimating that attendance was up by about 5,000 people to 88,000, or about 6.5 percent. Low hotel rates as well as relevant conference panels encouraged the rise, according to the association.

Exhibitors said they were taking orders and actually selling equipment, a sign that project purse strings have loosened a bit. That's not to say cap-ex has returned to pre-recession levels, but it does suggest that at least for things such as RF and studio projects, station monetary priorities are beginning to shift from being laser-focused on reducing debt.

Unfortunately, rumors continued to flow about groups still reducing their engineering rosters; some manufactur-

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WHEATNET IP

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NRSC Updates FM IBOC Measurement

Modulation Error Ratio Method Is Now Part of RF Mask Compliance Guidelines

BY LESLIE STIMSON

LAS VEGAS — The National Radio Systems Committee voted to add an FM quality measurement technique to its RF mask compliance guidelines for IBOC when it met concurrent with the NAB Show.

Also, members of the technical standards-setting body are working on several RBDS projects.

The measurement guideline update, a new standardized method for determining the transmission quality of an FM IBOC signal — Modulation Error Ratio — has been in the works for some time, and the guidelines will continue to be updated as IBOC technology progresses, said NRSC Chairman Milford Smith, vice president of radio engineering for Greater Media.

The general concept is that MER measurement can help a station measure the errors present in the data. MER tends to give the engineer a more useful view of system problems than the view obtained from bit error ratio measurements, according to the document "NRSC-G201-A, NRSC-5 RF Mask Compliance: Measurement Methods and Practice."

The guidelines provide suggestions for how to analyze FM IBOC transmission, including what settings to use on different test equipment to make sure stations are all measuring the performance of their IBOC systems in the same way. This is important, given the variety of transmission facility configurations that are suitable for IBOC signal generation.

RBDS Subcommittee Chairman Barry Thomas added, "This is a document you can hand someone and say, 'Here's what you do. Go out and test these stations.'"

The IBOC Standards Development Working Group of the Digital Radio Subcommittee, chaired by Dom Bordonaro, chief engineer of the Connecticut cluster for Cox Broadcasting, worked on the update. Geoff Mendenhall, vice president of transmission research and technology at Harris, led the sub-group responsible for the updated portions with contributions from David Maxson of Broadcast Signal Labs and others.

Photo by Jim Peck

NRSC Chairman Milford Smith explains the committee's latest actions. NRSC is sponsored jointly by the National Association of Broadcasters and the Consumer Electronics Association.

Smith said the group will turn its attention next to a similar AM measurement.

The guidelines are available on the NRSC website: *www.nrscstandards.org/*

Meanwhile, the RBDS Subcommittee is working on implementation guidelines to make station procedures simple and the data user experience more consistent.

Right now, receiver manufacturers implement the RBDS display in several ways. "We're trying to reach out to broadcasters to let us know how they're using it," said Thomas. "Once you see what everybody's doing, then it's easier to develop a guideline."

The hope is receiver manufacturers would see how stations *are* using RBDS as well as how they *prefer* to use it, so manufacturers will standardize the displays, which, in turn, would lead to more consistent consumer use.

NEWSROUNDUP

SAT VS. WCS: The FCC appears poised to vote on a Report and Order for a mobile broadband wireless service using 25 MHz of spectrum in the 2.3 GHz Wireless Communications Service band — spectrum that's adjacent to that used by satellite radio. The vote would end a 13-year dispute between Sirius XM, which fears interference, and wireless companies that want to roll out services. Several automakers, such as Ford, Nissan and Mercedes-Benz are siding with Sirius XM, concerned that the proposal doesn't have enough safeguards to protect satellite radios from interference from WCS users.

POWER: As of May 10, FM HD Radio stations could begin implementing the 6 dB digital power increase without special temporary authority. Federal Register publication had triggered a window in which opponents could ask the commissioners themselves to review the Media Bureau order. The agency dismissed two such requests that were filed too early. One of those petitioners, Jonathan Hardis, re-filed for review, saying the bureau had exceeded its authority. NPR opposed the petition and iBiquity asked for more time to respond to opposing petitions.

REGENT: Regent Communications became Townsquare Media after emerging from Chapter 11. Steven Price, co-founder of media investment firm FiveWire Ventures, is now Townsquare Media chairman and CEO, while FiveWire co-founder Stuart Rosenstein is the EVP and CFO. They succeed Bill Stakelin and Tony Vasconcellos, who resigned.

How About a Hike in AM Power?

Richard Arsenault Believes AM Needs Serious Intervention to Remedy Interference

FROM THE EDITOR

Paul McLane

Richard F. Arsenault thinks he has a solution to problems of AM broadcast reception. His idea may go no farther than the daydream stage; but it fits well into our ongoing coverage of the technical and business health of AM in the United States.

Arsenault is a consultant who most recently garnered attention for a proposal to allow earlier pre-sunrise operation; the FCC has been taking comments on that. He now appears to be feeling his oats and has petitioned the commission for a somewhat bigger change, namely a significant power increase for AM stations. We're not talking about digital stations here (as in the recent FM IBOC power hike), but about virtually all AM analog facilities.

"AM standard broadcast radio service has suffered serious degradation of coverage over recent decades due to increased interference from new technologies," he writes.

"The development and use of broadband over power lines (BPL), computers and other digital computing devices, appliances like microwave ovens, the common use of energy-efficient fluorescent lighting with integrated solid-state switching circuitry and virtually all other electronic devices and services have all significantly increased the sum amount of electromagnetic interference to the reception of AM radio to the point of near-uselessness in many areas where AM stations once provided adequate service to the general public."

He argues that the primary factor limiting reception during daylight hours has become interference from electronic devices and power lines, surpassing that caused by other stations.

"The commission established service contours and interference protection ratios at an earlier time when interference from existing electrical equipment was minimal and interference from digital electronics did not exist," he believes.

"At that time, the protected contours and the interference ratios made sense. Unfortunately, they were calculated without available foresight of the future digital technological revolution.

"The current protected daytime service areas for AM stations are generally out to the 0.5 mV/m contour for all classes of AM stations, with the exception of Domestic Class A AM stations, which are protected to the 0.1 mV/m contour," he continues.

"In reality, very few radios are capable of satisfactory reception at these lower signal levels because of the overwhelming degree of electronic and digital interference. What we currently have are AM broadcast stations adequately protecting each other in the AM radio band, but these same stations are not receiving protection from the intense electromagnetic interference from unintentional sources, making the current protected service contours of AM broadcast stations of minimal value.

"Accordingly, defining adequate rural service out to the 0.5 mV/m protected contour needs to be rethought in light of the fact that the sources of electromagnetic interference are part of our current lifestyle and will only get worse."

iStockphoto/Anthony Ladd

Bring back the good old days: 'We have watched the AM service degrade due to the increase in interference for too long,' Richard Arsenault believes. 'We must return AM radio service to comparable and usable coverage levels of the past.'

In his view, the solution is to allow virtually every AM in the United States the option of participating in a substantial across-the-board daytime power increase.

"Increasing power during daytime hours would solidify the daytime coverage of all participating stations and would not change the interference ratios between these same participating stations."

He would like to see a 10-fold power increase and, if that's not possible, fourfold. "Ultimately, anything less than a doubling of power (3 dB) would be almost insignificant."

GO FOR IT

Adoption of the full power increase, Arsenault thinks, "would solidify AM radio, penetrate virtually every remote area, break through all but the worst interference and fill most AM radio dials with numerous selections of strong stations instead of limited or no choices lost in static."

It would expand the coverage of AM stations and solidify coverage within their existing service areas. "None of the participating stations would lose coverage, as co-channel and adjacent channel stations that elect to maximize power would *not* see any change in their interference ratios; but all participating stations would dramatically improve overall coverage by improving their ratios between the desired radio signals and the undesired electronic interference."

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THIS ISSUE

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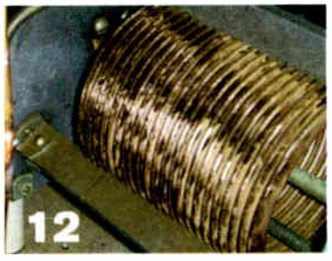

SANDERS

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who to call if I can't fix it."

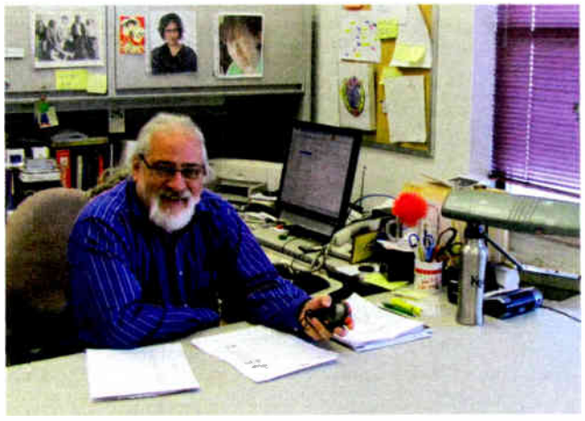
Sanders as the top technical person is responsible for facilities including the network chain of transmitters, studios and content distribution. He relies on contract engineers for RF work.

The network coverage map for KNAU, Arizona Public Radio, includes nearly all of the northern half of the state, including the Hopi and Navajo Reservations, and stretches from the southern rim of the Grand Canyon to the northern fringes of the Phoenix metro.

KNAU, which is licensed to Northern Arizona University, signed on in 1983 and has constructed 12 additional broadcast transmission sites, a combination of associate stations and low-power translators. Sanders joined KNAU in 2007. The operation produces two program streams; classical music originates on KNAU at 88.7 MHz in Flagstaff, while news/talk programming originates on KPUB at 91.7 MHz from the same facility. Those formats are also carried on four outlying FMs and seven low-power translators. The sister stations, or "robots" as Sanders called them, are in rural areas in places like Payson and Cottonwood, Ariz.

The network carries local content from KNAU's studios in addition to programming from National Public Radio, Public Radio International and American Public Media. It also streams its two formats via the Internet at *www.knau.org*.

Sanders, 56, has been in radio for 35 years. He grew up near Chicago and began his career on-air, making stops at commercial stations in Urbana and then Champaign, Ill., before joining Nevada Public Radio's KNPR(FM) in Las Vegas in 1981.



Sanders is network operations manager for non-commercial KNAU(FM) in Flagstaff; he oversees a network of 13 signals across the mountains of northern Arizona.

BOTH SIDES OF THE AISLE

"I've worked from mom-and-pop operations to larger commercial operations. Public radio is my favorite. Public radio offers tremendous programming quality," Sanders said.

"There is attention to audio quality and lots of niche programming, like classical music. There is a degree of flexibility here without a huge layer of bureaucracy and administration."

Sanders was "Morning Edition" host at noncommercial KCRW(FM) in Santa Monica, Calif., for nearly six years before coming to Flagstaff and settling in among the Ponderosa Pines at Northern Arizona University. He also was remote engineer for KTWV(FM) in Los Angeles.

Among his KNAU duties, Sanders is the go-to guy for solving any problems with office software, computers, printers and so on. He also manages the station's AudioVault automation and satellite uplink operations.

He has served as project manager overseeing KNAU's construction of a C-band satellite distribution system, which this year completed its first downlink install for network affiliate KNAD(FM) in Page, Ariz. More downlink sites will follow in Prescott, Show Low and at the Grand Canyon, he said, as fundraising permits. KNAU distributes its news/talk programming to KNAD over leased transponders of the NPR satellite distribution system on Galaxy 16. KNAU uses a Radyne DMD20 satellite modem while the affiliate uses a Tiernan ABR202A receiver.

"I've been working on this (C-band) project to two years. We completed the uplink portion from our main studios in Flagstaff last summer. We have historically used a system of on-air repeaters to reach audio to the outlying stations. We do still operate one audio-over-IP service to the translator in Prescott using a Barix box," Sanders said.

The satellite interconnection system for distribution of Arizona Public Radio programming will result in more reliable service, Sanders said.

AUDIO OVER IP

At one time, some of its outlying stations had local origination capabilities, but no longer, Sanders said. The stations now are all basically RF sites that are remotely controlled.

He has a contact person in each station's listening area whom he calls when he gets an off-air alarm; Sanders then assesses the situation and either drives to the site himself or dispatches

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SANDERS

(continued from page 5)

a contract engineer to fix the problem.

Sanders, who plays the sax and clarinet, lives with his wife, Constance DeVereaux, a senior lecturer at Northern Arizona University, in Flagstaff. He compares his transmitter sites to his two stepchildren. "They all have individual needs," he says. "Some of the sites are more reliable than others. I try to visit each site somewhat regularly."

KNAU's main studios, located on the south end of campus, are straightforward by design, Sanders said.

"The facilities are 15 years old and are very basic. For studios we have kept it simple from a technical operator point of view. We have had, over the years, a lot of non-radio people work here, so simplicity is good. We have three studios, an on-air, production and aux studio, which can all be put on the air needed."

Next on Sanders' list of things to do is an eventual studio rebuild at KNAU. "I cannot run any more wire or conduit. Too much gunk in the plumbing to do anything more with it."

He wants to rebuild the studios using audio over IP, which "offers so much more versatility, expandability, and will be cheaper. Cost is always a concern."

Sanders, who describes AoIP as "the new sliced bread," has been learning about AoIP at recent NAB conventions in Las Vegas; in fact he was the recipient of a $1,000 scholarship from the Association of Public Radio Engineers to attend the 2009 Public Radio Engineering Conference, which precedes the show. That scholarship is funded by APRE members and several equipment manufacturing sponsors.

Sanders, who has no formal technical training, attended AoIP seminars and meetings last year, and returned for the 2010 NAB Show.

A satellite radio user for a short time before discontinuing the subscription, Sanders has high hopes for the future of terrestrial radio, especially public radio.

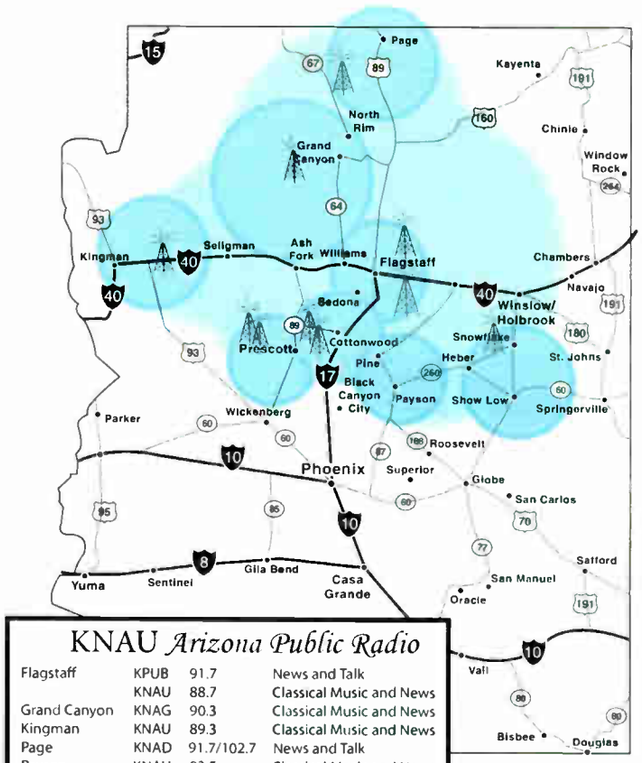
"We always think of the notion that we are not just radio people, but rather content people. People are not using radio for music as much as they used to. But what NPR has to offer in real time news and information is really unduplicated anywhere else."

One thing not in the future for KNAU or its stations is HD Radio, Sanders said.

"We've concluded that HD Radio is not viable here in rural Arizona and have serious doubts as to whether HD will ever be popular with listeners, even in more populated areas."

Flagstaff, a city of approximately 62,000 residents, often is listed on those "most desirable places to live" lists. Only 90 minutes from the Grand Canyon and considered a hiker's paradise, the community is supportive of KNAU's fundraising efforts and has helped the station reach its fund raising goals on a regular basis, he said.

"There are a lot of well-educated people living in this area. This is a community of lifelong learners who are quick to volunteer and come to our aid when we need it."



KNAU *Arizona Public Radio*

Flagstaff	KPUB	91.7	News and Talk
	KNAU	88.7	Classical Music and News
Grand Canyon	KNAG	90.3	Classical Music and News
Kingman	KNAU	89.3	Classical Music and News
Page	KNAD	91.7/102.7	News and Talk
Payson	KNAU	93.5	Classical Music and News
Prescott	KPUB	89.3	News and Talk
	KNAU	106.1	Classical Music and News
Show Low	KNAA	90.7	Classical Music and News
Verde Valley	KPUB	103.3	News and Talk
	KNAU	102.5	Classical Music and News
Vernon/Concho	K287-AI	105.3	Classical Music and News

The facilities of KNAU Arizona Public Radio reach much of the northern half of the state.

NAB

(continued from page 1)

ers said they're designing equipment that's easier to use with this reduced attention in mind.

Most radio exhibits were in the Central Hall, after more than a decade during which radio/audio booths were largely in the North Hall. Vendors were happier with the more inclusive feel.

Despite the uptick in estimated attendance, some functions remained reduced in scope. The NAB leadership event remained a reception, rather than a dinner; and regulatory sessions were again rolled into a broader management track.

However NAB did hold an FCC chairman's event, and three other commissioners participated in the show.

Among the news from the spring convention:

NAB TO CONTINUE ROYALTY FIGHT

Smith vowed to continue combating the record labels' efforts to persuade Congress to levy a performance royalty on broadcast radio.

The former two-term Republican senator said he was hired to lead NAB because he knows politics and comes from a political family. His father worked in the Eisenhower administration and his mother was born into the Udall political dynasty.

In politics, perception is reality, he said. Some believe broadcasting is the technology of the past, he said, but it remains a vital business and it's his job to make that case to lawmakers and the administration and its agencies.

"Broadcasting is the original wireless technology. We are mobile, and both radio and television are adapting to new technologies and finding new ways to deliver the most popular and important content. That is not the past; that is the future — still."

He took the job, he said, because he believes "the cause of free, over-the-air broadcasting, with its attendant public obligations, is a just and worthy cause. The values of free and local radio and television — and the public service responsibilities that come with that — are still relevant and vital today, even as a mature technology is being made new again."

Stations already pay copyright royalties to ASCAP, BMI and SESAC; the proposed fee would be an additional payment. NAB says the effort doesn't take into consideration the free promotion artists receive in the form of airplay and station events.

"Labels like to call it a 'right' or a 'royalty,' but whatever you call it, it's basically a bailout of the major recording companies. I think the American people have had enough bailouts," Smith said.

Referring to the advent of digital music downloads and decline in popularity of physical records and CDs, Smith said technology has wrecked the music industry's business model, so it seeks to make up the shortfall by "biting the hand that feeds it."

> **The cause** of free, over-the-air broadcasting, with its attendant public obligations, is a just and worthy cause.
>
> – Gordon Smith

Smith said, "The centrifugal forces of modern life are fraying the bonds that tether our citizens to their communities. Broadcasting, however, serves to keep our citizens connected to our communities and gives those communities coherence. That is a public good. And that's why we will continue to fight the record labels in their attempt to save their business model on the backs of free, local radio."

MusicFirst, a coalition of record labels and artists that back the performance royalty, responded in a statement from spokesman Marty Machowsky.

"AM and FM music radio stations earn billions each year in ad revenue without compensating the artists, musicians and rights holders who bring music to life and listeners' ears to the radio dial. They have free use of the public airwaves worth tens of billions more. Yet they refuse to pay artists and musicians even one penny for use of their work.

"It's wrong. Everyone deserves to be paid for their work."

Smith also discussed the FCC's proposed national broadband plan, which includes what he called the "spectrum grab" from broadcast television so that wireless companies have more for mobile broadband.

He said the turnover may not be voluntary as proposed. "Broadcasting is not an ATM that can keep spitting out spectrum."

He encouraged broadcasters to present a united front on issues facing the industry to overcome scenarios that could weaken radio and television. He said NAB needs stations to "advocate" for the industry in Washington and nationwide.

"I am very proud to be part of this industry, and I will work my heart out for you," he concluded.

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NAB

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broadcast chair of the Wisconsin EAS Committee, said he's feeling confident about how the EAS migration to a next-gen Common Alerting Protocol is progressing, and so is FEMA.

In a message on its website summing up its EAS meeting at the show, the SBE reported that Damon Penn, FEMA's assistant administrator for its National Continuity Programs Directorate, said on April 14 that FEMA estimates it would adopt CAP sometime this September.

That said, Timm told attendees that FEMA won't start its 180-day "shot clock" marking when stations need to have CAP-compliant EAS encoders/decoders in their facilities until they know stations can handle the CAP messages.

That's a big relief "that gives us comfort," said Timm, an engineer for Journal Broadcast Group-Milwaukee. FEMA says it will have the capability to provide CAP alerts to all EAS participants by the end of that 180-day period.

The current EAS isn't going away; CAP is simply a new delivery method, he stressed.

Photo by Jim Peck

Damon Penn, left, FEMA's assistant administrator, National Continuity Programs Directorate, and Jamie Barnett, chief of the FCC's Public Safety and Homeland Security Bureau, opened a next-gen EAS panel.

With the upgrade, after an EAS message is sent "we can add text, a toxic cloud plume map, Amber Alert pictures," he said as examples.

Timm's also a facilitator of an EAS CAP industry group that includes hardware and software vendors as well as broadcasters. The group has drawn up a CAP-to-EAS implementation guide for FEMA that was open for public comments until April 20 (*www.eas-cap.org/documents.htm*).

On a personal note, Timm, a broadcast engineer who's been at WTMJ(AM) in Milwaukee, Wis., for 37 years, plans to retire in a couple of months. He intends to continue volunteer EAS work and may explore engineering consulting.

MICHAEL J. FOX HONORED

NAB President/CEO Gordon Smith presented actor Michael J. Fox with the NAB's Distinguished Service Award for his advocacy work for Parkinson's disease.

His Michael J. Fox Foundation has raised more than $175 million in research funds. The organization (*michaeljfox.org*) is dedicated to finding a cure for Parkinson's and to ensuring the development of improved therapies for those living with the disease.

Previous recipients include Mary Tyler Moore, President Ronald Reagan, Edward R. Murrow, Bob Hope, Walter Cronkite, Oprah Winfrey and Charles Osgood.

SBE CELEBRATES BAUN, DAVIS AND LOCKE

Terrence M. Baun, director of engineering and operations for the Wisconsin Educational Communications Board, received the Society of Broadcast Engineers' Lifetime Achievement Award. One person close to Baun said he was "truly surprised and very emotional" when the award was given at the standing-room event.

Baun is a 34-year member of the SBE. He has served on the National Certification Committee for 12 years, as chairman for three. He was a director and vice president and was elected the SBE national president in 1995. Baun was named the SBE Broadcast Engineer of the Year in 1991, the first to receive that award; he was named an SBE Fellow in 1999 and in 2003 was named the SBE Educator of the Year.

SBE also elected Sterling Davis and Robert Locke as SBE Fellows. Davis is vice president of engineering for Cox Media Group in Atlanta and a member of SBE Chapter 5 in Atlanta. Locke is the chief engineer for KPTS(TV) in Maize, Kan. and a member of SBE Chapter 3 in that state.

MANY TRAVELLERS STRANDED BY VOLCANO ERUPTION

Nearly 24,000 NAB Show attendees came from abroad, and more than a few had their stay in the United States extended unexpectedly.

The volcano in southern Iceland erupted on April 15, causing massive disruptions to air traffic across Europe. As the ash plume spread, countries in the affected area began shutting down airspace, starting with the United Kingdom on April 15; U.K. airspace and that of most of Europe was closed for six days. After the airspace began to open, U.K. airlines sought volunteers to give up seats so the thousands of people still stranded after the volcanic ash disruption could get home. Re-booked returns stretched into May.

Upcoming: Radio World "Cool Stuff" Award winners, IBOC news from the show and highlights of the Public Radio Engineering Conference.

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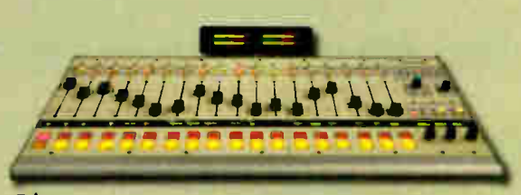

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Mind the Gap: A Tip From John Huntley

RF Line Arcing Problems Aren't Limited to Air Dielectric Lines

WORKBENCH
by John Bisset
Read more Workbench articles online at radioworld.com

John Huntley, KK7IW, is market chief for the Rockland, Ill., cluster of Cumulus stations. One of John's AM sites suffered a lightning strike several years ago. After encountering strange and random glitches in the RF, he eventually discovered an arc from inner to outer of the feed line to one tower.

The arc had slowly been burning down into the feed line. The burn was 6 inches into the line when he caught it. To make matters worse, the feed lines to all three towers are half-inch CATV-type aluminum jacket foam lines. Splicing?

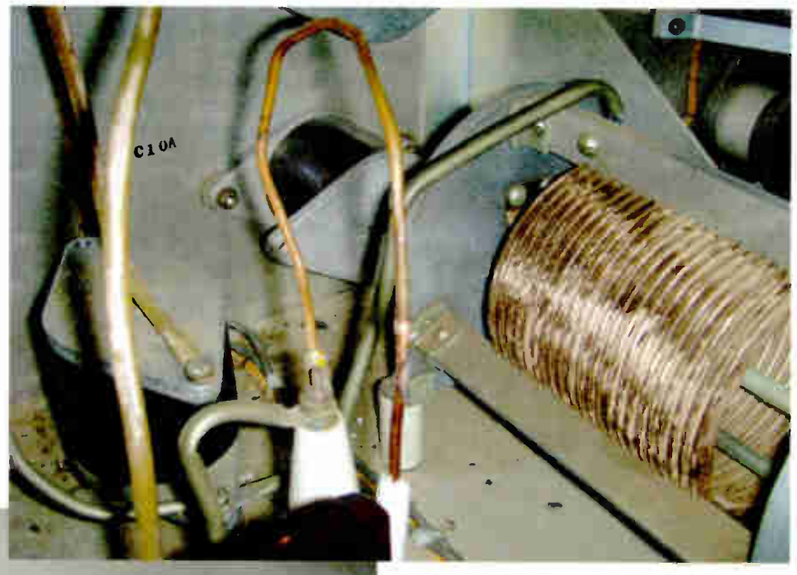


Fig. 1 (top): Trimming back the arced outer conductor stopped intermittent operation.

Fig. 2 (left): Horn gaps don't have to be costly. Here is a set fashioned out of copper tubing.

I don't think so!

The photo in Fig. 1 was taken several years after the repair but you can see the burn mark on the now-exposed inner. Fortunately, John had enough slack to pull the cable and trim back the arced section, as you can see.

It turns out that none of the Collins ATUs had arc gaps on their output. Although there are ball gaps at each tower base, the feeds leave the towers at about 8 feet above ground level.

One of the early PolyPhaser books described this as an inductive divider. There will be substantial voltages at the feed point during a strike.

John fashioned the horn gap pictured in Fig. 2 out of copper tubing. Notice that there is visible evidence that the gap has seen arcs! It is on the output of the ATUs (day & night at this tower).

This particular tower is 440 feet tall, the center tower of a three-tower in-line. The tower is detuned to be 170 feet tall at 1440 kHz, to match the other two towers, and has a base impedance of 270 Ohms. There are 12 lines and isocouplers in parallel with the AM feed line.

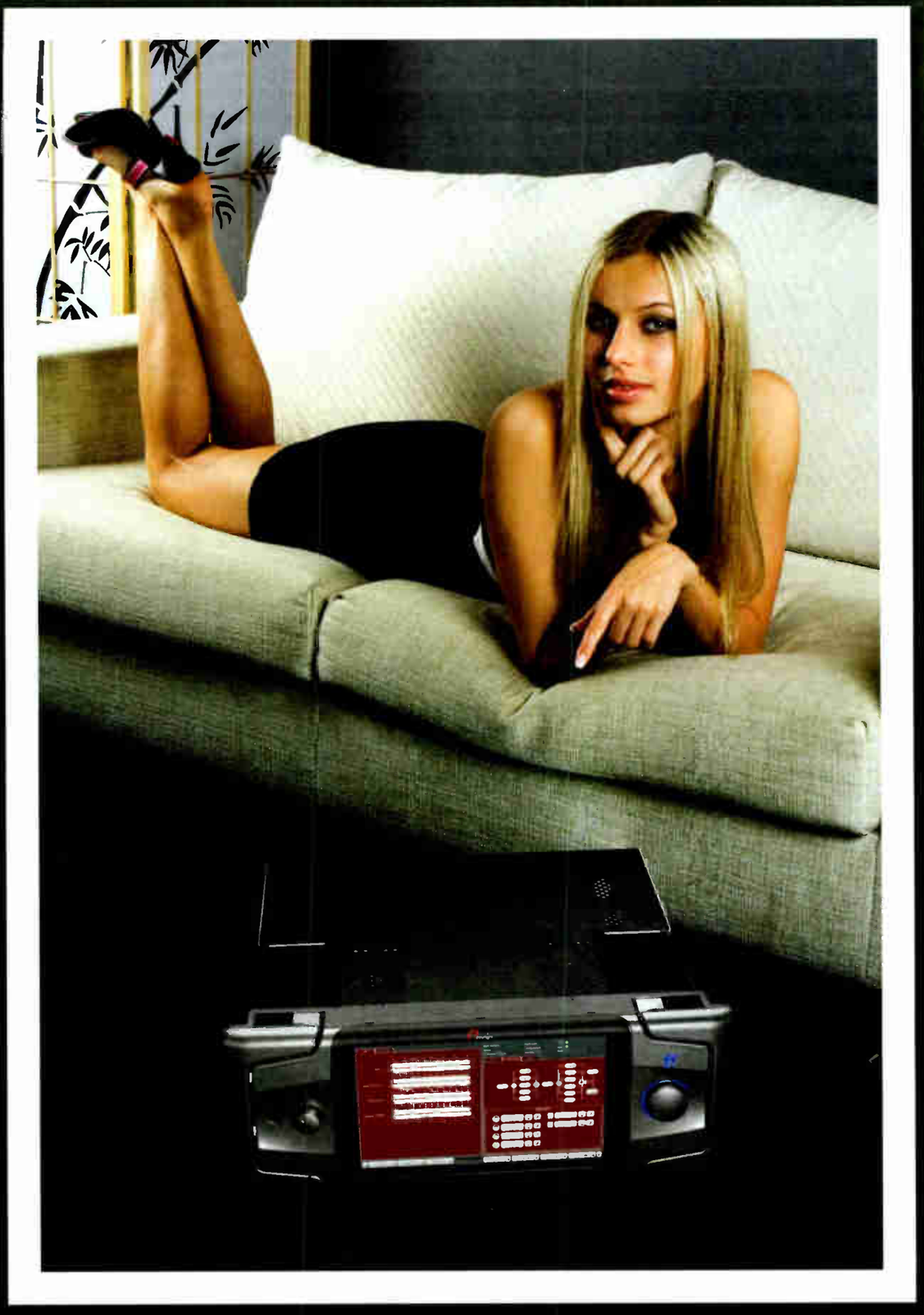
This tower also "ate isocouplers" during storms. The tower gaps are a lot tighter than they were when John arrived. That plus improved grounding have reduced isocoupler failure.

John surmises the lightning damage probably was due to grounding issues. Inspection disclosed that the 5-inch straps around the building had been connected with soft solder — *acid core* soft solder! The buried radial connections to the base strap square had been properly connected with silver solder, and the radial wires are in good condition.

There were no driven rods at the base of any of the three towers, and John has corrected that. The longest set he could drive at the tall tower was 24 feet. There are nine other rods of at least 8 feet, and some 16-foot sets, in the vicinity of the tower base. John placed these at the corners and centers of the fence around that tower.

There is much more to the story of grounding improvements to this site, and they are still ongoing. Guess you could say John has picked up the attitude of "Ground it! Improve the ground-

(continued on page 17)



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And more compatible equipment is likely on the way. The IEEE is working on a consumer electronics standard called "AVB" (802.1), which is similar to Livewire. When the standards-making process is eventually complete, CD players and other devices that can interoperate with Livewire studio equipment will probably appear.

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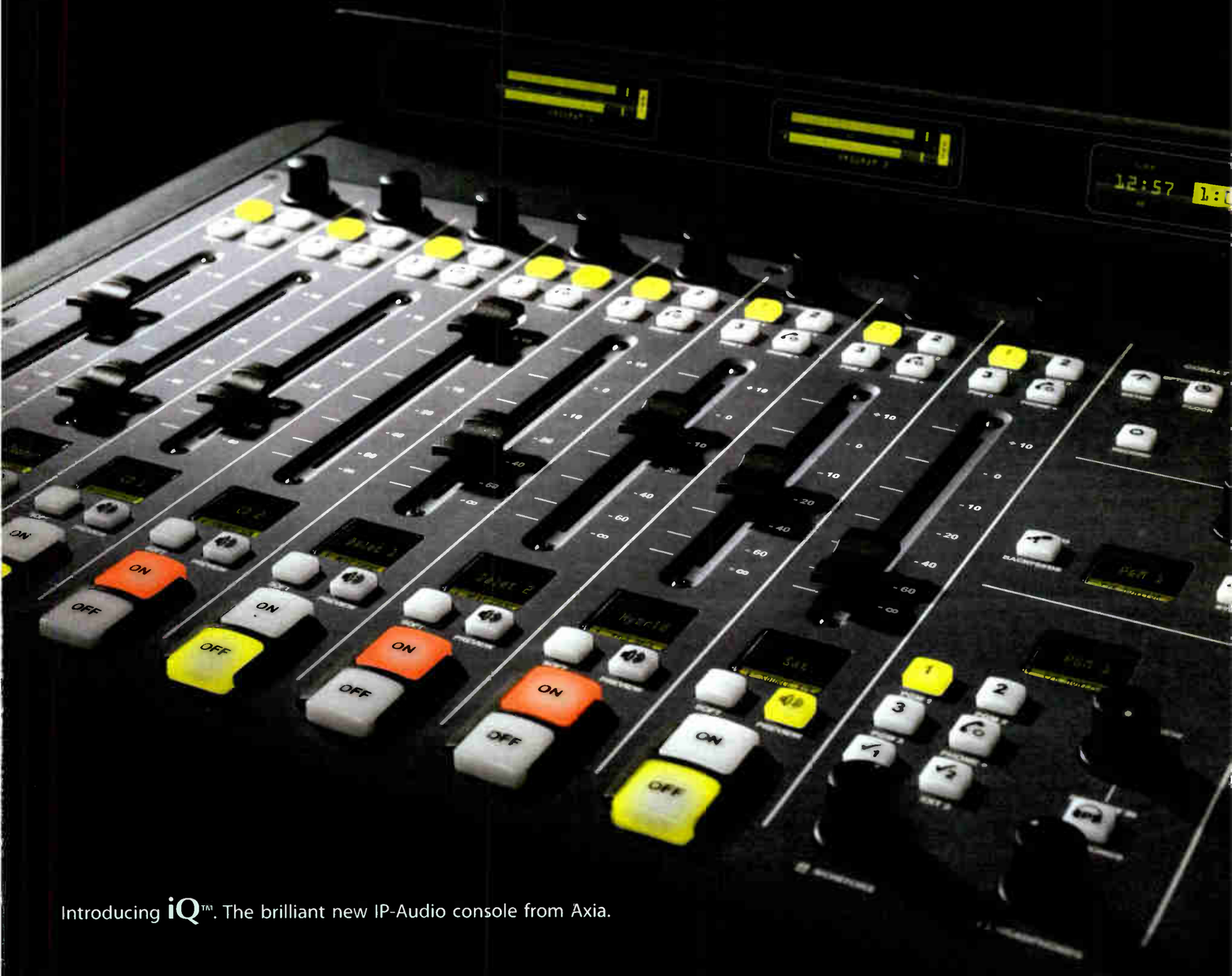

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P. HARRIS MORRIS TAKES THE REINS

BY MARK R. SMITH

P. Harris Morris, previously vice president and general manager of the Media and Workflow area of Harris Corp.'s Broadcast Communications business, **SUPPLYSIDE** *recently was appointed president of that division. He succeeds Tim Thorsteinson, who left last fall after three and a half years in the post.*

These are excerpts of an interview with our sister publication TV Technology.

What role do you see for the traditional radio broadcast business at Harris?

We'll have an important role in it, since there is a 7:1 ratio of radio to TV stations worldwide. Most radio stations still transmit in analog, and many will go digital in time; we've been in the business since 1922 and understand the patterns in demand worldwide.

It's also noteworthy that all of our radio (and TV) transmission products are becoming more software-based. That gives us greater synergies and economies of scale, and allows us to deliver great customer value.

Describe the health of your radio manufacturing business. Where do you think growth will come from in coming months?

We're seeing an uptick in sales leads in the U.S. Globally, stations in major nations that run TV and radio operations simultaneously remain the biggest sources of potential demand for radio.

Harris has cited digital as being an important growth source in both TV and radio. How do you expect your digital radio business to grow?

As the only global supplier of all the digital radio formats (HD Radio, DAB/DMB and DRM) we are seeing movement in the digital radio market around the globe. We have helped broadcasters launch digital services in Europe, Australia and China, and expect continued adoption as those regions make the transition.

In North America, many broadcasters paused to understand the impact of the HD Radio sideband increase; with that issue resolved we [expect] forward movement. This includes the first HD Radio quadcast we pioneered with WJFK(FM) in Washington, which takes advantage of both elevated sidebands and multicast services. We believe others will follow suit and resume deployment of HD.

Harris opened its Mason (Ohio) Broadcast Center to much attention several years ago but has since scaled back the scope of the broadcast manufacturing staff. Is that facility outsized now?

The short answer is that we have three hubs to our business: Denver, Toronto and Mason. There are many more service and sales sites worldwide. Mason will continue to be an important location for Harris Broadcast, in particular for our transmission products and our play-to-air solutions that are helping to drive global growth.

The transmitter is part of an entire workflow that includes encoders, exciters and channel play-out systems. Our goal is to supply interoperable solutions for specific segments of the TV business; these play-to-air solutions are a critical piece.

The past few years have seen challenges for the traditional broadcast business at Harris, as reflected in the company's financial results and CEO Howard Lance's comments over time. Describe the outlook now for broadcast, beyond radio.

We still see play-to-air solutions as a significant leg of our global growth. The other pieces are channel creation and play-out; production, especially for sports, news and live content. Another area is distribution, including multi-system operators and satellite.

What adjective would you use to describe the relevance of traditional broadcast within your business, compared to non-radio/TV?

Vital. It's the lion's share of our business.

EAS Moves Along

Emergency alerting was a big topic of interest at the NAB Show. We asked Harold Price, president of manufacturer Sage Alerting Systems, to summarize the latest.

RW: *For broadcast engineers, what's the takeaway?*

Price: At the Wednesday FEMA/FCC forum, both said that the end of September 2010 is the expected date for the start of the 180-day clock.

Sage was part of the big FEMA demonstration of CAP system interoperability. A rack of equipment in the FEMA booth at the show was used to show that FEMA could deliver CAP messages from its DMOPEN system to multiple vendors, resulting in EAS-formatted alerts.

Also, Sage was part of the demo of iBiquity's Active Radio system, showing delivery of EAS messages with CAP text through HD Radio.

In early March, Sage went through a pilot run of the FEMA-sponsored CAP conformity test. Live testing is ready to start as soon as the final protocol becomes an OASIS standard, which will happen in June.

The vendor interoperability demo with the federal delivery system, readiness for testing, final protocol signoff in June and joint FCC/FEMA discussion of the September date are good indications that the CAP clock is indeed likely to start before the end of this year.

The other two items on the FCC side are that the reply comment period for the FCC's Second FNPRM (mainly concerned with the national EAS test) has expired, so we expect something from the FCC on that in the not too distant future; and the FCC's request for informal comments on Part 11 in general, on better integrating CAP into the rules, is now open. *[Reply comments are due June 14.]*

Also, the EAS-CAP Industry Group has published its draft recommendations for FEMA's CAP-EAS Implementation Guide (*www.eas-cap.org/documents.htm*).

WORKBENCH

(continued from page 12)

ing, and then improve it again." A systematic approach that pays dividends.

John Huntley loves to talk grounding. He can be reached at *jchuntley@earthlink.net*.

Arcing is serious business. If your feed uses rigid line sections, pay attention to this tip.

Richard Wood of Resonant Results in Wisconsin provides infrared imaging for broadcast and industrial applications. His checks of your transmission line are akin to an angiogram of your heart. The pictures spot potential problems inside the line that you cannot see.

Some of Richard's inspection projects have yielded interesting results. The picture in Fig. 3 was from a tower site that had experienced rigid line failures. To spot pending problems, the line was tested under power.

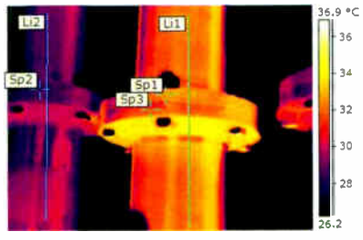

Fig. 3: An infrared camera spots a hot bullet in rigid line.

The FLR camera displays temperature differences in color and is portable enough to take up a tower and shoot each of the three 3-inch lines at the flanges. It was important to monitor the air temperature and wind speed at each elevation, to account for changes as Richard got higher on the tower.

With a safety person on the ground, Richard radioed down the findings at each flange location. All three lines were running near the same power levels, so expected temperature differences were minimal.

All was going well with the measured temperatures decreasing while getting farther from the transmitter, until flange #45. Fig. 3 shows the right-hand line significantly hotter than the left line. This was the only area on the tower that appeared to have an issue.

That night the station shut down. While some riggers were climbing the tower, Richard tested the line with an HP network analyzer and found a reflection in the area of the "hot" bullet. After the bullet was replaced, the time domain tests showed the problem solved.

Fig. 4 shows the bad bullet that was removed. Significant deterioration can be seen, but it had not burned open yet.

Another handy application for infrared testing is in AM phasing and branching systems. Richard recently measured an AM site, and could "look" at the components and "see" the distributed currents in action.

Fig. 4: The burned bullet, removed before failing.

One of the power adjusting coils in the phasor showed significantly elevated temperatures. Having a handheld temperature gun can be helpful on site, but the coils do not have enough flat surface area to provide a good target for them.

Note that the handheld sensors have a low spot size ratio (usually 10:1) and only provide an average temperature reading for the sampled area. Used properly, these can be handy, but their limitations should be recognized.

Want to see more? Richard's website is *www.resonantresults.com*. Richard Wood can be reached at *rwoodsky@verizon.net*.

John Bisset marked his 40th year in broadcasting recently. He is international sales manager for Europe and Southern Africa for Nautel and a past recipient of the SBE's Educator of the Year Award. Reach him at johnbisset@myfairpoint.net. *Faxed submissions can be sent to (603) 472-4944.*

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

AM POWER

(continued from page 4)

Arsenault suggests a grace period would be established to allow stations time to install upgrades; and only a written letter to the commission would be needed, specifying the degree of power increase and date of implementation. "All future interference calculations could be made utilizing the previous lower power levels of all stations, simplifying future allocation issues," he continued.

He acknowledges concerns involving stations near Canada and Mexico and a few others "where a saltwater interference path to foreign stations exists," but believes that "the grand majority of listeners to domestic AM broadcast stations will benefit by this request if adopted. The few stations in the border areas with required daytime protection to foreign stations could benefit by opting to use a directional antenna pattern or a change in the existing daytime antenna pattern, or alternately possibly use a partial power increase."

Arsenault would limit his power hike to the daytime hours "due to nighttime interference restraints with foreign broadcasters," but nighttime interference to stations in Canada, Mexico and other nations could be considered later "unless the commission can resolve these issues in a timely manner with each of these countries."

NO STATIC AT ALL?

Arsenault started his radio career in the 1970s as a DJ on a commercial FM in Vineland, N.J. He told me he was fascinated with technology as a youngster and assembled small radio transmitters and receivers for school science projects and out of personal interest.

"I quickly realized that the highest class FCC license, the First Class Radiotelephone at that time, would be my ticket to expand my radio career, so I picked up a few books and studied until the book covers fell off."

In the early 1980s he worked as a chief engineer for radio and at Lamar University in Beaumont, Texas, and did work for Jules Cohen and Associates, the legendary consulting firm.

"In the mid and late 1980s I designed and assembled a few radio stations and prepared a number of FCC applications for power increases, including directional antennas and short-spaced radio facilities," he said. "I also hosted a Saturday night oldies show and did some radio sales."

He filed his first petition for rulemaking in 1989, addressing a plan to allow existing daytime standalone stations an opportunity to use low-power FM in order to provide full-time coverage to their communities. In the early 1990s, he was the sole engineer for 14 AM and FM stations; he went on to purchase WREY(AM) a 1,000 watt station in Millville, N.J., which he managed for six years (it is now WMVB). This was an important time in the development of his views.

"Managing the sales, programming, staff and community involvement of a stand-alone AM station had to be the biggest and toughest challenge of my career, in light of the fact that all competitors were either FM or had AM/FM combos, and the local market was already overshadowed by major-market Philadelphia stations. I had to get creative and expand the local community connection."

His business now is in offering technological and business consulting services to radio broadcasters who want to optimize their signals and grow their stations. His website is *www.radio-broadcast-engineer.com*.

I suspect Arsenault will succeed on his earlier petition to move up pre-sunrise authorization time. It may be harder to gain as much traction with an ambitious power hike but I commend him for bringing the idea up and I hope it will be taken seriously. This may not yet be a comprehensive technical plan but it can start the conversation.

"I realize that there are details that will need to be addressed before implementation," he wrote. "But more importantly, this petition should open discussion on this concept ... The time to get the static out of AM radio is past due. We have watched the AM service degrade due to the increase in interference for too long. We must return AM radio service to comparable and usable coverage levels of the past."

Tell me what you think at *radioworld@nbmedia.com*. Arsenault welcomes your thoughts too at *radioservices@ieee.org*.

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Vorsis AP-2000 Offers Plenty for Users

Processor is Well-Built and Offers a Deep Pool of Processing Parameters

BY IRA WILNER

When I first heard about the Wheatstone Vorsis line of broadcast audio processors I wanted to evaluate them because, in the past, I had specified Wheatstone audio consoles for my highest quality broadcast facility builds. At one time Wheatstone offered the quietest, most feature-filled analog broadcasting boards on the planet. With that pedigree I assumed the Vorsis product line would be special, and it is.

PRODUCT EVALUATION

Jeff Keith, the lead product design engineer for the AP-2000, had previously worked for Telos Systems/Omnia Audio. You can hear it in the AP-2000. There is an accuracy and lively feel to the sound, special to both companies' product lines. The AP-2000 is the most complex DSP audio processor product to date. With 437 adjustable parameters it is not for the faint of heart. It is a tinkerer's heaven! Nothing is hidden and numerical values are not arbitrary, representing actual values. Thanks to a clever, full-color GUI some of the adjustments are quite user-friendly. For example, there are equalization curves you can adjust by grabbing the graphical curve and tugging them to new peaks or valleys.

UNDER THE HOOD

DSP-driven audio processors have come a very long way from their analog brethren of the 1980s. Boxes four rack units high and crammed with vertically-mounted plug-in PC cards have been replaced with mostly empty chassis sporting a single mainboard. The underlying reason for not providing the product in a one RU chassis is mostly the need for sufficient front- and rear-panel real estate for the I/O connectors, local control and display surfaces. The main board of the AP-2000 has 10 layers, partially required to permit mixed analog and digital signals to coexist quietly and partially to control impedance for the high-speed digital transmission line traces between chips. Signal processing is handled by a DSP engine farm consisting of 18 Motorola fixed-point ICs and one Texas Instruments floating point engine. It is all tied together with a Xilinx programmable gate array logic. And the user control I/O is provided by a Broadcom five-port Ethernet switch IC that permits simultaneous control from the front-panel embedded PC as well as multiple remote TCP/IP connections to the box.

Screenshot of the Vorsis AP-2000 AGC-Compressor

Analog audio is meticulously handled by 192 kHz clocked AKM converters which boast better than 120 dB dynamic range and –100 dB THD.

The power supply is part of the mainboard too, thus reducing manufacturing costs. This is an in-house-designed switcher using components that provide better performance and greater reliability than an off-the-shelf OEM solution. The IC packages are a mix of thru-hole devices and SMDs. For greater reliability the few components that could have been socketed are soldered in place.

So what happens if the power to your facility fails? While you should have a fast-switching or truly uninterruptible dual conversion UPS protecting your computer-style equipment there still may be occasions where you'll suffer power loss to your audio processor. The AP-2000 DSP farm boots up in a few seconds providing audio quite quickly. The single-board computer for the front panel takes about a half a minute to come to life.

The AP-2000 acoustically is very quiet. You could mount it in your studio furniture as there are no noisy cabinet flushing fans, just a small internal fan to move air around the internal heat sink for the front-panel computer.

The AP-2000 ships with 50 factory presets. More can be downloaded from the Vorsis Web site. They cover a wide range of programming and offer some interesting sounds. Some of the dance presets do a lot with bass response, pushing the envelope. As with most presets, they are starting-off points probably requiring tailoring to your specific needs and expectations. Some might be too mild while others might be a bit heavy handed. Time did not permit me to explore all of them.

One complaint I hear all the time about major audio processors is their inability to transition smoothly from one preset to another during day-part changes. The AP-2000 seems to handle those changes gracefully, gently cross-fading from one to the other without sudden jarring changes.

Preset management is intuitive using

PRODUCT CAPSULE

VORSIS
AP-2000 Processor

Thumbs Up
+ Complete user control over all processing functions
+ Hard-copy printout of every adjustable parameter
+ Transparent sound with no preconceived coloration
+ Fast-responding remote-panel GUI

Thumbs Down
– Touch pad is difficult to use
– Mouse port does not support modern mice
– No automatic de-emphasis in headphone monitor
– No simple mode for less-experienced users

Price: $13,995

For information, contact Jay Tyler in North Carolina at (252) 638-7000 or visit www.vorsis.com.

a Windows-style folder filing arrangement for favorites. You have unlimited remote storage for presets. You can also download and print every parameter of every preset including a comparison sheet so you can spot the differences between them. This is a unique and educational tool when trying to understand the settings and what they ultimately do to your sound.

MONITORING

I felt the front panel fell a bit short of expectations by providing a nice VGA color display but without touchscreen. The separate touchpad to the right is a bit awkward and sometimes frustrating to use. The USB port on the front panel is reserved for an external mouse. In practice I could not get the mouse port to work properly as it only supported older basic mechanical mice and not optical mice. Fortunately, a similar GUI, ported to Windows, is provided for remote control. It has somewhat more capability than the front-panel GUI and is easier to manipulate using a workstation or a laptop PC.

Caution! The front-panel headphone monitor output is clean-sounding and can deliver lots of current to your headphones. In fact, I found the default output level way too high. The volume control is a bit coarse due to a very short virtual slider. The remote GUI's slider is better. You can monitor the output of almost every subsystem to hear what it is doing to your sound including the output of the composite processing section. You can hear the results of final composite limiting and clipping before you put the processor on the air. There is, however, some silliness here. If you set your composite output to have normal FM pre-emphasis, that's precisely what you'll hear from the headphone monitor. No separate automatic de-emphasis is applied to it. Thus, you have to turn off pre-emphasis on the composite output to monitor it from the headphone jack with a flat frequency response. If the unit is in the air chain you won't want to do this as it will disrupt pre-emphasis as broadcast.

TRANSPARENCY

Vorsis processors pride themselves as being uncolored out of the box. They have no signature sound. While one can choose from a large selection for factory crafted presets, as is the case with every manufacturer, I found I needed to modify them to get the sound I'm after. This is a more demanding chore when a box doesn't come with its own signature sound. Also, unlike other processors, the AP-2000 does not have simplified menu and control modes. There are no basic more-or-less adjustments that automatically alter a bevy of parameters. I was told it's on the AP-2000 wish list to add a simplified control option. While the underlying software was designed to create good results it is also easy to create an ugly sound. Some caution must be employed along with a good pair of ears.

The AP-2000 is capable of producing a very open or a very tightly compressed in-your-face sound. There are tools for recognizing and processing mostly monaural audio human speech differently to help reduce sibilance and audible peak clipping and they do work. The look-ahead distortion canceling limiter/clippers do reduce artifacts. The special bass handling processing can be tuned for intentional doubling or for a very clean tight low end. You do not want to pre-process with an outboard AGC because the built-in intelligent sweet spot AGC math is linked to the compressor/limiter math to keep the processing in its sweet spot over a very wide dynamic range.

I was looking for an exceptionally open sound. So, I dialed back all of the compressor/limiter functions leaving only AGC stages and final protection math in service. This resulted in some peak distortion especially with speech. You cannot depend only upon the AGC stage math to provide sufficient level control without forcing the final processing to work too hard. This is a fact of life for all audio processors, not just the Vorsis. Each stage contributes something to audio control. The Vorsis AGC is especially smart but you cannot run without some additional compression and limiting prior to the final composite processing.

There is an almost infinite amount of adjusting one can do with this processor and, with limited time to experiment, I only scratched the surface.

STUDIO SESSIONS

Durabook Lives Up to Its Name

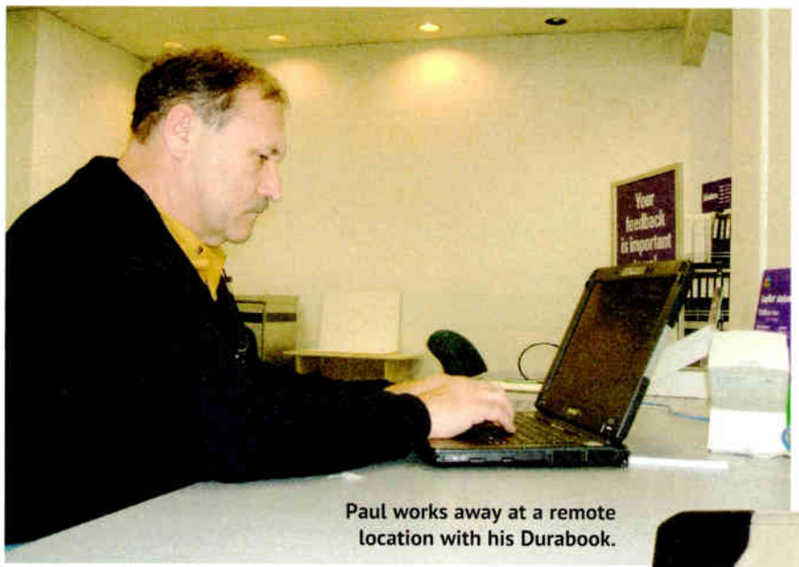
The Warrior Meets a Computer Made for His Lifestyle and Is Pleased

BY PAUL KAMINSKI

The road brings challenges to those who must travel it and to the equipment that travels it as well. The last thing a sales person, engineer, producer or reporter needs is failure from the most complex tool they may carry — a laptop computer — when trying to work from a remote location. GammaTech Computer Corp. builds the Durabook line to help reduce a few of the physical worries that come from life on the road and provide more than enough processing power to handle the challenges and complexity of that environment.

RADIO ROAD WARRIOR

Columns are archived at radioworld.com



Paul works away at a remote location with his Durabook.

I had a chance to test a Durabook D14RM for a few months. It was loaded with almost every option available: Vista Business, 2 GB of RAM, a 320 GB hard drive and an Intel P4500 processor running at 2.1 GHz.

SOLID CASE

When you take the D14RM from the packing material, you can't help noticing the construction of the case first thing. It's made from a composite material that is 20 times stronger than ABS plastic. A good thing, since the carrying case I was using for the Durabook was accidentally yanked off my shoulder while going through a turnstile at the Greenbelt, Md. Metrorail station. It crashed to the floor. When I checked the machine, the laptop booted immediately and I was able to send e-mails as though nothing happened.

What about other challenges in the real world, like an accidental spill on the keyboard? While not completely waterproof, the Durabook will shake off an accidental small spill of water on the keyboard and continue to operate. Operating outside? I set up outdoors in a campsite where the temperature fell to 50 degrees, and the Durabook continued to work. There are rubber covers for every port on the Durabook D14, which also help to keep dust, dirt and drops of water away from the electronics. The physical security of the unit is backed by standard fingerprint recognition software and sensor, and standard CompuTrace, which is loaded in the machine's BIOS. That means that the average computer thief will not know that the Durabook with CompuTrace can be monitored online. There is also provision for a standard Kensington security cable and lock.

The D14RM can be ordered with four powered USB 2.0 ports, a webcam, DVD burner, and an option for 3G/4G wireless. I used a Sprint Sierra Wireless 597 USB card to work with 3G — which I used to transmit submissions literally from the side of the road to CBS News in New York for the hourly newscasts early on "Black Friday" in November. The Durabook has standard 802.11 abgn capabilities for wireless networks and an Ethernet port. They all worked well at the ad hoc wireless network at the NASCAR press hotel and on a wired Ethernet network at Homestead-Miami Speedway for pre-race and post-race coverage.

If one is setting up an ad hoc newsroom in a hotel room, the sound from reporters can be ingested into the audio editing program with the USB ports from thumb drives or machines, from the onboard card reader, the analog input jack and with the Bluetooth option, any Bluetooth device (such as the JK Audio Daptor Three, for instance). I also used a Marshall Electronics MicMatePro as a microphone interface and sound card.

With such a quick processor, no issues arose with Audacity (my usual audio editing program). Half a gig more of processor speed does make a difference in the speed of cutting audio, watching video, and with a fast enough connection, Web surfing.

BATTERY LIFE

The test laptop was equipped with a six cell Li-Ion battery. Vista has a utility that allows users to select between power schemes that maximize battery life or

performance. I selected a scheme which balanced performance and battery life, and was able to get a consistent two and a half hours of running on batteries before I had to recharge.

The DVD player would play Blu-ray discs, and export the video through an optional HDMI port — which means that the laptop should process HD video. So a very sophisticated HD sales presentation can easily be played for a client, by connecting the optional HDMI port to the client's video display. The Cyberlink 7 DVD suite (standard) has a basic non-linear video editing program, which can be used to assemble that sales or promotional presentation in much the same manner as I'd use Audacity to assemble radio programs. With the webcam and 3/4G wireless, an engineer could take the Durabook to the transmitter site and video chat with tech support if necessary.

The only agitation during our test came from the operating system — and that is certainly not the fault of GammaTech but rather Microsoft. Though Vista had some neat features, it seemed more complex than it had to be, and it did not allow me to use my regular podcast generation program. My suggestion would be to order this machine with Windows 7. (*Editor's Note: According to GammaTech the D14RM now ships with choice of Windows 7 or Vista.*)

The Durabook D14RM has a manufacturer's suggested retail price of $1,362. As shipped and equipped, the D14RM I tested sold for $1,627. You will see Durabooks in law enforcement vehicles all over the country. I suspect you may begin to see a few of these on the road in broadcast applications. The as-tested price for the D14RM is high, but in this case you really do get what you pay for. The physical protection capability of the unit itself (drop, shock, water and dust resistance, tough outer case) may be enough to justify its purchase.

For information, contact GammaTech in California at (800) 995-8946 or visit www.gammatechusa.com.

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

MARKET PLACE

GIMMEE A BEAT: For radio DJs doing the club thing, Denon DJ is debuting the DN-X1600 digital DJ mixer, a four-channel mixer with Alps 60 mm channel faders and a 45 mm crossfader.

Accompanying each channel is a 16-segment LED meter and three-band EQ. A unique feature is V-Link, a technology courtesy of Edirol/Roland that allows for linking to Edirol video mixers. Unit includes 14 digital effects such as delay, echo, ping-pong delay and beat scratch. **Info:** www.denondj.com

'Fidelity' Losses and Your Radio Station

The Key Concepts to Remember: Prevent, Protect, Insure & Recover

BY MARK E. BATTERSBY

Sadly, chances are someone has stolen from your radio station or broadcasting equipment business.

It may have been an isolated instance, it may be widespread and ongoing, but statistically, it has happened. Even worse, receding prosperity in our troubled economy may be to blame for a dramatic increase in theft losses.

Even a business with no physical merchandise, no face-to-face cash transactions, may be susceptible to other forms of business theft and fraud. In fact, the U.S. Small Business Administration estimated in a 2008 report that, even when retail theft such as shoplifting is included, two-thirds of business thefts are employee thefts rather than thefts or fraud committed by outsiders.

That's right, massive losses such as those in the Madoff case and the subprime meltdown have made the headlines, but it is often the unsuspected threats such as embezzling employees, thieves, forgers and other cheats that threaten the financial health of many businesses. There's no reason radio can be considered exempt.

Discovery of betrayal by a trusted employee or business associate typically leads to disbelief, shock, anger and shame.

Paralysis is understandable after the fact. However, actions taken before might have prevented the loss; insurance might help make the broadcasting operation whole; our tax laws will ease the bite of theft or fraud losses; and prompt action when the loss is discovered will not only mitigate its impact but can facilitate recovery.

EMBEZZLEMENT AND THEFT

Ask the average owner or manager if he or she is concerned about embezzlement or employee theft and the likely response will be "I don't have to worry about that because:

"My employees are all good, honest people."
"We're just a small company."
"My people have all been with me a long time, so I know whom I can trust."
"We don't handle cash."

(continued on page 26)

iStockphoto/joaquin croxatto

THE FRESHEST AIR

The new tablemount Air 3 delivers superb broadcast quality and a great feature set at an extremely attractive price. The Air 3 gives you 12 stereo input fader channels (with both A and B balanced inputs on each channel), a 13th phone caller fader, two mic preamps, two program busses, a control room monitor, split cue, a built-in cue speaker and lots more. Its USB connection is patchable to any of your input faders and internally dipswitchable to pick up program 1 or program 2 output mixes. This lets the Air 3 interface with your desktop computer for news and music sweetening functions, or to stream audio mixes from and to the console. RJ-45 connectors keep your wiring simple and inexpensive. Completely made in the USA and available TODAY!

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FIDELITY

(continued from page 24)

If your answer matches any one of these statements, you are probably operating under a few misconceptions that could prove expensive to your business. If you think embezzlement or employee theft will never happen in your broadcast business, think again.

Security experts say that as many as 30 percent of the average business's employees do steal, and another 60 percent will steal if given a motive and opportunity. Some estimates indicate that more than $600 billion is stolen annually, or roughly $4,500 per employee. According to the U.S. Department of Commerce, about a third of all business failures each year can be traced back to employee theft and other employee crime.

INSURE

Because stealing can cost your operation a lot of money, the best way to avoid employee theft is to take steps to prevent it from ever happening. See the tips in the box for suggestions.

But because employee theft or dishonesty can severely damage any radio station's bottom line or credit, create adverse publicity and disrupt operations, it's also almost a necessity to insure the operation from the employee who endangers the financial stability of the operation by stealing funds, equipment or proprietary information.

When it comes to buying insurance, however, the owners and managers of many businesses are finding out what it feels like to be a teenager seeking an automobile liability policy.

Insurers are cutting back on the amount of general liability coverage they will issue and, in some cases, raising rates sharply.

Fortunately, "shopping" for available, affordable insurance such as "fidelity" insurance provides several options.

Fidelity liability insurance provides coverage for the loss of money, securities or property due to employee theft. The term "employee" can include a non-compensated officer of the company, former employees, temporary personnel, directors or trustees as well as regularly employed personnel.

Some fidelity liability policies also insure against losses resulting from employees by computer theft or electronic funds transfer fraud, and they cover employee dishonesty (required by ERISA) for the company's employee benefit plan. If the policy does not address these additional areas, protection can be purchased separately as:

- Commercial crime coverage, which covers money and securities, stock and fixtures against theft, burglary and robbery both on and off the insured premises and from both employees and outsiders, or
- Fidelity bonds, which cover business owners for losses due to dishonest acts by their employees.

PROPER STEPS, PROPER TIME

It should come as no surprise that insurance companies often deny or limit claims based on policy language or challenges to the policy itself. Thus, upon learning of a loss due to theft or fraud, a broadcasting business owner or manager should:

- Immediately notify the insurance company, even if the full details remain to be determined. Many insurance companies specify a period within which notice must be given.
- Conduct an immediate, discreet investigation focusing on the scope of the loss, the identity of participants and the disposition of the stolen assets.
- Implement immediate safeguards to prevent further losses.
- Garner information for a fraud audit and an asset seizure auction.
- Attempt to interview, secure a statement and secure restitution from any dishonest employees.
- Terminate dishonest employees.
- Prepare and submit a "proof of loss" regarding the insurance claim. Most insurance policies have a specific time period within which a sworn proof of loss must be submitted; policyholders should comply or obtain a written extension. The initial submission may be supplemented, if the full nature or extent of loss is not known by the deadline.
- Set a target for the earliest date when a lawsuit may be filed. Many fidelity insurance policies state that an action against the insurance company must be commenced within two years of discovery of a covered loss.

Throughout, the station or broadcasting business owner or manager should remember:

- Do not make any promises to the dishonest employee that you will refrain from contacting the authorities;
- Do not waive or release any claims against the dishonest employee or potentially secondary responsible parties without complete restitution; and
- Do not settle with any party without first contacting the insurance company.

RECOVERY VIA TAX LOSSES

Although lost profits are not tax deductible, Uncle Sam, in the form of our tax rules, stands ready to help every broadcasting business cope with theft and fraud losses. Theft losses generate embezzlement tax deductions.

Under our tax rules, theft is defined as the taking and removing of money or property with the intent to deprive the owner of it. In the fine print, it reads, "The taking of property must be illegal under the law of the state where it occurred and it must have been done with a criminal intent."

Theft losses, like most types of losses, are usually tax deductible in the year sustained. However, under the tax rules, theft losses are actually "sustained" in the year when the station owner or

(continued on page 28)

PREVENTION FIRST

While these steps are not foolproof, they can offer a measure of protection against employees raiding the till:

- Perform background checks of prospective employees
- Consider giving an "honesty test," a standardized, commercially available written test. On the downside, these tests are often inaccurate and may violate privacy and civil rights, although they do help keep out people with a propensity to steal.
- Supervise your employees
- Cultivate conducive, employee-employer relationships
- Appropriately assign and separate employee responsibility, accountability and authority
- Institute procedural controls involving receipt and payment of funds
- Separate the functions of purchasing, ordering, receiving and payment
- Institute protection measures (locks, alarms, safes, security guards)
- Continually monitor and evaluate your business operations, making it hard to steal, and
- Show a willingness to prosecute employees caught stealing

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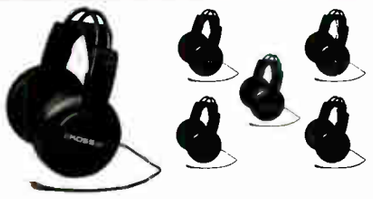

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BGS

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Do-It-Yourself Research

Even Lacking a Real Budget, You Can Gather Invaluable Info

As I talk with program directors around the USA, I find a recurring theme concerning research: There isn't much.

I repeatedly hear that the research budget, once a favorite target of cuts, isn't being cut anymore — because there hasn't been research money allocated for several years.

PROMO POWER

Mark Lapidus

The result is that we now have more PDs than ever making uneducated guesses as to what their audiences want from them.

Worse, several of the younger PDs with whom I've spoken are absolutely convinced they know what their audience likes, or doesn't like, based on personal intuition. It hasn't occurred to them that they bring their own bias and baggage to divining what they believe their listeners are thinking.

While I have no magic wand that will return research budgets to you, I am suggesting that PDs now need to make a greater effort at gathering opinions from target audiences that may shed a least a little light on decision-making.

Make no mistake, however: This is not a substitute for real research executed by professionals who can help recruit/screen, ask the proper questions and interpret answers into action items that produce positive ratings results.

What can you hope to accomplish and how do you start?

You're not going to be able to do proper perceptual or music research, but you can do focus groups. The simplest method is to conduct a series of "listener advisory board" panels, in which you ask several groups the same questions to determine if there are patterns in the answers you receive.

CAREFUL QUESTIONS

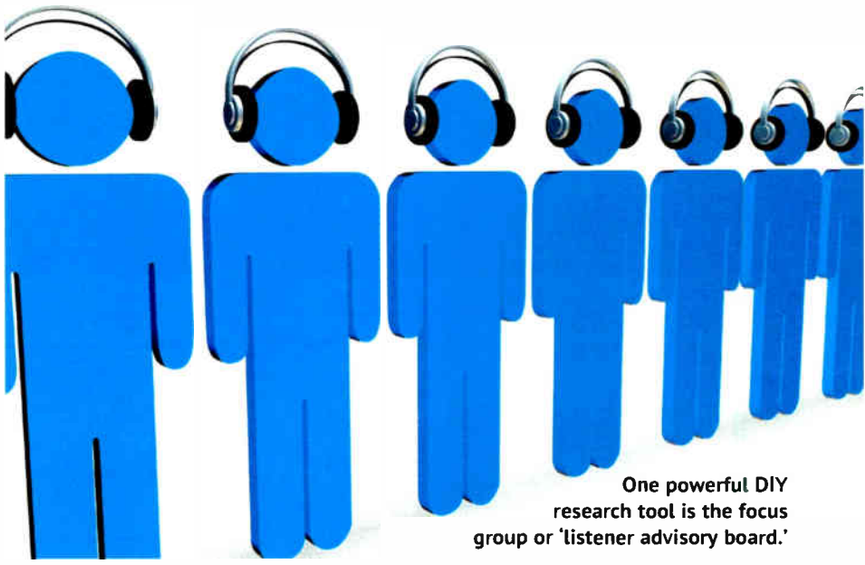
Your first step is determining a "screener." The goal of the screener is find people for your research group who match the core of your target demo.

For example, if you are a sports FM station that doesn't carry baseball, you are likely looking for men 18 to 40 who consume at least two hours of sports entertainment per week and listen to your radio station.

After determining who you're looking for, how do you find them?

Your website, Facebook page and your own airwaves are great places to find recruits. Another method is to try Craigslist or another local classified vehicle that is likely to reach your target. Advertise that you are seeking people who have opinions about music, or sports, or talk — whatever you're researching. Offer an incentive such as small sums of cash, tickets or T-shirts to pump up participation.

You're trying to find 10 to 15 people who can meet for about an hour one early evening or on a weekend. You'll want to schedule three or four separate groups of people. Why so many? Some won't show even when they tell you they'll be there; and the group size has to big enough that you obtain a variety of opinions.



One powerful DIY research tool is the focus group or 'listener advisory board.'

Consider asking questions about your on-air talent, the layout of your website, your Facebook page, what you do with Twitter, your contests and what your panel thinks of your direct competitors. Do not ask the group questions about how they might feel about something offered in the future.

It's vital that the moderator not lead the group to answers. The minute a moderator expresses his or her own opinion about a question, the entire session is in jeopardy. This is why I recommend having someone else moderate your panels while you watch from a corner of the room. Perhaps you can find a program director from a sister station with whom you can trade groups.

A moderator must be careful about the dynamic of each focus group. When it's obvious that one person is leading every question, the moderator must intercede and pull opinions out of other participants.

When asking questions concerning talent, it's a great idea to use recordings (the same ones for each group). Make sure these are short enough to keep people's interest but long enough to be representative. Ask the group what they liked and what they didn't.

Finally, when you do focus groups, you must be open to hearing things about your radio station that make you uncomfortable. Since you have pride in your product, it's not easy hearing negativity, or views that fly in the face of what you believe.

Remember, the key to being a great program director is being a great listener!

The author is president of Lapidus Media. Contact him at marklapidus@verizon.net.

FIDELITY

(continued from page 26)

manager discovers the loss. Thus, a theft loss is not deductible in the tax year in which the theft actually occurs unless that also happens to be the year in which the loss was discovered.

Going one step further: If, in the year of discovery, a reasonable possibility of reimbursement for any loss exists, the deduction cannot be taken until that reimbursement is actually made or ruled out as likely. Remember, the basic rule states that in order for losses to be deductible, there must be a "closed transaction."

In order to deduct a theft loss, a business owner or manager must be able to show there was a theft as well as support the amount claimed as a deduction. For a theft loss, this means being able to show the following:

- When it was first discovered that property was missing
- That your property was stolen
- That you were the owner of the property
- Whether a claim for reimbursement exists for which there is a reasonable expectation of recovery.

The cost can be steep — and, in instances of employee thefts such as embezzlement, devastating.

The way the broadcasting operation protects itself before such losses occur, maintains insurance protection, reacts to the theft and understands the recovery possibilities offered under our tax laws are important. Also important is the range of professional advice available every step of the way.

Mark Battersby is a tax and financial writer based in the suburban Philadelphia community of Ardmore, Pa.

STATIONSERVICES

LIVE365 LAUNCHES 'FAITHCASTING' PACKAGES

Promising churches and other organizations "an easy and affordable way to spread the Word," Live365, an Internet broadcasting network, launched "Faithcasting" Internet radio packages. The company said targeted users include "mega-churches, small rural churches, organizations and passionate individuals" who wish to reach worldwide audiences.

Services start at $99 a month and include software and broadcasting tools as well as phone and e-mail support.

The company also offers distribution through Live365.com, iPhone, Blackberry, Windows Mobile and devices such as TiVo and WDTV Live.

"Seeing an increase in demand for faith-based broadcasting services, Live365 recently added custom features targeted to the needs of this growing market," it stated.

"For example, Faithcasters have the option of including a 'Donation' button on the custom player window for their station, which also can be embedded on their website. As always, Live365 also covers all fees for royalty organizations, including ASCAP, BMI, SESAC, and SoundExchange."

Info: www.live365.com/pro/faithcast.live

TAKING IT TO THE 'HOMEFRONT'

Danny Lipford, a home improvement expert, is in his second year with the syndicated radio show "Homefront with Danny Lipford."

Lipford took over the show in 2009 after the death of host Don Zeman. Along with co-host Allen Lyle, Lipford answers call-in questions from listeners, interviews guests such as home designer Kathy Ireland, and "shares adventures and misadventures from the world of home improvement."

Lipford also is known for his Emmy-nominated TV show "Today's Homeowner with Danny Lipford" and regular appearances on The Weather Channel and "The Early Show" on CBS.

Info: E-mail Danny Lipford Media at bill@dannylipford.com.

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Arrakis 1200-1SS 15-channel console for sale, several years old, been in storage 2 years, worked great then, includes power supply and spare parts. Contact help@chapmanradio.com.

WANT TO BUY

ADM (audio designs and manufacturing) 70s era consoles and parts. Al @ agrunwel@twcny.rr.com.

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Collector wants to buy: old vintage pro gears, compressor/limiter, microphone, mixing consoles, amplifiers, mic preamps, speakers, turntables, EQ working or not, working transformers (UTC Western Electric), Fairchild, Western Electric, Langevin, RCA, Gates, Urei, Altec, Pultec, Collins. Cash - pick up 773-339-9035

2" plastic "spot" reels 6.5 or 8" diameter, as used for quad video. Wayne, Audio Village, 760-320-0728 or audiovlg@gte.net.

Equipment Wanted: obsolete, or out of service broadcast recording gear, amplifiers, preamps, outboard, radio or mixing consoles, microphones, etc. Large lots acceptable. Pickup or shipping can be discussed. 443-854-0725 or ajkivi@gmail.com.

I'm looking for San Francisco radio recordings from the 1920's through the 1980's. For example newscast, talk shows, music shows, live band remotes, etc. Stations like KGO, KFRC, KSFO, KTAB, KDIA, KWBR, KSFX, KOBY, KCBS, KQW, KRE, KTIM, KYA, etc, I will pay for copies... Feel free to call me at 925-284-5428 or you can email me at ronwtamm@yahoo.com.

Looking for a broadcast excerpt of a SanFrancisco Giant's taped off of KSFO radio from 1959, interviews with Willie Mays, Dusty Rhodes & some play by play excerpts, also features a homerun by Willie Mays and Felipe Alou stealing second base, running time is 18:02, also looking for SF Giants games and/or highlights from 1958-1978 also taped off KSFO Radio. Ron, 925-284-5428 or ronwtamm@yahoo.com.

Looking for KFRC signoff radio broadcast from 1930 Andy Potter, running time is 0:22 & also the KLX kitchen the program guest is Susanne Caygill, a discussion of women's affairs with a long promotion for Caygill's appearance at a local store. Anne Truax, Susanne Caygill, running time is 13:44. Ron, 925-284-5428 or email ronwtamm@yahoo.com.

Looking for KTIM FM radio shows from 1981-1984 if possible unscoped. R Tamm, 925-284-5428 or ronwtamm@yahoo.com.

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Unique, dynamic personality with passion seeks opportunity to learn and grow in radio. On-air talent including Music/Sports. Strong copywriting ability. Jeremy Red, 214-650-4283 or redmanaf@ hotmail.com.

Female with strong digital editing abilities. Extremely creative. Good show prep skills. Dependable and focused. Energetic and friendly. Self-motivated, independent and passionate. Jalee'cia, 682-518-4374 or jaleecia18@yahoo.com.

Goal driven, yet detail oriented production specialist with copywriting, and voiceover experience. Very tech savvy, with practical knowledge of studio operations and applications. Larry, dz_ldr@ yahoo.com.

Innovative on-air talent looking for new challenges. Freelance voice/creative copywriter. Good with character voices and comedy bits. Strong Production/Digital Editing skills. James, 817-551-7741 or jamesdarter@gmail.com.

READER'SFORUM

T1 SUPPORT

In a recent issue of Radio World, Bob Ladd of WMYR(AM)/WCNZ(AM) noted his difficulties with a T1 connection being down for months waiting for repairs. This amazes me, since the major advantage of the T1 is that this can be avoided.

The T1 is a tariffed service; rates and minimum uptimes are regulated by the government. Unlike with an untariffed DSL connection, the telco can be fined severely if the service is not repaired promptly.

Much of what you pay extra for when you purchase a T1 is that peace of mind.

The T1 is a tariffed service. The telco can be fined severely if the service is not repaired promptly.

– Scott Dorsey

A customer of mine recently had a difficulty with a tariffed data circuit that went down at irregular intervals.

After I spent two days on the phone with people at Verizon who hardly spoke English and did not understand what I was saying when I quoted bit error rates to them, I finally got them to roll a truck. The technician who arrived had never seen the service and suggested the problem probably was with my ISP. In the process he also managed to disconnect the office voice line.

I faxed a letter describing the issue to the state public utility commission, and within an hour I had an executive from Verizon calling me up and asking me why I hadn't escalated the problem. A truck with an actual competent technician arrived the next day and the problem was sorted out by moving my circuit to a different pair in a damaged trunk.

May I strongly suggest that, even though some time has elapsed, Mr. Ladd write a short letter to the Florida Public Service Commission describing his experience with the telco and what he finally wound up having to do when the problem was never resolved.

If nothing else it will probably prevent such problems from happening to others in his area.

Scott Dorsey
Kludge Audio
Williamsburg, Va.

ARE YOU ALERT-READY?

If a tree in the forest falls and there is no one near, does it make a sound?

If the countryside is being chewed up by a tornado but the local radio station is on auto-pilot, will there be an alert?

I'd not want to be the GM of any radio station that did not respond in a real emergency. I'd have difficulty facing my listeners, and, particularly my advertisers. Your station depends on both for a living. Give-back cannot be any more important than the proper response to a real emergency.

How to make sure you don't drop the most important ball?

Resolve now to get intimately involved with your local emergency services, first responders, city and county and regional leaders. Make sure they know how to reach several of your key people in a descending-order telephone tree — at home, on mobile, via close friends and relatives.

Make sure they know that your people will react … that they may have to send a helicopter, four-wheel-drive vehicle or snowcat to pick them up but that your people will respond and perform in the most vital link your listeners and your community can rely on.

Day-of-disaster is a poor time to try to get acquainted with the emergency leaders in your community. The new EAS CAP-capable gear will be only an expense if you don't work now to get really close to the obvious people in your community.

If your tower is not on the ground, how will you face your public?

Dave Burns
Richmond, Ind.

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READER'S FORUM

AM, OUT IN FRONT

Kudos to Paula Triplett for a "spot-on" response (March 10, Letters) to Scott Taylor's "chip-on-his-shoulder" rant about AM radio.

I had no idea what Taylor was trying to prove in his Jan. 1 commentary and finally decided that he simply had an old axe to grind with an AM owner/manager, maybe someone who wouldn't hire him, or fired him.

He wrote like a typical radio-wannabe, attempting to show us that he is much smarter than the rest of us who have been making a good living and proudly serving our communities for many years with AM radio stations … people like Harry Hoyler, for example (Jan. 1, Letters) and of course, Paula and the Finger Lakes Radio Group, and hundreds of other small-market operations around the country — people Taylor obviously never contacted. But when you already know it all, why bother to be confused with the facts?

Taylor is welcome anytime to take a look at our AM facility and meet our team — people who love the adventure that is small-market AM radio and are proud of what we do for our communities.

Here in northwestern North Dakota we didn't participate in the recession, and we are well into our sixth record year in a row, with our AM station solidly leading the way. Are we facing challenges? Of course; and we appreciate each and every one of them and how hard they work to keep us on our toes.

With people like Harry and Paula, and here in the west, our Cherry Creek philosophy of small-market radio management and sales, I have never been more optimistic about the future of good old-fashioned R-A-D-I-O, with AM out there in front, where it has always been.

Way to go Paula!

If anyone wants an e-mail edition of our monthly newsletter, e-mail me at *jwanson@cherrycreekradio.com* and put "Newsletter" in the subject line.

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For Your Information

MARCH 2010

"Happy St. Patrick's Day" and welcome to our F.Y.I. Newsletter, our continuing effort to keep advertisers and friends up to date on all the exciting happenings in the world of Radio, at Cherry Creek Radio and the Northern Plains Radio Network. Comments and suggestions are always encouraged.

SPORTS AND RECREATION SHOW

Williston's 25th Annual SPORTS and RECREATION SHOW will be held March 19th thru the 21st at the Raymond Family Community Center. The Big Event is sponsored by the Williston Convention and Visitors Bureau; and the Cherry Creek Northern Plains Radio Network will be there, Broadcasting LIVE! Be sure to stop by our booth on the second floor and say "HI!"!

SPRING WHEAT SHOW

The 57th Annual National Hard Spring WHEAT SHOW was held February 1st thru the 3rd at the Airport International Inn in Williston. The keynote speaker was Ron Hanson, Distinguished Professor of Agribusiness at the University of Nebraska. The Cherry Creek Northern Plains Radio Network was a sponsor of this important agricultural event, and Earl was there, Broadcasting LIVE!

HIGH SCHOOL TOURNAMENTS ON THE INTERNET

Again, during the Winter Sports Tournament Season; EVERY high school sporting event we broadcast on any of our three Cherry Creek Northern Plains Radio Network stations, is being "streamed" LIVE on the Internet. Just go to the Website of the station broadcasting the game, and click on the "Streaming" Icon! Please help us spread the word to family and friends across the country and around the world! If you have any questions or problems, call Scott Haugen at 701-572-5371 or J.D. Nelson at 406-433-5090.

DARLENE WINS BIG

Congratulations to Darlene Klein of Sidney, Montana, another BIG WINNER in our daily CASH CAROUSEL GAME on "Country Thunder"; Z-96.1! Darlene won a whopping $568, and she is probably still screaming! Tune in, daily from 6-10AM, for your opportunity to WIN!

DEADWOOD HERE WE COME

Our next exciting bus trip to Deadwood, South Dakota, is March 12th through the 14th. Both buses are full, but Penny is taking names for a waiting list. Call her at 701-572-5371. CALL TODAY!!

ANONYMOUS

"The two hardest things to handle in life are failure and success!"

Cherry Creek Radio Northern Plains Radio Network

The Northern Plains Radio Network uses this newsletter to keep in touch. Joel Swanson is general manager.

5. Competing technologies are putting up significant competition.
6. People are losing their jobs or having to work part time just to stay in the industry.

These are a few of the points that Mr. Taylor made, and it seems to me that all of these points are valid to one degree or another.

Very few young people in this country actually listen to AM. As a former educator teaching communications courses, I took yearly unscientific surveys and determined that in my classes, very few of my students had ever tuned into AM other than to see what the AM button does. Operators who do not change with the times are in serious trouble of being irrelevant.

Though many may disagree with Mr. Taylor's comments, he simply stated what he observed firsthand.

Obviously, many AM operators are doing the right things, making good business decisions, making a living and a profit. We do however need to refrain from "wanting to kill the messenger" as to the precarious state of affairs that many small AM operators find themselves in.

Daryl Alligood
Retired Educator
Raleigh, N.C.

LOST IN TRANSLATION

As I have read, some stations are experiencing tough times. When the economy is down, it can make it really tough on smaller-market stations.

I'd like to address translators and the effects they can have on local stations. I believe translators are good if they are used for the right reasons. But when other stations (and much of the time it is multiple station owners) put in translators with basically the same type of format, this really takes revenue from the local operator.

The translator people don't have multiple families to support in that community or the major investment of a main radio station, yet they are allowed to take a piece of the pie that the local station needs.

I feel that there should be some way that a translator should have to do at least 51 percent different programming than main stations to at least give the local station a fairer playing field.

Mark Taylor
President
Sky High Broadcasting
Neosho, Mo.

RW ON SW

Paul, please pass my congratulations to James Careless for his fine article on shortwave in the latest RW.

I of course am one of the habitual supporters of shortwave to some areas of the world that he talks about — in the ever-increasing minority. But he did an excellent job covering most aspects of the pro/con argument(s) in his succinct piece.

George Woodard
McKinney, Texas

LEAVING LAS VEGAS

James Withers' article on Las Vegas "The Show Behind the Show" (March 24) mentions: "The Strip was not even part of Las Vegas back then," a reference to 1940s development of the Flamingo Hotel.

In fact, it's still not. Unless you're north of Sahara Avenue, nothing on the Strip is in the City of Las Vegas.

Larry Fuss
President
Contemporary Communications
Las Vegas


FEATURES

The Show Behind the Show

Perhaps the Most Interesting Exhibit at NAB Is the City of Las Vegas Itself

BY JAMES G. WITHERS

FIRSTPERSON

STATION SERVICES

OPINION

CopperLan Offers Benefits to Broadcasters

The System Offers Manufacturers a Ready-Made Toolset for Control

BY DAVID HERSCOVITCH AND ERIC LUKAC-KURUC

CopperLan is a comprehensive system for command and control, combining software, middleware, protocol and procedures for computing platforms and embedded devices.

COMMENTARY

Currently running on OS-X, Windows, embedded Linux and other dedicated microcontroller implementations, it offers manufacturers of equipment and software applications a ready-made toolset to turn their products into intelligent networked nodes easily.

UNIFIED THEORY

The CopperLan native network topology is an abstract definition that can be applied to any existing or future physical connectivity solution.

In other words, the CopperLan neutral topology can be conformed to the specifics of Ethernet, USB, Firewire, etc. through a network adaptation layer. Thanks to its abstract upper topology, CopperLan can make a heterogeneous multi-network system appear unified.

Being non-IP based, it does not disturb other protocols sharing the same wires. This perfectly fulfills the goal of CopperLan to work as an independent layer of communication that is complementary to audio streaming or any other purpose, such as web access.

Systems employing CopperLan are self-configuring and allow for hot-plugging. There is no need for libraries to describe the capabilities of the added equipment. Each device is self-declared, exposing its parameters in plain text. This allows real-time device exploration and editing, remote feedback and display, as well as system-wide instant warnings.

CopperLan does not mandate the use of computers. Editing and other advanced features can be based on simple displays as typically found on hardware front panels.

For equipment lacking a text display, this zero-configuration network caters to full functionality, enabling remote editing from another piece of equipment.

Since CopperLan does not impose or imply audio streaming, it is equally useful for stations utilizing analog or digital audio. So even where every piece of equipment does not employ digital audio, all station gear can participate in a unified command and control architecture.

The time is overdue for broadcast to adopt a unified topography where all equipment communicates regardless of cabling type, manufacturer or location.

Just like MI has benefited greatly from the MIDI standard, the time is overdue for broadcast to adopt a unified topography where all equipment communicates regardless of cabling type, manufacturer or location.

Speaking of location, the ability for VPN tunneling offers remote management and troubleshooting — a boon for stations lacking permanent technical staff or programming remote broadcasts.

The need for the subtle combination of resilience and security is neatly addressed by CopperLan's peer-to-peer distributed intelligence.

For example, the loss of a connection will not break down the entire system as there is no "master" unit in the entire setup. Virtual connections can be (self-) locking, preventing accidental disconnections. Data transfer type messages can be encrypted, and since the whole system is non-IP based, there is no access for potential hacking.

CopperLan sports a total-recall setup management maintaining not only the settings in every device, but also the instant re-establishment of all virtual links.

REAL WORLD

The first CopperLan licensee in the broadcast industry is Radio Systems Inc. of Logan, N.J.

Radio Systems' vision for their new Platform console included multiple physical and virtual control surfaces, each with control of one or more audio engines. Given their high-performance standards and long list of required features for connection and communication, CopperLan provided a ready-made comprehensive solution, dramatically reducing integration effort.

The CopperLan software development environment allowed their development team quickly to implement a working communication platform. Illustrating this is the abstraction layer offered by the CopperLan API that allows the very same code to run inside the physical control surface and its computer application sibling.

Radio Systems choose to communicate via CopperLan by design so that other manufacturers could easily communicate with their console.

By supporting this idea of openness and collaboration in system control, the entire broadcast industry benefits from manufacturers and products that work well together.

David Herscovitch and Eric Lukac-Kuruc are chief executive officer and chief technology officer, respectively, of Klavis Technologies in Belgium.

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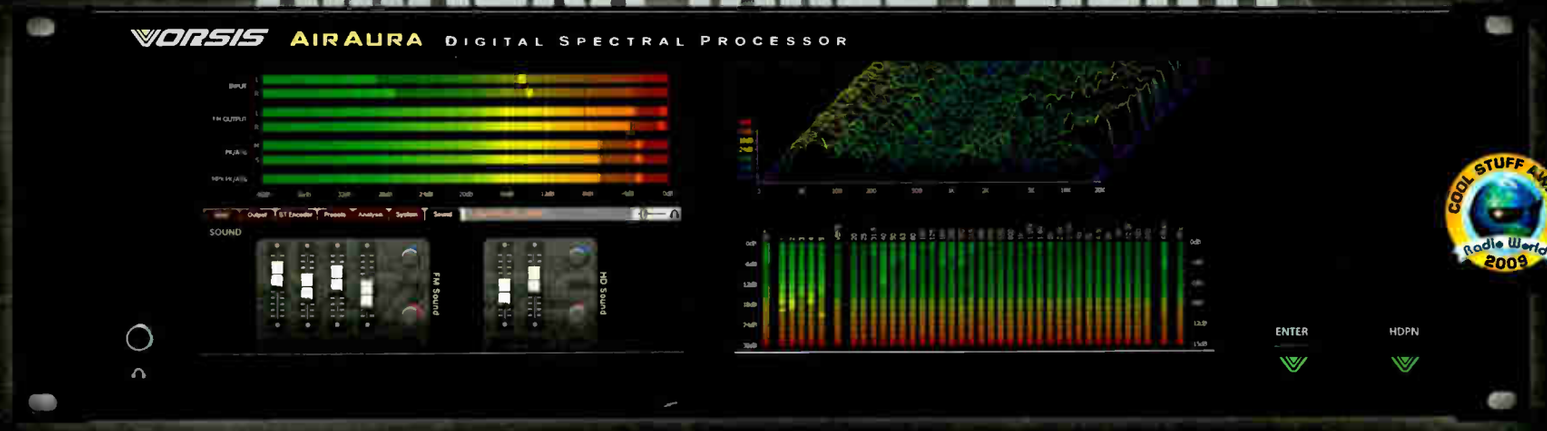

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- **New proprietary "AirAura" final clipper technology**
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