NAB SHOW TECH PREVIEW

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Consumer Demand Drives In-Car Connectivity

Pioneer's Cardenas puts dashboard evolution in perspective

LONG BEACH, CALIF. — As vice president of marketing for the Car Electronics Division of Pioneer Electronics USA, Ted Cardenas is responsible for overall brand strategy, sales initiatives, promotion and advertising. That puts him in the center of what's happening with the changing car dashboard as the aftermarket receiver manufacturer talks to customers about Pioneer's in-vehicle entertainment, navigation and connectivity products, and directs them to its retail and distribution partners.

Radio World News Editor/Washington Bureau Chief Leslie Stimson recently spoke with Cardenas about the "connected car" and radio's place in its evolving digital dashboard.

He began working in consumer electronics during his junior year in high school at Sound and Service in Carroll, Iowa, in 1989. Cardenas has been with Pioneer 18 years, starting as a product specialist, providing training and support for car and home electronics dealers.

In 2000, he moved to Pioneer's headquarters in Long Beach, Calif., and became brand manager for the mobile business group's marketing division. In 2007, he moved into a management role within the product planning department, working with Japanese engineers and design teams across U.S. mobile electronic product lines. He was promoted to his current role in 2012.

RW: We're hearing a lot about the "connected car." What does that mean and how do all types of audio consumption fit into that definition?

Cardenas: It's reaching out to the cloud or the Internet to bring some kind of content or event to push other content out. ... That's where the connected car gets really unique, because it's really

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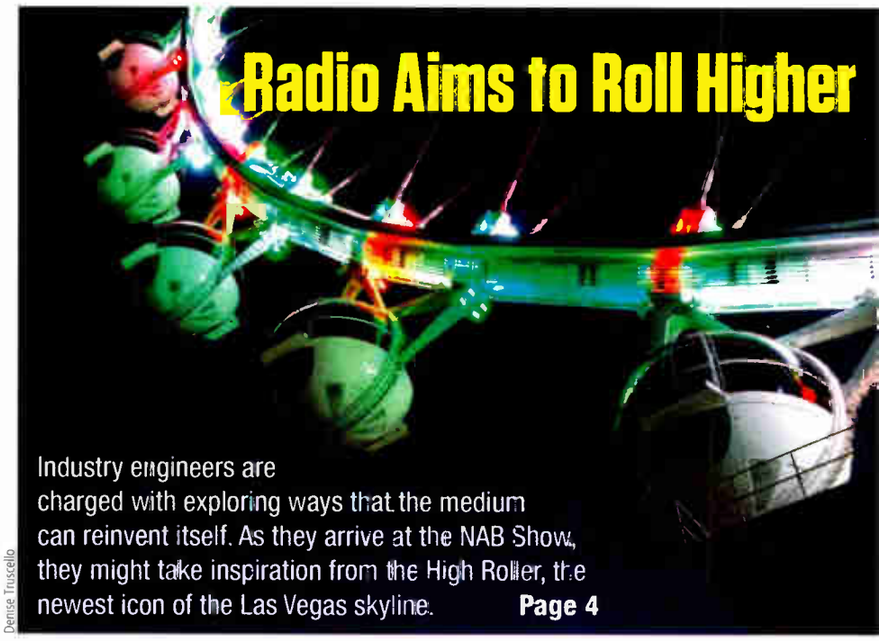

Radio Aims to Roll Higher

Industry engineers are charged with exploring ways that the medium can reinvent itself. As they arrive at the NAB Show, they might take inspiration from the High Roller, the newest icon of the Las Vegas skyline. **Page 4**

Denise Truscello

Settlement Talks in HD Radio Suit?

Court filings indicate radio groups may be willing to settle before trial

NEWS ANALYSIS

BY RANDY J. STINE

Court filings in an HD Radio patent suit indicate broadcasters' willingness to at least consider settling before trial.

The situation is hard to gauge, with broadcasters not commenting and the patent holder difficult to track down. But information has emerged that suggests a settlement could be in the offing.

Wyncomm LLC sued 14 radio ownership groups in November 2013, claiming that the voice and data

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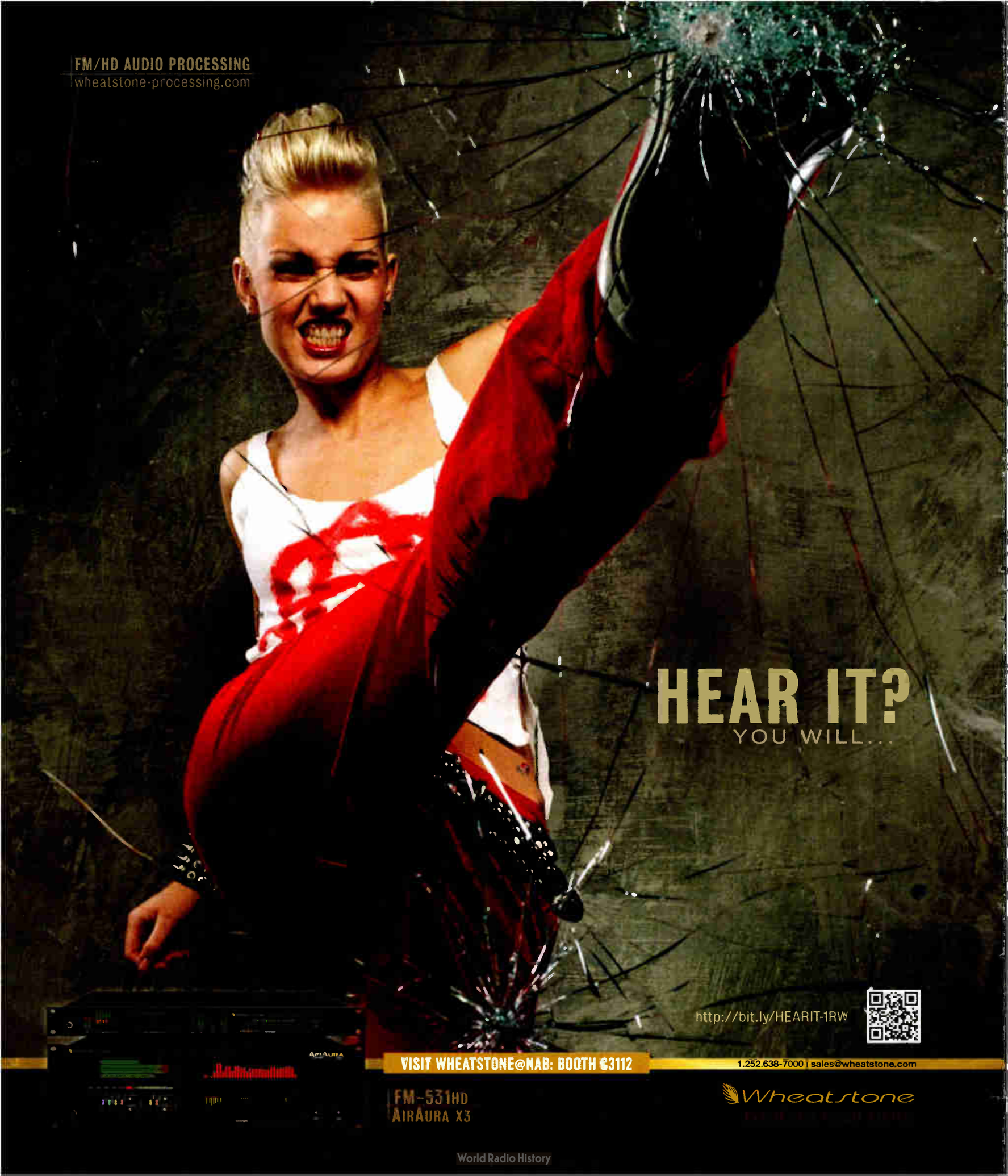

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Website: www.radioworld.com
Email: radioworld@nbmedia.com | Telephone: (703) 852-4600
Business Fax: (703) 852-4582 | Editorial Fax: (703) 852-4585

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EDITORIAL STAFF
EDITOR IN CHIEF, U.S. Paul J. McLane
NEWS EDITOR/WASHINGTON BUREAU CHIEF Leslie Stimson
GEAR & TECHNOLOGY EDITOR Brett Moss
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LATIN AMERICA EDITOR IN CHIEF Rogelio Ocampo
LATIN AMERICA EDITOR Karina Gerardi
ASSISTANT EDITOR Emily Reigart

EDITORIAL CONTRIBUTORS
W.C. Alexander, Barry Blesser, James Careless, Harry Cole, Ken Deutsch, Mark Durenberger, Charles Fitch, Christopher Friesen, Harold Hallikainen, Craig Johnston, Alan Jurison, Paul Kaminski, John Kean, Peter King, Mark Lapidus, Daniel Mansergh, John Merli, Laura Mir, Jim Peck, Mark Persons, Stephen M. Poole, Carl Lindemann, James O'Neal, Tom Osenkowsky, Rich Rarey, John Schneider, Randy Stine, Richard Strickland, James G. Withers, Tom Vernon

ADMINISTRATION & PRODUCTION
PUBLISHER John Casey
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CIRCULATION
GROUP DIRECTOR, AUDIENCE DEVELOPMENT Meg Estevez
CIRCULATION MANAGER Kwentin Keenan
ASSOCIATE CIRCULATION MANAGER Michele Fonville

SUBSCRIPTIONS
Radio World, P.O. Box 282, Lowell, MA 01853
TELEPHONE: 888-266-5828 (USA only 8:30 a.m.–5 p.m. EST)
978-667-0352 (Outside the US) FAX: 978-671-0460
WEBSITE: www.myRWNews.com
EMAIL: newbay@computerfulfillment.com

CORPORATE
NewBay Media LLC
PRESIDENT AND CEO Steve Palm
CHIEF FINANCIAL OFFICER Paul Mastronardi
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EXECUTIVE VICE PRESIDENT Carmel King
VICE PRESIDENT / SALES DIRECTOR Eric Trabb

ADVERTISING SALES REPRESENTATIVES
US REGIONAL & CANADA: John Casey, jcasey@nbmedia.com
T: 212-378-0400, ext. 512 | F: 330-247-1288
US REGIONAL: Michele Inderrieden, minderrieden@nbmedia.com
T: 212-378-0400, ext. 523 | F: 301-234-6303
EUROPE, AFRICA & MIDDLE EAST:
Raffaella Calabrese, rcalabrese@broadcast.it
T: +39-02-9288-4940 | F: +39-02-7004-36999
LATIN AMERICA: Susana Saibene, susana.saibene@gmail.com
T: +34-607-31-40-71
JAPAN: Eiji Yoshikawa, callems@world.odn.ne.jp
T: +81-3-3327-5759 | F: +81-3-3322-7933
ASIA-PACIFIC: Wengong Wang, wwg@imaschina.com
T: +86-755-83862930/40/50 | F: +86-755-83862920
CLASSIFIEDS: Michele Inderrieden, minderrieden@nbmedia.com
T: 212-378-0400, ext. 523 | F: 301-234-6303
LIST RENTAL: 914-925-2449, danny.grubert@lakegroupmedia.com

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Rarey Now Leads NPR Labs

NPR Distribution promotes Murphy

NPR has made two notable technical promotions.

Rich Rarey becomes director of NPR Labs, succeeding Mike Starling, who recently retired. Mark Murphy meanwhile is director of engineering for NPR Distribution, a new position.

Rarey had been manager of strategic technology applications. He started at NPR in 1980 as engineer of the Chicago Bureau; he was master control supervisor before moving to "Labs" in 2008. Based in Washington, he'll manage a staff of two plus three interns; he reports to Marty Garrison, vice president of technology operations, distribution and broadcast engineering.

NPR has "reimagined" the mission of NPR Labs, Rarey said, to expand on its core mission of supporting the organization and the broader public radio system through technical and other services. Over time, it has added grant-funded work and fee-based consulting, developing and testing products and services for clients.

Rich Rarey

Customers include stations that need accurate mapping products for proposed HD Radio coverage or customized Program Service Data tools; and internal NPR divisions for mapping products. The organization has provided consultations on audio codecs, streaming bit rate selection and loudness; it has done research for clients such as Nautel, the National Radio Systems Committee, Consumer Electronics Association and the Broadcast Traffic Consortium, of which NPR is a member.

Looking forward, Rarey said, areas of interest include evaluation and development of program service data tools, audio standards and loudness, program accessibility and media technology issues across a variety of platforms.

Rarey is working on a Department of Homeland Security Alerting project for the deaf and hard-of-hearing. This involves development of an accessible FM RBDS receiver to be used in an emergency alerting demonstration program in the Gulf Coast region. The CEA selected the receiver as a 2014 CES Innovations Awards honoree, as we've reported.

The work — funded by FEMA, and managed by DHS' Science and Technology Directorate — involves testing broadcast emergency texts with up to 500 deaf/hard-of-hearing volunteers through 26 public stations in Florida, Alabama, Mississippi, Louisiana and Texas.

Mark Murphy

NPR Labs is also working with the NRSC on studies to determine compatibility of FM single-sideband transmissions and a study on AM modulation-dependent carrier level transmissions. It is also updating its HD Radio power calculator.

Separately, Mark Murphy has been promoted to director of engineering for NPR Distribution, a new position. Previously, he was the division's deputy director of engineering.

Since joining NPR in 1981, Murphy has held a variety of technical roles including satellite repair depot supervisor and senior project engineer. Most recently, he has been the engineering lead for the Public Radio Satellite System's multiyear PRSS "Forward" project. The PRSS is managed by NPR.

In that role, he's been responsible for the installation of new satellite dishes and other ground equipment at more than 80 public radio stations.

Murphy oversees the satellite and terrestrial technologies that the PRSS uses to distribute broadcast content as well as a team of engineers. Murphy, based in Washington, will manage a team of five and reports to Steve Densmore, director of broadcast operations.

— Leslie Stimson

NEWSROUNDUP

HARRIS: One year after Harris Broadcast was spun off by Harris Corp., its new owner, private equity firm The Gores Group, is splitting the operation into two independent units. GatesAir will focus on over-the-air radio and TV broadcasting while sister Imagine Communications will focus on developing Internet- and cloud-based software networks and workflow systems. Former Harris Broadcast CEO Charlie Vogt will be chief executive officer of both. Imagine Communications will be based in Dallas. GatesAir will be based in Cincinnati, with its manufacturing, supply chain and fulfillment center in Quincy, Ill. Those operations have historic connections with the Gates and Harris names. GatesAir Chief Product Officer Rich Redmond said the company is "thrilled" to bring back the Gates name.

ICANN: The U.S. Commerce Department plans to transition away from its oversight role of the Internet's back end. The National Telecommunications and Information Administration announced a plan to give up oversight of key Internet domain name functions. Currently NTIA oversees the technical system that ensures the public can get to the websites they're looking for. It contracts with the Internet Corporation for Assigned Names and Numbers to carry out the Internet Assigned Numbers Authority functions, and has an agreement with Verisign under which that company performs related root zone management functions. Now is the time to begin a transition, according to Assistant Secretary of Commerce for Communications and Information Larry Strickling. "We look forward to ICANN convening stakeholders across the global Internet community to craft an appropriate transition plan."

LAWO: Lawo North America has moved headquarters to a new facility in Toronto, citing increased demand for its products. Contact the company at Lawo North America Corp., 2041 McCowan Road Unit 1, Toronto, Ontario M1S 3Y6 CANADA. Phone (416) 292-0078. For information contact *sales-north-america@lawo.com* or visit *www.lawo.com*. Lawo's parent is in Germany, where its products are manufactured.

World Radio History

FROM THE **EDITOR**

Paul McLane

Success Is Ahead, So Let's Roll

Denise Truscello

The wheel is a powerful symbol in human culture and history, one that has come to symbolize forward motion for a race of people who always seem to have somewhere else to be. Success is ahead if we can just get there; so let's roll.

That's why I find the "High Roller" an interesting visual metaphor for changes in our industry, and have put it on the cover of our NAB Show preview issue. The High Roller will grab everyone's gaze in Las Vegas this year; so now you will be able to nod knowingly and inform your friends.

This is the world's largest observation wheel, almost exactly as tall as the Washington Monument; it is part of a costly new shopping and entertainment "district" called The LINQ. The wheel's legs were going up when we were in town last year; now it is finished and about to open.

The ride has 28 glass-enclosed cabins, each of which can hold 40 people; the loop ride takes 30 minutes. The

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Deborah D. McAdams

NEWSROUNDUP

IN-CAR DATA: AT&T and Audi have put a price on in-car data. The companies are offering two options to people who would like to add their new Audi to an existing Mobile Share data plan: a 5 GB/ six-month plan for $99

and a 30 GB/30-month plan for $499. The plans coincide with the debut of the 2015 A3 sedan, available this month. According to the automaker, Audi will enable the first in-vehicle 4G LTE data connection in North America. Audi A3 sedans equipped with Audi Connect will receive a free six-month trial period. Audi Connect features picture navigation, audible news headlines, Facebook and Twitter alerts, access to 7,000 online stations and personalized RSS news feeds

INTERACTIVE ADS: NextRadio and TagStation want to beta-test the enhanced ad capabilities of FM-enabled smartphones. Emmis SVP/CTO Paul Brenner tells RW that "national brand" advertisers, broadcasters and Sprint are taking part. They've begun running synchronous beta-testing enhanced ad campaigns alongside radio campaigns. The tests will measure results for advertisers using consumer actions on mobile phones through TagStation into NextRadio FM Smartphones. Radio advertisers will be adding a level of interactivity with consumers connecting with them via texting, clicking to call, linking to websites, mobile couponing, sharing or use of location-based services.

RDS: The data broadcast of pubcaster Michigan Radio was hacked, and profane messages showed up on some receivers tuned to WVGR(FM) and WFUM(FM) in the west Michigan and Flint areas, according to Marketing Director Steve Chrypinski. "Michigan Radio took immediate steps to address this breach as soon as we became aware of it, including updating the passwords and other security settings used to access our RDS display." Michigan Radio is further encrypting its system. Engineers tell RW that stations with RDS encoders connected to public IP/Internet connections are vulnerable. Stations should deploy RDS encoders on a VPN/WAN secured connection or use other security techniques to prevent unauthorized access to the encoders, experts say, in addition to changing usernames and passwords from factory defaults.

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wheel is not only about a ride but about impact from a distance. It features 2,000 LED lights and changing colors (all-green for St. Pat's). The photos I've seen are striking, even for a town that defines visual candy. The skyline will look different thanks to this big bicycle rim.

Ferris wheels appear to be hot these days, perhaps in part thanks to the London Eye. One opened not long ago in Seattle; another is rising in Maryland, very close to the nation's capital. The New York Wheel planned on Staten Island would be even taller than the High Roller.

So apparently, what's perceived as "old" can "become new" again; maybe there's a lesson for radio in this.

WHAT GOES UP

Of course, I should be careful of my metaphors. Long before the TV show came along, the term "wheel of fortune" reminded thinking people that Fate is fickle, and who might be brought high can be brought low again.

Well, I liked the pix anyway.

The High Roller is set to open soon. Broadcasters might get lucky; according to a recent Dallas Morning News story, the owner, Caesar's Entertainment, was mum about its opening date, but the newspaper wrote: "The latest word is that there's likely to be a soft opening in March followed by a grand opening weekend of parties in late spring." So maybe you'll be among the first to get a look around (and I do mean *around*).

Our NAB Show tech preview is featured in this issue. See you in Vegas.

World Radio History

CARDENAS

(continued from page 1)

one of the first mediums, if not *the* first for us, to be able to not just receive information that's being broadcast from somewhere like a radio station, but also to have true two-way communication ... Now, whether it's the device, the car or the consumer, that information can be sent back up to the cloud to get dynamic things like location-based services, to get real-time traffic or weather or to cue different media sources and entertainment.

RW: *Do consumers care whether the connection is an embedded modem vs. a tethered cellphone connection?*

Cardenas: If the tethering is seamless, then the consumer doesn't care or doesn't want to know. If the tethering requires some action on their part, then there is still some resistance to it.

RW: *Meaning they just want it to work?*

Cardenas: I would generally say yes, most consumers just want it to work.

I think that has been one of the primary success points of Apple, when compared to a lot of other things. They use that in their marketing, "You can just pick it up and use it. It just works." Ultimately, and I don't really know if there's a lot of solutions out there that do this for the car, but ultimately if we're going to hit critical mass and we're going to have a lot of consumers who have this connected vehicle, it's going to need to be as simple as: I get in my car, I turn on the car and it's connected.

RW: *Does it seem that after NHTSA released its guidelines to minimize distraction, automakers are now pulling back a little bit on how they implement connectivity in the dash?*

Cardenas: I represent only the aftermarket. ... We're pretty fortunate because we're serving a consumer who is coming to us and saying, "I want a solution for this technology, and I'm willing to pay for it." ... The OEMs have a completely different and far more complex customer. They may have a customer who says, "I want that white car over there and I really like how it looks and I like how it drives. It's got this thing in the dash, which I may or may not want."

It's a really, really difficult proposition for the auto manufacturer, because on one hand, they have to meet demands of the consumer who wants that technology, and make it simple enough and make it work — but at the same time they have to make it *very* simple for the consumer who just wants an AM/FM radio and doesn't care about those connected features.

Pioneer has advanced HD Radio in its receivers. Last year, the company introduced Artist Experience on some of its models. This year, the HD Radio section of its new Networked Entertainment Experience receivers feature AE and display what's playing on multicast channels, if available. Shown is the AVIC-6000NEX.

RW: *At the CES show, discussions about where cars are going centered on driver-assisted technology, then automated, and finally, driverless vehicles. How does that affect how Pioneer is thinking about future products?*

Cardenas: If we ever got to, and I'm sure we will sometime in the future, but if we got to the point where the autonomous vehicle would be commonplace, really, that's going to change the entertainment system almost entirely. It would become almost much closer to a home entertainment system at that point, because we're simply getting in the vehicle and sitting down and letting the vehicle take us where we desire.

RW: *Radio is now beginning to realize the dash is more crowded, with streaming radio and satellite radio, as well as the ability to plug in your MP3 player and other devices. Are AM and FM stations always going to be in the dashboard?*

Cardenas: My position personally — and I think the position of Pioneer and most of the companies that are players either in the aftermarket or the OEM entertainment space for the automobile — we still firmly believe that terrestrial radio, AM and FM, certainly have an important place. Now is that importance going to diminish over time? Yes, that's a very real possibility. What is that timeline? I personally believe that it's still quite a long ways out. ...

Part of it is embracing, at least in my opinion, other technologies like the Internet, like Web pages, like Tweets, or other types of ways that the radio station that has traditionally been broadcasting out information or entertainment to their consumer base, embracing other methods to do so, *not* as alternatives, but to do so in conjunction with the radio broadcast they're doing.

RW: *In a broad sense, speaking of radio's competitors in the dash, why are manufacturers putting the capabilities to receive all these things into devices?*

Cardenas: It's two-fold. One is consumer demand. I would imagine all of us have tried those services, and [two], it's also the fact that we now can. If we rewind just 20 years ago, there was limited space and controls. Devices were larger and the cost was higher, and so, as a manufacturer ... we had to make choices. ... What I think is great about today from a consumer perspective is you can have all of those things.

I use pretty much all of those, but not every single day. I will switch. If I'm listening to Pandora for a certain amount of time, eventually I start hearing the same music over and over. And sure, I could switch over to another channel; but more often than not, I will switch to a completely different source. I'll go back to FM, and then I'll go back to music that's on my iPod or that I have in my CD player. ...

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MORE DASHBOARD

This is one in a series of articles about radio's role and future in the evolving automobile dashboard. To read other articles visit http://radioworld.com/dashboard.

World Radio History

NAB Booth C2221

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CARDENAS

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Radio has a clear advantage because you've got a person on the other end of that line. ... A good example ... is my wife listens to KISS(FM) here in L.A. every single morning, not because she likes music, although she likes music, but that's not her driving reason. It's because she wants to listen to Ryan Seacrest in the morning.

***RW:** Some CE manufacturers are moving away from making in-dash radios with knobs and buttons. Will those remain or not?*

Cardenas: It goes to consumer demand and it's cyclical. I would say if you looked back over the last 20 or 30 years, about every five years there's a group that takes all the buttons and knobs away and changes it to something else, and then they come back because we as consumers, for whatever reason, we tend to like knobs. We tend to like hard keys that are single-, or at most, dual-purpose, so that I know: When I press this button, it's going to turn the radio off. Or I know when I hit that button it's going to tune to preset number three. ...

I think the question becomes more of: Will we still replicate a lot of those controls but do it with touch interfaces as those interfaces evolve and get so much better? Right now, you can get into a Pioneer radio, and it's got a volume knob. Today, we have a couple of products that have a capacitive touchscreen in the dash — five or 10 years from now will there be a majority of products that have a capacitive touchscreen? Or maybe even multiple touchpads, like some of the OEMs are doing, or a secondary touchscreen that you can put your hand against and act like you're turning a knob... and will that do the same thing?

***RW:** The capacitive touchscreen — what does that recognize?*

Cardenas: There's two primary types of touchscreens: Resistive, which requires a physical press. You're actually pressing through the material on the screen to make an electrical connection that's embedded in the screen. A resistive touchscreen is commonly what you find in an automobile. ...

A capacitive touchscreen is like what you have on your smartphone or your tablet. A capacitive touchscreen ... still has some electrical sensors in the touchpanel, but instead of requiring a physical push, it's using the electrical capacitance in your skin to indicate to the system on the backside where you're touching on the screen. ... Swipes and multi touch are possible on both technologies, but the resistive tends to be much faster. ...

Ted Cardenas with demo models of Pioneer receivers.

Pioneer was the first to introduce it into the car in the aftermarket, and we did it with our AppRadio, the original one, which we launched in 2011. Today we have two AppRadios, and at CES we introduced our flagship navigation [model], which will ship to retailers [in March], and that also has a capacitive touchscreen. By April we'll have three of our family of products that now feature a capacitive touchscreen.

***RW:** We're now seeing handhelds that are FM-receive, and only if there is an FM chip in the device. Do you foresee making car radios that are FM-only and leaving out AM?*

Cardenas: From Pioneer's perspective I cannot imagine that happening for a really long time. ... [W]e've basically got an engineered tuner chipset that we designed a long time ago and ... just for the cost of engineering we basically have that legacy design, and it's what goes in every radio, and there's no need to change it.

***RW:** How does Pioneer find out what consumers want?*

Cardenas: We still do research. We do focus groups. Our retailers will tell us the things that people came in asking for or what people bought and maybe didn't like the experience, so we tend to get a lot of our feedback that evolves the product ... and make minor changes or even dramatic changes.

What has really grown to become a fantastic tool over the last couple of years is social networking because now we've got a method to carry on a conversation with some of our most enthusiastic customers or potential customers. ...

[T]he 50,000 likes on our Pioneer Facebook page are really passionate, enthusiastic consumers. We are engaging them in a true two-way communication. We may post the news about a new model or hint about a new feature, and then we'll get a lot of pretty constructive feedback.

***RW:** What was the concept behind the Pioneer AppRadio Hackathon?*

Cardenas: There are a lot of people developing apps, but they're developing the majority of them for the smartphone or tablet and few of them are designed specifically to be used in-car. Our motivation for doing the Pioneer AppRadio Hackathon was to introduce these app developers to our AppRadio platform. ... We were really looking for things that offered location-based services. The example we used was if Jiffy Lube wrote an app ... It would pop up an indicator on your Pioneer AppRadio and say: "It's been 2,950 miles since your last oil change. Jiffy Lube recommends an oil change every 3,000 miles. You're going to drive by a Jiffy Lube in one mile on your left. Don't you want to stop by and get your oil changed? And for doing so here's a 10 percent-off coupon," or something like that.

***RW:** That dovetails with what NextRadio is doing. The person is listening to an FM station through the app on a smartphone, and they may get a coupon from McDonalds, if they're near one. It's location-based, targeted advertising.*

Cardenas: That's hot right now. There's huge potential revenue, potential advertising. There's a lot of apps that are doing it, and people are trying to figure out the best way because it is so relevant and targeted.

***RW:** Is there something I should have asked and didn't?*

Cardenas: We get feedback from consumers and retailers, and working closely with iBiquity, we've evolved the HD Radio interface on our next product, the NEX [Networked Entertainment Experience] receivers we introduced at

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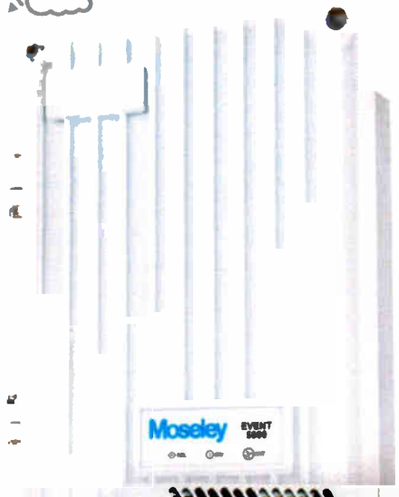
World Radio History

HIGH CAPACITY
EVENT STUDIO TRANSMITTER LINKS

outdoor unit



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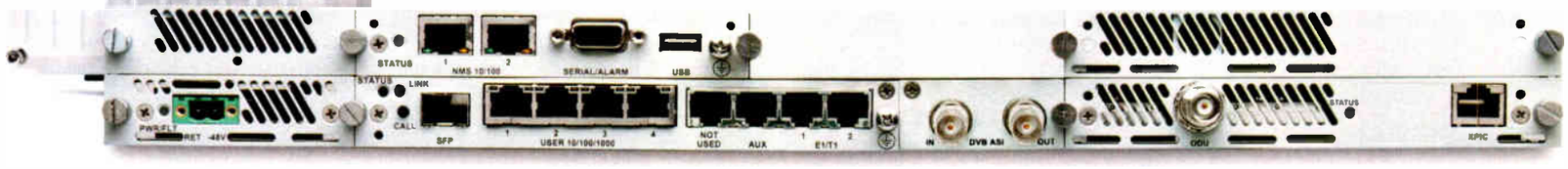
EVENT systems are fully bi-directional including a Software Defined Indoor Unit (SDIDU) and Outdoor Unit (ODU), eliminating the need for costly waveguide hardware. The ODU is available in the license free 5.8 GHz band, or licensed 11, 18, or 23 GHz bands. Appropriate external antennas are selected based on path length.

indoor unit



INTELLIGENT SYSTEM DESIGN

Spectrum-scalable digital radios with user-selectable data rates enable broadcasters to have greater flexibility in STL planning and future growth. The integrated T1/E1 and Ethernet interfaces allow for a combination of T1/E1 and IP packet data.

IP APPLIANCES AND APPLICATIONS

Offer IP transmitter control, surveillance security, and site monitoring to reduce downtime, and protect valuable station assets while saving travel time to the site.

REMOTE MIRRORED SERVERS

From the transmitter site, offers backup of business records and programming content to get you back on the air quickly in the event of a studio outage.

EMAIL AND INTERNET ACCESS FROM THE TRANSMITTER SITE

Saves engineers time accessing manuals or technical support from manufacturers during maintenance sessions.

SIMPLE NETWORK MANAGEMENT PROTOCOL (SNMP)

Full SNMP package with GUI provides easy monitoring and configuration changes.

Contact The Moseley Sales Team to Custom Configure Your EVENT STL/TSL Today!

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World Radio History

HD SUIT

(continued from page 1)

transmission technology broadcasters use for their HD Radio broadcasts violates the patents it owns.

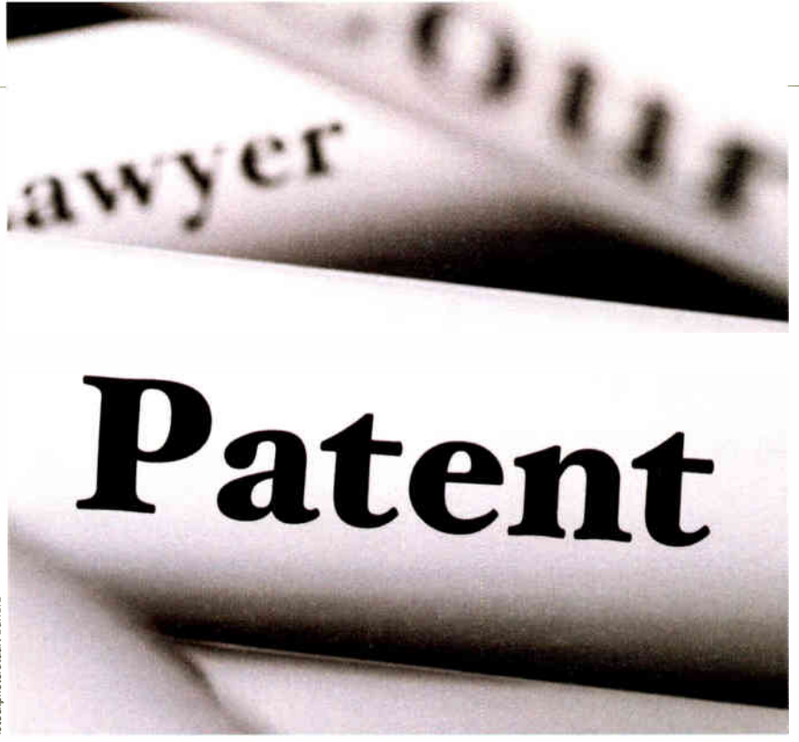
Named as defendants in the federal lawsuit were Beasley Broadcast Group, CBS Radio, Clear Channel parent CC Media Holdings, Cox Media Group, Cumulus Media, Entercom, Entravision, Greater Media, Hubbard Radio, Radio Disney, Radio One, Saga, Townsquare Media and Univision.

Now court documents give a brief glimpse inside the lawsuit between radio owners and a company that some consider a "patent troll." The documents show an intention to discuss a settlement while delaying the date broadcasters are required to reply to the lawsuit filed in federal court.

"The reason for the request is to allow parties additional time to discuss settlement," according to a letter cosigned by both sides filed with U.S. District Court in Delaware in early February. The request was accepted by the court; that delays broadcaster responses until April 25. Originally, responses were due in late February.

Bill Ragland, a patent attorney with Womble Carlyle Sandridge & Rice, which is not affiliated with the case, said it's not unusual for opposing parties to request additional time to file responses to a complaint to allow for settlement talks.

"The fact that the request is made jointly by the patent holder and the broadcasters is an indication that settlement discussions are underway or planned at the time of the request," he said.



iStockphoto/Stuart Burford

Radio World contacted several of the broadcast groups for comment, including Beasley, Clear Channel Media & Entertainment and Greater Media. The companies said they do not comment on pending litigation.

Attempts to find contact info on the Internet for Wyncomm were unsuccessful; and emails to Wyncomm's legal counsel were not returned. Wyncomm's business address is listed in court documents as 113 Barksdale Professional Center in Newark, Del.

HD Radio developer iBiquity Digital is not named nor identified in any of the lawsuits. The company licenses the technology used by radio broadcasters; it has consistently declined comment on the suit and did so again for this article.

NONOISCLOSURE IS TYPICAL

Approximately 76 percent of patent lawsuits end in some sort of settlement, according to Thomas Ewing, a patent attorney and IP consultant for Avancept LLC. "What's impossible to tell is who is getting the better deal in this case, [Wyncomm] or the broadcasters."

Because most actual settlements include nondisclosure agreements, Ewing said often it's impossible to determine who settled for what amount, even afterwards.

Wyncomm LLC claims the broadcasters are using in-band, on-channel technology, and therefore, infringing on U.S. patent 5,506,866 and two associated patents it owns. Wyncomm lists Delaware Radio Technologies as the exclusive licensee for its technology. DRT is also listed as a plaintiff in the suit.

The '866 patent, "Side-Channel Communications in Simultaneous Voice and Data Transmission," was issued to AT&T in 1996, but its ownership has changed hands many times since. The patent expired in November 2013.

Expiration means the patent owner cannot obtain an injunction, sharply reducing stakes for the accused infringers, said Scott Daniels, an intellectual property attorney with Westerman, Hattori, Daniels & Adrian LLP. "The patent owner may still seek damages for acts of infringement occurring for a period up to six years before the filing date of the complaint," he said.

There is a second patent — 5,642,379 — cited in the lawsuit; it expires in June 2015. "That is far too soon for injunctive relief to be a possibility," Daniels said.

The third patent, 5,475,691, expired last fall. Titled "Voice Activated Data Rate Change in Simultaneous Voice and Data Transmission," it was granted to AT&T in 1995.

One broadcast source characterized the first two patents as "clearly written for telephony," discussing predecessors to DSL and covering the digitization of voice and data for a phone network. The third patent is a little more broad and "does not specifically refer to a phone network," according to this source, who emphasized that none of the patents specifically refer to RF and finds "nothing" in these patents "that expands the scope sufficiently to cover HD Radio."

MONEY DAMAGES

Daniels said the lawsuit could be a deterrent to broadcasters using HD Radio technology and those considering adopting it.

As things stand, the case is purely one for money damages, according to Daniels, who said: "The individual broadcasters, sued for infringement, will want to settle provided that Wyncomm offers them "an amount below their legal costs in defending against the lawsuit."

Meanwhile, Wyncomm and Delaware Radio Technology will hope to settle with at least a few broadcasters to obtain funds to finance the litigation against the others and encourage those radio groups to settle as well, Daniels speculated.

While the mindset of broadcasters about settling is difficult to determine, it's obvious the case is likely moving in that direction, according to another court observer.

Gregg Skall, a communications attorney with Womble Carlyle Sandridge & Rice, LLP, said plaintiffs typically consider "the nuisance value" when thinking about settling, especially in patent matters where the expense of litigation can be quite large.

World Radio History

"We must assume that such [resolution] discussions are underway and are sufficiently serious to warrant a delay in the process so that the parties can focus on the terms of a possible settlement."

Wyncomm and DRT are based in Delaware and identified by legal observers as "nonpracticing entities," patent holding companies that typically don't produce goods or services but manage intellectual property portfolios.

NPEs often have offices in Delaware due to its desirable corporate taxes and laws, observers said. For instance, Delaware Radio Technologies, according to Hoovers, lists as its address 1209 North Orange Street in Wilmington, Del., known for being home to 200,000 business addresses as registered agent services.

Some industry observers have speculated that broadcasters are hoping to avoid a possibly contentious trial, especially considering Wyncomm's history. Its aggressive approach to litigation-seeking infringement damages has moved some to refer to it as a patent troll. Wyncomm, along with DRT, filed a barrage of suits against electronics companies asserting the '866 patent. Late last year, the entities filed a similar suit alleging Ford, Chrysler, General Motors, Toyota, BMW and 13 other car companies are infringing on the patent. That suit remains active.

THE MAIN PATENT

The abstract description of U.S. patent no. 5,505,866, "Side-Channel Communications in Simultaneous Voice and Data Transmission," details the technical aspect of the patent:

In a simultaneous voice and data communication system, a stream of signal points is portioned into a plurality of symbol blocks, each symbol block including a data segment and a control segment. The data segment carries information from a user, i.e., user data, while the control segment controls segment information. A voice signal is then added to at least a portion, or all, of the signal points of each symbol block to provide simultaneous voice and data transmission o an opposite endpoint. The control information from a secondary data source, and/or may include information from a secondary data source, and/or may include information about the characteristics of the succeeding block, e.g., the user data rate, and information pertaining to characteristics of the communication channel.

CARDENAS

(continued from page 8)

CES. Last year, we introduced Artist Experience. This year we have the ability to display what is playing on HD2 and HD3, if it's available.

***RW:** Do you still do road tests of your HD Radio prototypes, making sure they can receive the signal?*

Cardenas: We've got a torture loop that we've been using for some 20 years. It's used for all of the "radio" — so that could be AM, FM, HD Radio. We use it for satellite radio and even for the connected car to see if we're able to receive a satellite signal. ... Our offices are in Long Beach, Calif. Near Long Beach is Palos Verdes, a little peninsula jutting out into the ocean. It's a hill and you can drive a loop around Palos Verdes and be blocked entirely from almost all of the towers that are in the Los Angeles area. Once you get on the other side of the hill, you only have ocean to the west and hill to the east, and you have a very difficult time receiving any broadcast signals. Our engineers in Long Beach ... know exactly where the problem areas are, so they can mark on their notes, "In this specific area we had an issue." ... Our team in Detroit has a similar loop. We've tested in various cities. We've done tuner testing in almost every major metropolitan area in the United States.

Comment on this or any story. Write to radioworld@nbmedia.com.

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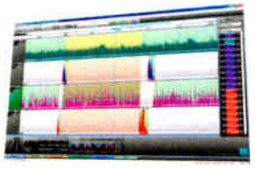

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Beware of Phony Insurance Certs

Take steps to verify your subcontractors' authenticity

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

On the National Association of Tower Erectors LinkedIn page, John McGarvey, a partner with the Insurance Office of America's Telecom Division, wrote recently about the importance of collecting certificates of insurance from your subcontractors, a prudent risk management technique.

How do you know if the sub's coverage is in force or really ever existed? It's difficult in today's world.

You may think a certificate protects you; but if you hire a contractor who has falsified their insurance certificate, you are the loser.

John reports a trend of insurance companies that have no idea they are insuring guys who are actually climbing towers. Should a loss occur, the insurer may deny the claim immediately based on misrepresentation.

IOA's Telecom Division offers a no-obligation certificate of insurance audit. They will go through your certificates of insurance and verify policy numbers, find out if policies are in force and provide you with a synopsis of the findings. Contact him via email to *john.mcgarvey@ioausa.com* or call (770) 654-8666.

Whether or not you use John's service, now is a good time to make a list of your subcontractors — tower riggers, HVAC, electricians. Any sub who works on your station should provide you with insurance certification. Managing this is yet another value-added service that you, the station or contract engineer, can bring to an employer or client.

Ihor Slabicki makes live recordings of small groups when they perform in concert. He edits and masters CDs from these recordings. In his spare time, he reads *Workbench*.

In our Feb. 12 column, I asked what's in your toolbox. Ihor offers interesting and inexpensive suggestions.

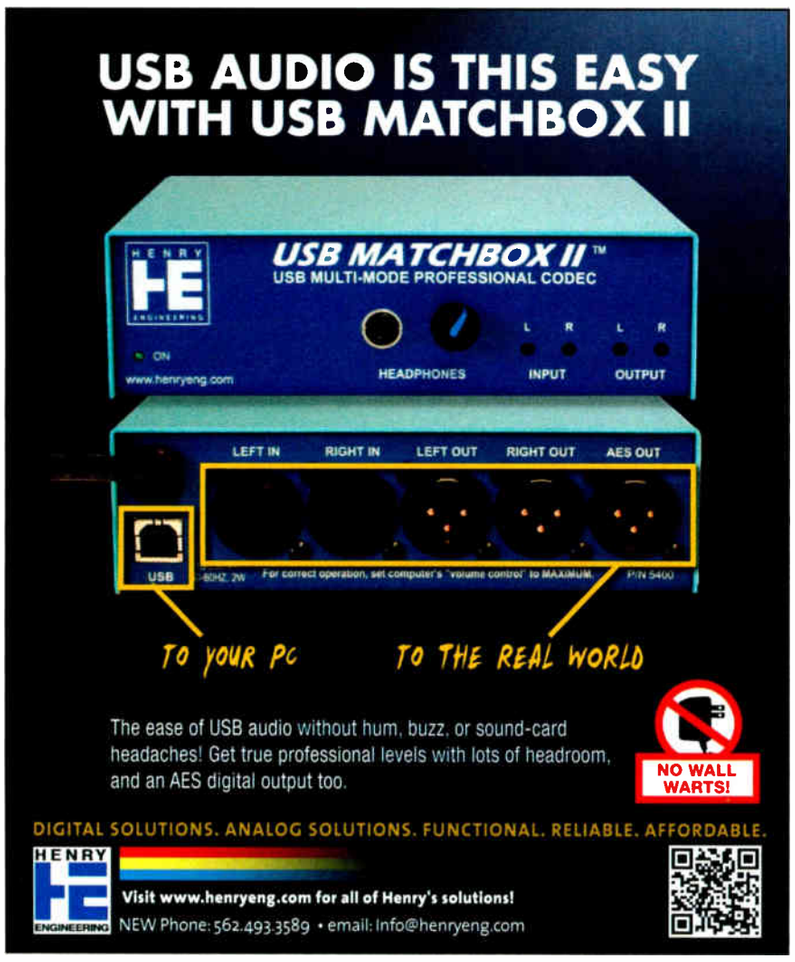

Fig. 1: Nail files? Nah ... These are "fine sandpaper on a stick."

First off are emery boards. Think of each as an applicator of "fine sandpaper on a stick" — very useful for filing down nicks or polishing corroded terminals and contacts. The length of the board lets you reach into equipment easily.

Next are drinking straws, useful for blowing out dust and dirt in crevices, even blowing out a dropped screw, nut or washer when you cannot reach into equipment to retrieve it. The length of the straw lets you aim the air blast, and you can control how much air and how strong of a blast (or puff) you send.

Ihor also likes "yellow stickies" — Post-it Notes brand, or similar products. These are useful for temporarily labeling everything but the dog. One can be rolled into a sleeve to wrap around a wire as an identifier, or cut to any size and used to temporarily label parts, switches, nearly anything. The slight tackiness allows you to hold screws or nuts in place while working with them, or to pick up parts that may have fallen.

The best thing about Ihor's "tools" — their low cost. You can get straws at a fast food restaurant. A 100-count bag of 4-5/8-inch double-sided emery boards costs less than $10 on Amazon. And you can find Post-it Notes in your station's office supply closet or various retail outlets.

Ihor can be reached at *Ihorbuy@gmail.com*.

Charles S. "Buc" Fitch, P.E., recently changed the blown incandescent bulb in a Marti SCG-10 SCA modulator to a warm white 20 ma, 5 mm LED.

The values that work are a 470 ohm 1/2 watt resistor in place of the nominal 15 ohm 1/4 watt that is on the meter PCB. Marti once again has a diode (1N4007) in the circuit to reduce the raw voltage. For that reason the LED is polarity sensitive. As you look at the PCB from the front (component side), the plus LED is the right solder pad that had been used for the bulb.

Changing out LEDs for the incandescent offers long life and reliable lighting. Thanks, Buc, for the tip.

Reach Charles S. "Buc" Fitch at *fitchpe@comcast.com*.

Broadcaster, project engineer and fellow RW contributor Dan Slentz wants readers to imagine a day when you can order a spare part, and a data file containing specs is transmitted to an appliance on your desk ... and out pops your part!

We already replaced physical mail (and junk mail) with email and spam; the only thing we gave up was paper. But a device like this is a game-changer.

Fig. 2: The Da Vinci 1.0 is a desktop 3D printer retailing for $499.

Even now, with available technology, we could get plastic replacement hardware for audio boards, transmitters, etc. — pretty much any plastic part. But how soon until this technology has other supplies (ranging from raw material to maybe surface-mount electronics in "dispensers") in it so that actual operational parts could be made?

It's probably coming. Fairly large items, eight inches to a side, can be "printed" today using the 3D printer in Fig. 2. It costs under $500. Need a Teflon mounting ring, a custom insulator and end piece for an audio console? See the future at this link: *www.xyzprinting.com/en/product*.

Contact Dan Slentz at *dan_slentz@yahoo.com*.

Contribute to Workbench. You'll help your fellow engineers, and qualify for SBE recertification credit. Send Workbench tips to johnpbisset@gmail.com. *Fax to (603) 472-4944.*

Author John Bisset has spent 44 years in the broadcasting industry and is still learning. He handles West Coast sales for the Telos Alliance. He is SBE Certified and is a past recipient of the SBE's Educator of the Year Award.

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Not Your Typical Radio Remote

The author, DOE for Dan Patrick, tells what it's like to cover the Super Bowl

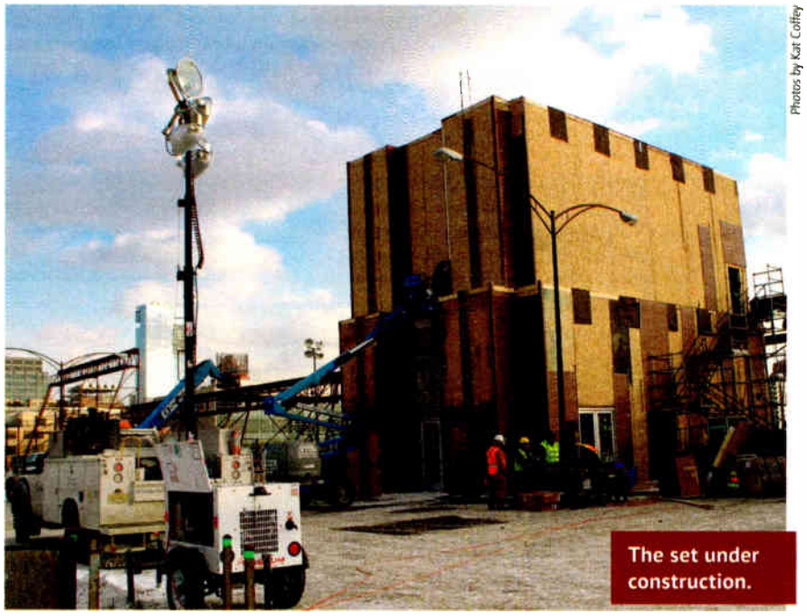
FIRSTPERSON

BY JIM HIBBARD

For the past five years, "The Dan Patrick Show" has gone on the road for the week leading up to the Super Bowl.

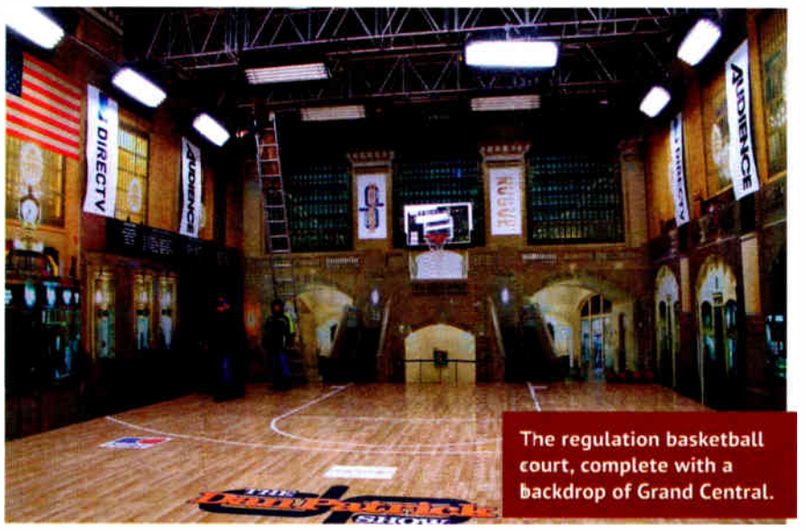
The national radio program broadcasts Monday through Friday on approximately 350 U.S. affiliates and is syndicated on Premiere Radio Network; it is also broadcast as a TV show on NBC Sports Network and DirecTV's Audience Network.

This year, DirecTV built Dan's "Manscraper" on the top floor of the parking structure at Pier 40 in New York City overlooking the Hudson River. The two-story building featured a large set on the first floor (fashioned after Dan's Connecticut "Mancave"), with a rear wall of glass giving the audience a view of lower Manhattan, including the new One World Trade Center, formerly known as the Freedom Tower. A spiral staircase led to the second floor, which was a regulation basketball court, complete with a backdrop of Grand Central Station.



Photos by Kat Coffey

The set under construction.



The regulation basketball court, complete with a backdrop of Grand Central.

THE TECHNICAL SKINNY

The show features Dan alongside his four co-hosts, The Danettes. Each of the guys has a turret with on/off/cough, headphone volume and talkback to two destinations. The hosts turn their own mics on and off, so in the booth we just ride levels on their mics, plus the phone calls and show bumpers we receive from the main studio in Milford, N.J.

Several high-profile guests joined Dan during the week, and guest mics and headphones were controlled in the booth, which is typically a construction trailer located outside the main set.

We use an eight-channel headphone amp with eight stereo inputs. PGM is fed to both left and right channels, and the IFB interrupt is on the right channel.

Since this is a TV broadcast of the radio show, most of the camera shots are in the main studio while interviewing guests and taking phone calls, but during radio commercial breaks, fans get "behind the scenes" with what DirecTV calls "Look-ins." Dan and The Danettes usually get up from their seats to go upstairs and play basketball, outside to the football field, greet their fans or give guests a tour. The guys and their guests have wireless lavs, which the TV audio engineer takes for the Look-ins. Our remote radio mixer also has all the wireless mics for backup, or if they stay to shoot hoops or do some other "non-studio" segment.

The heart of the operation is our Wheatstone E-1 console, which includes two Wheatstone Blades. The console has only 12 faders, so we utilized scene changes (events) to accommodate all our sources. There are four PGM busses, which have unique assignments feeding the TV truck, headphones, the main studio in Milford, and the on-set monitor speakers.

In the past, we've used the Vorsis M-1 and M-2 mic processors. This year, we demo'd two Vorsis M-4 Blades, for the five regular guys, plus two guest positions. Because the M4s are GUI-based, we split Dan's mic and the guest mics to both the M4 and to dbx 286s mic processors for backup in case we needed to adjust anything in a big hurry, as the dbx has knobs!

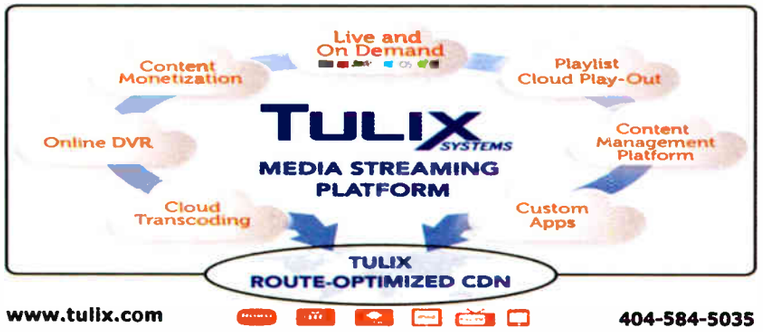
Since this is a TV set, it's a large room with high ceilings filled with not only the talent, but TV camera operators, floor directors, producers, lighting, other technical assistants and production assistants. We relied a lot on mic processing, EQ and dynamics to keep it from sounding like a big cave and to "gate" out extraneous noise from the crew and the huge fans that worked endlessly to keep the studio warm in the sub-freezing NYC temps!

THE PREP

It takes about a month to prepare for this five-day remote broadcast. Configuring the Wheatstone E-1 for "The Dan Patrick Show" includes all mic and source assignments, setting up the two sets of mic processors, programming the talkback on the mic turrets for each talent, assigning the busses, creating

(continued on page 18)

The TV show's main set, as seen from the spiral staircase that connected the two floors.



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SATELLITE SIGNAL LEVEL METER AND SAT IDENTIFIER

Our TURBO-S2 meter makes satellite antenna aiming fast and easy. Now you can perfectly peak all your dishes, to achieve maximum performance and reliable reception of "finicky" new digital channels. The unit powers the LNB for convenient work at the dish site. The TURBO-S2 shows the name of each satellite, plus displays key signal quality specs for all

MPEG2/MPEG4/DVBS/DVBS2/QPSK/8PSK channels. Adjust to perfection when viewing readouts for carrier-to-noise (C/N), signal quality (EbNo), and Bit Error Rate (BER). This USA-built unit comes with English speaking tech support, and our customers widely praise the unit for its features and reliability.

SURGE SUPPRESSOR FOR LIGHTING NEAR SATELLITE ANTENNA

Place "LNB-Zap-Stop" in the coaxial cable line that runs from the dish, to the satellite receivers. Think of it as an "insurance policy" to protect expensive indoor equipment from lightning hits. Transient

Suppressing Diode technology works to block high voltage lightning surges. The lightning protection units can take multiple hits, with no need for reseting or replacing.

CHOOSE THE BEST LNB SIGNAL CABLE

On long satellite signal cable runs, avoid using "noisy" amplifiers, so that you maintain the maximum C/N performance that your dish can deliver. Choose DAWNflex low-loss coaxial cable for dish-to receiver distances from 300 to 500 feet. This flexible cable passes satellite L band signals with very little loss. It is flooded for direct burial, and the quad shielded design

offers the best protection from signal ingress. Choose the SATfiber link for dish-to-receiver distances from 500 feet to 50 miles. Eliminate long distance signal attenuation, and lightning surge problems, when you install SingleMode fiber running out to the dish. Place our SATfiber Transmitter and Receiver units on both ends of the fiber, and pass 45 to 2800 Mhz with perfect quality. Call DAWNco to hear about our easy-install fiber, and for help choosing the best SATfiber system for your needs.

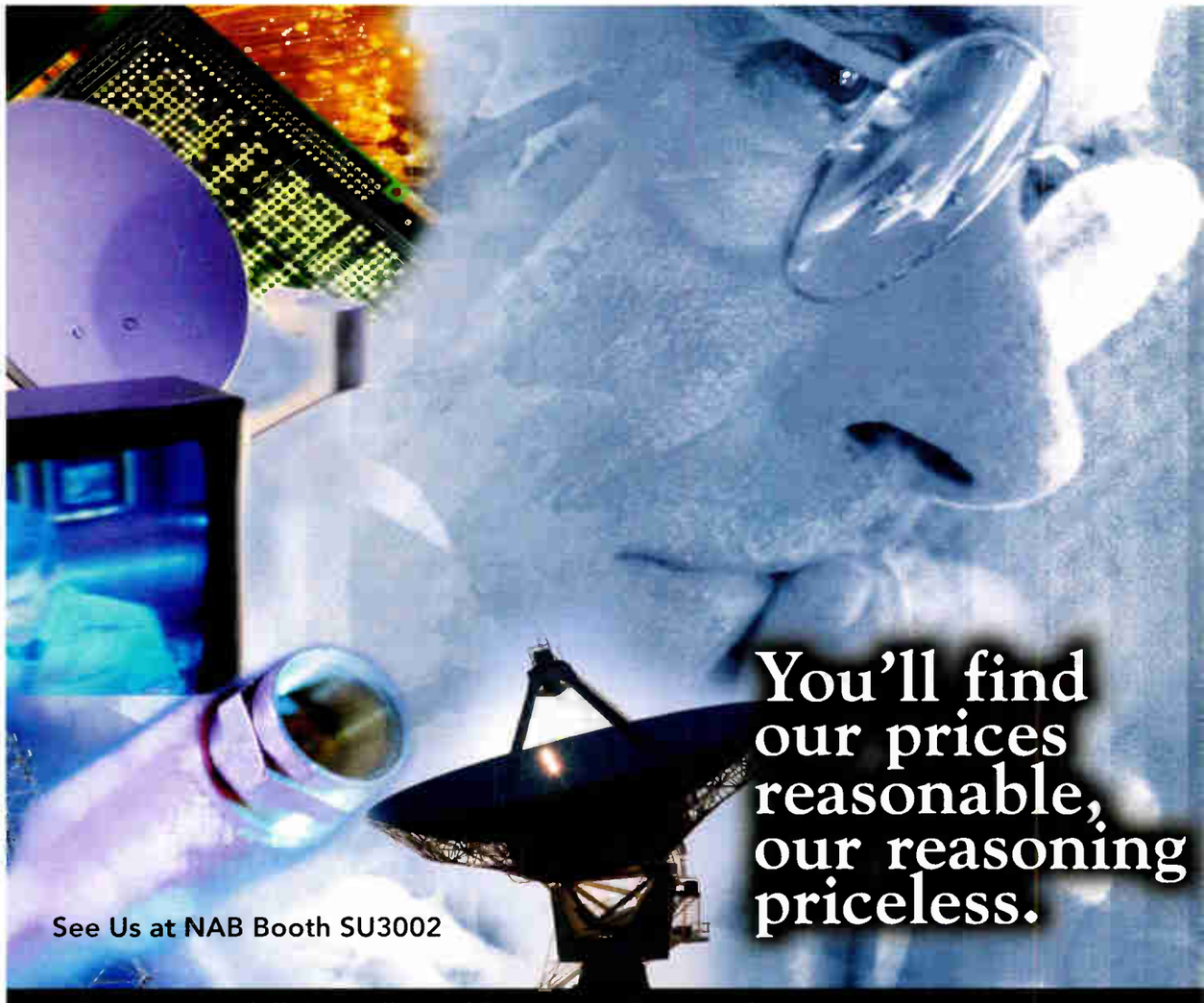
HD GRADE LNB AMPLIFIERS ARE NEEDED FOR NEW SAT CHANNELS

Several networks have made the switch to DAWNco's new "L series" of C and Ku band LNB amplifiers, to accommodate the "finicky" nature of new HD satellite receivers. This new generation of LNB has improved specs that can make a real difference in the reception of high-definition and 8PSK satellite channels. These new LNBs feature best-in-industry specs for "1dB gain compression point" and "phase noise." Internal circuitry has been completely redesigned for reduced power draw, so that indoor receivers and power supplies will never be overtaxed. In order to prevent video picture tiling and signal outages, when outdoor temperatures fluctuate, DAWNco's best LNBs feature a highly stable +/- 2 Khz rating. Make sure to upgrade to the new DAWNco "L series" LNBs, and watch for improved EbNo readings on your digital satellite receivers.

HIGH GAIN 4.2 METER SATELLITE ANTENNA

In stationary or motorized configuration

Bigger is better, when you consider satellite antennas for optimum MPEG4 satellite channel reception. The 4.2m is the largest and highest gain dish that still mounts on a single pipe. The unique aluminum reflector can be delivered in 1-piece on a special factory truck, for fast installation, or in an 8-petal configuration for easy-carry to a rooftop location. Call DAWNco for help choosing the most cost effective satellite antenna to improve your satellite reception.



You'll find our prices reasonable, our reasoning priceless.

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That's why so many people come to **DAWN**CO. They count on us for everything from satellite antennas, receivers, LNBs, and position controllers to fiber optic broadband links, satellite links and data links.

We offer the broadcast TV, cable TV, radio and educational fields high quality equipment at down-to-earth prices.

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Call a **DAWN**CO expert with your questions by simply dialing **800.866.6969**. Use the same number for our free catalog, or find it all on the web at www.**DAWN**CO.com.

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Reasonable prices, priceless reasoning.

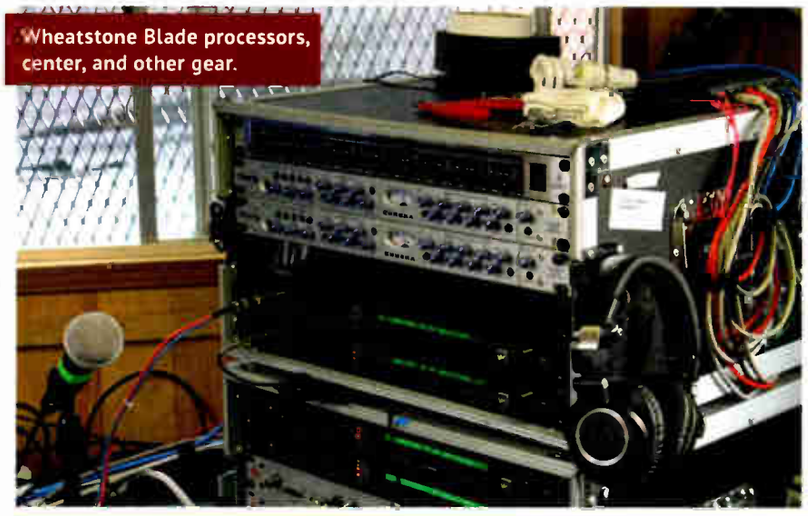
World Radio History

SUPER BOWL

(continued from page 16)

"events," setting up a utility mixer in the Blade, and assigning the programmable buttons on the console for talkback to the TV truck, on-set talent and the Milford studio (master control).

There are endless emails, conference calls and other phone calls to coordinate phone lines, Internet, T-1s, and making sure our audio trailer is actually within a reasonable distance from the set. There are also CAD drawings we share with the TV audio truck, so we can be sure we're all on the same page regarding who provides what in terms of sources and talkbacks. The TV truck is usually located about a quarter mile from the set, so there is a ton of fiber between us. A week before we arrive on location, we pack up our two pallets of gear and get it on its way to the destination.



Wheatstone Blade processors, center, and other gear.

WHAT WE'VE LEARNED

After five years of "The Dan Patrick Show" pre-Super Bowl remotes, we've picked up a few things:

The console and monitor setup.

Photos by Kat Coffey

- Pack everything as if it might be dropped off the back of a truck.
- Cover the pallets of gear with tarps and tons of shrink-wrap because the final destination seems to always have rain or snow.
- ALWAYS have a backup plan for transmission because phone lines and Internet are unpredictable — that's if you can even get the ISDNs to work at all, which, for us, was only once in five years!
- Fly the cables no matter what! It's not fun digging out after a week of rain, freezing rain and snow.
- Bring clothing for all weather. It was sunny and warm in Indianapolis, and freezing and snowing in Dallas. Who'd have thought? Then there was the Polar Vortex in NYC. We are hoping for some warmer weather in Phoenix next year.
- Oh, and to have fun. After all, it's radio!

Thanks to all the radio crew: Kat, Alan, Paul and Dan-o.

Jim Hibbard is owner of Pacific Mobile Recorders/Studio Builders, Sacramento, Calif., and DOE of radio for "The Dan Patrick Radio Show." Contact him via jim@studiobuilders.com.

CONGRATULATIONS

Jeff Littlejohn

on receiving the

2014 NAB Radio Engineering Achievement Award

From your friends at

iBiquity Digital

HD Radio®
Digital AM & FM

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The Original LPFM

World Radio History

Editor's Picks: Engineering Conferences

We point out some favorites while not taking ourselves too seriously

BY PAUL McLANE

Expect to hear the phrase "hybrid radio" a lot at the Broadcast Engineering Conference of the NAB Show. Ditto for "all-digital AM," "IP," "AES67," "connected car," "NextRadio," "EAS" and "my feet hurt."

Radio World sifted through the agenda of radio-oriented sessions and identified the following as particularly promising. If you don't like our list, well, we're sorry. (But you can see the full one at *www.nabshow.com*.)

In our March 12 issue, we previewed the Broadcast Management Conference.

YES, EVEN PUBLIC ENGINEERS NEED INTERNET PROTOCOL

Public radio engineers will tell you they like to stay ahead of the curve. So it's probably not surprising that they always meet *before* the NAB Show itself gets going.

"Engineering in an Increasingly IP Environment" is the theme of the 14th Public Radio Engineering Conference, Thursday and Friday, April 3–4.

NPR typically has a presence at PREC, of course; this year Senior Director of Engineering Shawn Fox will give an in-depth view of the network's new headquarters, some photos of which we've published in Radio World. Fox will also talk later that day about disaster recovery plans at PRSS and NPR and about new concepts in master control.

Other NPR speakers on the agenda include Distribution Deputy Director of Quality Assurance and Functional Design Laura Jensen; System Architect David Julian Gray; Director of Technology Strategy Chris Nelson; and NPR Labs' Director Rich Rarey and Senior Technologist John Kean. These are some pretty impressive titles; and if you want to hang out with the network's tech crowd, here's your chance to schmooze.

Several manufacturers will speak about IP-related subjects. Our eye also is caught by a dish heater project to be described by Aaron Read of Rhode Island Public Radio (only RW readers would get excited about a dish heater project); as well as a talk by Mark Persons discussing practical tips, and a promised presentation by Shane Toven of Wyoming Public Radio tantalizingly titled "Test Equipment Playground."

Toven plans to bring test equipment — an exciter, a couple of handheld spectrum analyzers, portable modulation analyzer, oscilloscope, audio generator/analyzer — and give practical demonstrations along with Mark Persons.

"The idea is to give younger engineers who may be more IT- than audio- and RF-savvy a chance to play around with some tools that they might not otherwise have had a chance to experience yet," Toven told RW.

For info on PREC, visit *www.apre.us*.

High Roller by Denise Truscello; Background by Kovacs/Dawley

IF YOU GO

What: 2014 NAB Show

Where: Las Vegas Convention Center

When: April 5–10

Who: Media and entertainment attendees, "people passionate about content"

How: www.nabshow.com

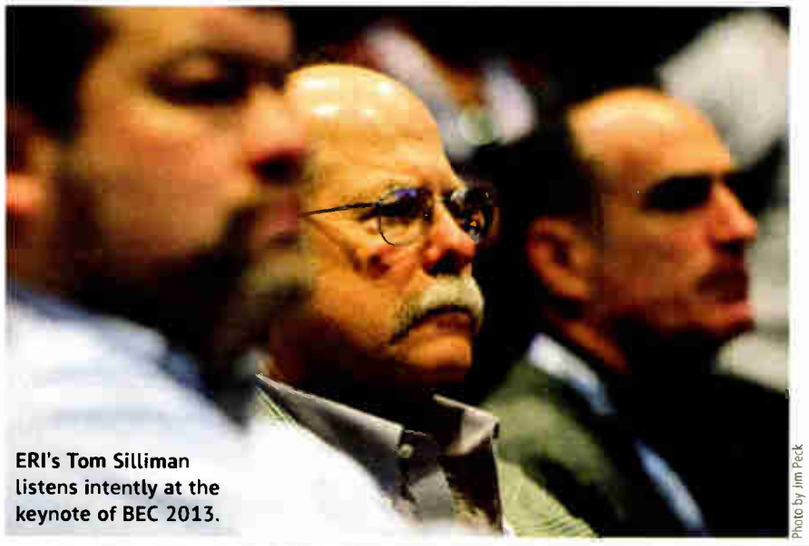
How Much: Packages vary from $150 for a "session three pack" to $1,349 for a "Smart Pass," with various discounts for one-day, government/military and other types of registration

KEVIN GAGE DRIVES A HYBRID

On Sunday morning, **Kevin Gage** again gives the keynote of the Broadcast Engineering Conference. He's executive vice president and chief technology officer of the NAB.

In last year's address, he said that broadcasters, when considering traditional strengths of radio like robustness, scalability and localism, we should include mobility too.

"The audiences we serve are increasingly mobile, and they want their media content along for the ride," he said then. "Radio has long been a mobile service, but we can make it even more pervasive with its inclusion on more handheld devices, and its expanded service to vehicles through hybrid radio techniques."



ERI's Tom Silliman listens intently at the keynote of BEC 2013.

Photo by Jim Peck

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So you might be asking yourself, "Self, what *is* hybrid digital radio, anyway?"

Well, the European Broadcasting Union defines it as the combination of broadcast radio and broadband/IP technologies. RadioDNS, on which RW has reported, is an example; and you can see it on the exhibit floor. Another is the NextRadio app initiative pushed by Emmis Communications and others in the United States to create and encourage enhanced FM listening via smartphones.

NAB's Kevin Gage will keynote the Broadcast Engineering Conference. "Hybrid radio" is likely to be among his discussion topics.

So expect Gage to say "hybrid radio" a lot this year. Indeed, his emphasis is likely to carry over to show Monday, when he moderates a featured three-hour session called **"Hybrid Radio: Making It Happen at Your Station."**

Show up for that and you will hear from Paul Brenner, senior vice president and chief technology officer of Emmis, who we suspect will provide an update on NextRadio; as well as from a person who can bring a carmaker perspective and talk about hybrid radio's chances in the dashboard. That's Scott Burnell, Ford Motor Co.'s global lead for business development and partner management. (If the rental car company at McCarran Airport gives him a Chevy, will he refuse it?)

THIS STUFF IS COMPLICATED

When people bemoan the loss of AM technical expertise in our industry, they're comforted by the presence of Ron Rackley — and beg him never to retire.

The engineering superstar, principal of du Treil, Lundin & Rackley Inc., will delve Sunday into "Optimization of Shared-Frequency AM Antenna Systems Using Synergistic Filter Design."

He notes a trend toward transmitter site sharing by AM stations, driven by economic constraints and the difficulties of developing new standalone sites. According to a session summary, these facilities need stringent filtering so radiation patterns don't interact counterproductively, and to avoid creating intermodulation products within the transmitters.

Rackley says the interactions should be studied through "whole-system" computer modeling, to account for filter, matching network and tower array self and mutual impedance characteristics, taken together.

(continued on page 22)

Photos by Jim Peck

Presenters at the 2013 Public Radio Engineering Conference gathered for Radio World's camera. Robert Meuser, Engineaux Inc.; Victoria St. John, Vermont Public Radio; Don Dixon, Colorado Public Radio; Tim Bealor, Broadcast Electronics (rear); Richard Parker, Vermont Public Radio; James Gray, St. Cloud State University; Thomas Balistreri, EAA Radio (rear); Steve Johnston, Wisconsin Public Radio; David Antoine, WBGO(FM); Tony Peterle, Worldcast Systems; Tim Warner, Timothy L. Warner Inc.; Don Pettifor, Crown Broadcast/IREC; and Shane Toven, Wyoming Public Media.

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TECH SESSIONS

(continued from page 21)

COMMISSIONER PAI, LOOK WHAT YOU STARTED

The Rackley session is part of a series of Sunday talks about **"AM Revitalization,"** a topic of industry discussion since Commissioner Ajit Pai made his big pro-AM speech in the fall of 2012 and instantly turned thousands of AM station owners into Republicans.

One of the provocative ideas that have been floated is whether AM stations could, or should, go "all-digital." Some people break out in hives at that idea, others salivate at the prospect of nice wide AM channels on which to drive their digital signals. The series includes two presentations about this topic. Will voices be raised in contention? (One can hope; it makes for good copy.)

There's an update about NAB Labs' testing of all-digital AM, with NAB Senior Director of Advanced Engineering David Layer and Cumulus Media Senior Vice President/Corporate Director of Engineering & IT Gary Kline; and there is a talk about transmission challenges and solutions for all-digital AM IBOC from Brian Walker of Nautel.

The revitalization sessions also include a discussion on how to use new FCC AM proximity rules, by Ben Dawson, president of Hatfield & Dawson Consulting Engineers — who is no slouch himself when it comes to AM, as witness the fact that he was honored in 2006, along with the aforesaid Rackley, with the NAB Radio Engineering Achievement Award.

"DIGIT" WOULD BE A GOOD NAME FOR A DOG

The U.S. radio industry was not able to move its revenue needle upwards last year, according to new data from the Radio Advertising Bureau. However, the digital income piece is still increasing, expected to surpass $1 billion this year.

As you probably are aware, "digital revenue" can refer to a lot of things; for RAB, it means money brought in by radio websites, Internet/Web streaming and HD Radio including HD2 and HD3 channels. Regardless, engineers can bet that their bosses want them to be on top of discussions about *anything* digital.

So pay attention to **"Advancements in Digital Radio,"** a series of presentations on Sunday. Moderating is Roswell Clark, director of technical operations for Cox Media Group's Tampa/Orlando Radio operation.

We mentioned the NextRadio app. While Paul Brenner is stumping around the industry pitching that concept, his Emmis Communications colleague Benjamin Husmann has his hands deeply into the app and how it interacts with a radio station's infrastructure. He'll discuss what engineers should know about integrating metadata services into playout systems in **"Integrating Data Services for Enhanced Radio Broadcasting: NextRadio & HD Radio."**

Further, there's a talk by Jeff Detweiler of iBiquity Digital about how to configure HD Radio offerings to maximize the consumer's experience. He'll delve into audio quality, diversity delay alignment, program service data and related topics.

Dealing with another type of data, Dan Mansergh of KQED Inc. will summarize recent NRSC guidelines to help you get the most out of your RDS. Reader emails to Radio World about our own series of articles on this topic indicate strong ongoing interest (see *radioworld.com/rds*).

Also, Jim Dalke of Dalke Broadcast Services will discuss **"Coherent Single-Frequency Networks for Optimizing FM Coverage."**

Photo by Jim Peck

AM revitalization packed the room last year and is on the agenda again. Station owner Andrew Skotdal posed a question for last year's panel, which included Commissioner Ajit Pai.

AOIP IS A NOT A FOUR-LETTER WORD

Working with audio over IP need not make you cuss. **"AoIP in the Broadcast Plant"** is the topic of another Sunday set of talks (indeed, Sunday looks like a busy day for engineers).

Attacking various technical angles about audio over IP will be Keyur Parikh, architect and software lead at Harris Broadcast; Steve Dove of Wheatstone; and Andreas Hildebrand of ALC NetworX. The latter will address the new AES-67 standard for AoIP interoperability. Find out why some manufacturers who don't like to talk to each other are making products that like to talk to each other.

"SON, TURN DOWN THAT INTERNET RACKET!"

If you're looking for a twist to your usual track of tech, consider a Monday grouping moderated by Jeff Littlejohn, Clear Channel Media and Entertainment's executive vice president of engineering and systems integration, on **"Consumer Electronics Developments."**

Speakers will delve into wireless AV connectivity; enhanced content distribution; interoperability among media applications; and "Virtual Set-top Boxes."

Take particular note of a paper by NPR Labs Senior Technologist John Kean, whom we suspect of taking some kind of techno-geek sports supplement, based on how much written research he's been cranking out lately.

Kean will talk about **"ITU Loudness and Audio Stream Normalization."** As RW has reported, NPR Labs looked into Internet streaming technology and concluded that irregularities in audio program loudness, from stream to stream, as well as within a stream, can have an impact on listener satisfaction. There's a Consumer Electronic Association group working on this.

WAIT ... MORE HYBRID RADIO?

Yep! Told ya!

On Monday afternoon, an unusual workshop put on by NAB Labs will discuss **"Hybrid Radio: Making It Happen at Your Station."**

NAB Vice President of Technology John Marino said this workshop "will give radio managers an opportunity to understand how radio broadcasting combined with the Internet has the potential to make the broadcast product even more appealing to listeners." He said attendees also will learn why carmakers are encouraging radio to become more visual. He sees hybrid radio as "one way to challenge services such as Pandora with content tailored specifically for local listeners."

It will be led by Kevin Gage, mentioned earlier, head of NAB Labs; the focus of the talks will be on how to implement hybrid radio at a typical station, and there will be an opportunity for interaction with panelists. The goal is an educational dialogue for non-technical managers interested in new business opportunities (so bring that boss who pesters you about how the station can get more involved in digital).

MEAT AND POTATO STUFF

Tuesday's agenda has a load of presentations all day about **"Broadcast Facilities."** You might not find the name sexy; yet radio runs on such meat-and-potatoes (unless you leave this food in the station kitchen, where the engineering department will get at it).

One that jumps out is **"Broadcast Applications in the Unlicensed WiFi Bands: It's Not as Bad as You Might Think,"** by Steve Johnston and Kevin Trueblood of Wisconsin Public Radio. This has been an exciting area for some stations to explore, as they look to extend computer networks out to their transmitter sites. The authors say doing so has become cheaper and easier.

HE MIGHT BURST INTO SONG

David Pogue will speak at the Radio

(continued on page 44)

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NABSHOW Where Content Comes to Life

So Who Is Raising Digital Power?

Preview this session exploring FM HD IBOC power levels

BY ALAN JURISON

HD Radio stations are raising power levels; just how many are doing so is the subject of a talk I'll give on Sunday at the NAB Show.

In 2010, the Federal Communications Commission adopted new technical rules to permit FM stations voluntarily to increase hybrid digital power levels from –20 dBc to –14 dBc for most stations, and set a system to allow some stations to achieve up to –10 dBc.

I did some extensive research and digging into FCC records to find out how widely high-level power levels have been adopted. I knew from anecdotal evidence talking to engineers across the country that stations were increasing HD Radio power, but nobody could quantify that. I had asked the FCC and iBiquity the number of elevated HD power stations in operation, but both entities only were able to provide a partial picture.

I sorted through some FCC records to try to get some hard numbers on the increase. While the research I did does not offer the full count of increased stations, the numbers available, I think, are encouraging and show some significant progress. They were higher than I personally was expecting. There are approximately 365 stations running at some elevated digital power level as of early February. The paper breaks the findings down further.

My presentation also has a second part, exploring results of field testing that I've done on behalf of Clear Channel.

Over the last year and a half, I have driven thousands of miles in various markets, monitoring and logging the reception characteristics of elevated digital signals. The stations I have had the opportunity to study in depth have operated in the range between –14 dBc to –20 dBc. I focus on the differences of these two power levels in the paper.

I had been unable to locate any extensive performance studies of the –14 dBc power level, the most common power level deployed. All of the studies that were submitted on the record to the commission in the 2007–2008 timeframe were based on the full power increase to –10 dBc. The information in the paper could very well be the first time data is shared publicly on –14 dBc performance. The tests covered in the paper are in the New York and Los Angeles markets.

Also, some of our testing is more indicative of "real-world" automotive testing. I performed measurements using OEM "in glass" automotive antennas and I compared the differences between standard quarter wave antennas. This, too, has an impact on HD Radio reception performance in the automotive environment. Generally speaking, the "in glass" antennas do not perform as well as other antenna designs. In the paper, I compare how these antennas perform at the –14 dBc and – 20 dBc power levels.

Most automotive manufacturers are including HD Radio in many of their latest vehicles. Because of the increasing receiver base for HD Radio, and the growing importance of data delivery via HD Radio (Artist Experience, traffic data, etc.), I hope to add to the technical record of tangible benefits of elevated digital power.

This image shows HD Radio reception performance of WHTZ(FM)'s digital signal, 20 dB below carrier, via an OEM automotive antenna along I-287 in Westchester County, N.Y. Comparisons are made to WLTW(FM)'s digital signal at –14 dBc.

The session is called **"Field Observations of Elevated FM HD IBOC Power Levels."** Radio World will report on the detailed findings after the show.

Alan Jurison is a senior operations engineer for Clear Channel Media + Entertainment's Engineering and Systems Integration Group. He holds several SBE certifications including CSRE, CBNE, AMD and DRB. His opinions are not necessarily those of Clear Channel or Radio World.

World Radio History

SBE Celebrates 50th Anniversary

Ennes Educational Program coincides with more than NAB opening day

BY FRED BAUMGARTNER, WITH JOHN L. PORAY

Author Fred Baumgartner, CPBE, CBNT, is an Ennes trustee. John L. Poray, CAE, is SBE executive director.

This NAB Show is a one-of-a-kind special edition for the Society of Broadcast Engineers. The SBE will celebrate the semicentennial of its *dies natalis*, a wonderfully fancy way of saying the Society of Broadcast Engineers will have been born, to the minute, half a century prior to this year's Ennes program at NAB.

I'm old enough and lucky enough to have met more than a few of those founding members over the years, and I'm trying to imagine how the individuals attending that foundational meeting would look upon the presence and progress the SBE has achieved in the 18,262 intervening days. I'm guessing they would be both pleased and amazed. I'm a bit pleased and amazed myself; and as a broadcast engineer, you should be also.

The 19th day-long installment of the SBE's Ennes program will coincide with the NAB Show's opening day, April 5. Attendance requires full NAB admission, which SBE members can purchase at a discount. This Ennes program is also the last day of the PBS Technology Conference, and your registration for TechCon is good for the day's Ennes sessions. If you are in the PBS/NPR fold, it is well worth it to attend TechCon (the list of presentations and tracks can be found at *www.pbstechconference.org/home/*) as well as the Ennes program.

The SBE is celebrating its 50th with a special reception during the NAB Show. Society members and guests are invited. Be sure to reserve Tuesday, April 8 from 6:30 to 9:30 p.m. in S-219 of the Las Vegas Convention Center. There will be beverages and "finger foods," and the SBE will give away five $50 bills to attendees. Come and reconnect with several hundred of your broadcast engineering friends.

Immediately prior to the reception is the spring SBE Membership meeting, at 5:30 p.m. across the hall in S-225. Members and guests are welcome to attend that as well. There will be more giveaways, including a $350 gift card to Fry's Electronics, as well as member recognitions and important updates on the society.

THE ENNES PROGRAM

Every year we ask, "What is it that broadcast engineers most need to know?" We start each program with an early-morning extended tutorial.

This year, we consider what we broadcast engineers don't know about finances and monetization in our new digital media world — and how this lack of knowledge can hurt us. Hence, we've asked two frontline finance and new media sales authorities, Scripps' Paul Latham and Burkes Young, to teach us how to best manage our engineering financial assets, and how to construct our facilities and workflows to accommodate the revenue shift to newer digital media distribution.

This year's program focus is "Best Practices." In this business, we are blessed with professionals who are known for examining the best and worst in engineering methods. You no doubt have read Mark Persons' and John

(continued on page 27)

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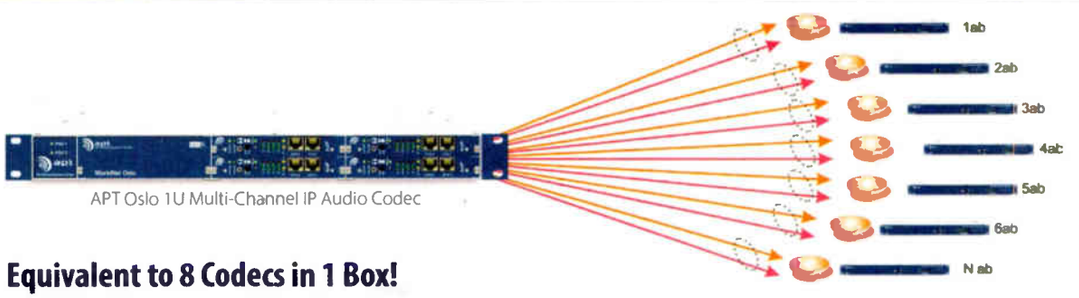

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Reception Lets Hams Meet

Attendees share experiences and tricks of the trade

FIRSTPERSON

BY ROBERT R. KEGERREIS

In 2013, I noticed an Amateur Radio Operators Reception scheduled for Wednesday, and several thoughts immediately entered my head:

There must be a lot of broadcast engineers who are licensed hams. Maybe now that I'm retired is a good time to get my ticket.

With hopes of attending the reception, I had nine weeks to get a ham license.

PROMPT FAILURE

It's amazing how much ham radio has changed since I was a kid. Back in the late '50s, I used to listen to the 20- and 40-meter bands. I amassed a colorful collection of SWL-QSL cards, and I would spend hours listening on my old Zenith 6-S-229 and twist the tuning knob just a hair left or right to isolate a voice nestled between the squeaks and squawks. I tweaked my long copper wire antenna — making it longer, cutting it shorter and stretching it between trees higher or lower. I hooked up a pair of headphones, so I could hear better when signals would fade out. And I learned much about radio technology just by listening to hams talk to each other.

That's when I first thought I wanted to get a ham license, and of course back then, it began with the Novice class theory and five words per minute of Morse Code. With retirement, ham radio now has my attention once again.

I contacted ARRL via the Internet and purchased the "Ham Radio License Manual." Upon beginning to read about "all you need to become an amateur radio operator," I immediately learned that there was no longer a Novice class license and that Morse Code was no longer required for the Technician or General Class licenses. I began to skim the book and was amazed at how much of the theory I already knew (enough to be dangerous) from high school and college physics.

I figured that this was pretty simple: I'll take the test next week. So I went to the local ham club volunteers' examining session, paid my 15 bucks and sat down. Then I began reading the questions: questions about third-party radio users, single-sideband usage, safety rules and RF power effects, ionosphere, repeaters and frequency. I promptly failed — I missed 10 questions. Which ones? The examiners were not allowed to tell me.

I thought, *maybe this ham license stuff is not so easy after all.* So I returned home and really hit the books. Four weeks later, I paid another $15 to take the test again, with different questions. I passed, and two weeks later, I received my license from the FCC and became a new technician: KD8UDQ. Once I had my Technician's license, I decided to go after my General before buying gear and making that first CQ attempt.

I also rearranged my schedule for NAB and added another day to attend the Amateur Radio Operators Reception. Each year, the reception is sponsored by industry names, including Heil Sound and BSW. My mission was to talk with several hams and hopefully answer: "What makes a broadcast engineer, who spends 8-10 hours each workday in front of a transmitter, go home and get back in front of another transmitter?"

TV ON A HAM BAND

Wednesday evening I headed over to Ballroom B of the LVH. A huge line of people were standing or sitting in chairs outside of the entrance. The reception would not start for about an hour, yet there

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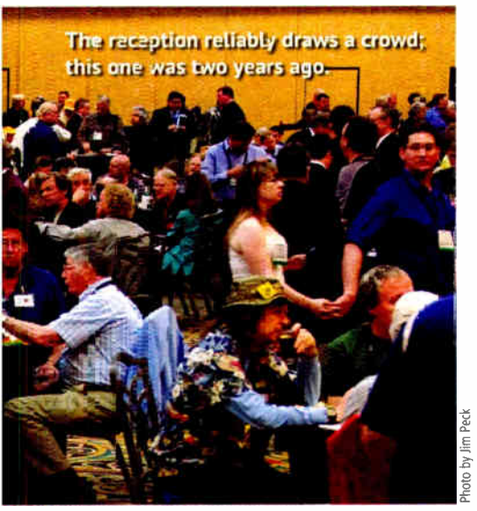

Photo by Jim Peck

in Person

were hams — hundreds of hams, from all over the United States.

There were tables loaded with door prizes, and every attendee was given a raffle and a drink ticket. There were also mountains of snacks. The event was televised on Ham Nation Webcast Live. Although Ham Nation is an Internet television feed, "slow-scan TV hams," such as Judy Moss and David Moss, WD6DCD (General) and WD6CZY (General-Extra), respectively, were having lots of fun. Judy and David are members of the Las Vegas Radio Amateur Club (LVRAC), one of the 47 amateur radio clubs active within the greater Las Vegas area.

Judy and David enjoy amateur radio as their hobby. Both have been using slow-scan TV for some time and have experimented with transmitting different forms of visual information. Judy and David are also active in supporting community and state activities when their radio hobby can be used for emergency and enhanced communications. For example, David assisted with radio communication for the Baker to Vegas Challenge Cup Relay in April. This race features 8,000 to 10,000 law enforcement officers running a 120-mile relay from Baker, Calif., to Las Vegas over two days.

RF BLACK MAGIC AND ELECTRONICS

I also met David Leyrer, a television communications specialist with Vegas PBS Channel 10. I learned that David got his ham license in 2009 — K8HMF, (General-Extra) — he's one of those broadcast engineers who has RF running through his veins.

He was chief engineer for many years at Channel 62 in Detroit. He's been

(continued on page 43)

SBE ANNIVERSARY

(continued from page 25)

Bisset's Radio World columns; all I can say is that they are even better in person.

Is your group or station involved in advertising outside of the broadcast world? Many broadcasters do outdoor, print and specialty advertising, and recently "Digital Out Of Home." The digital signage industry has begun to view broadcasters' interest as a natural extension of their core business and assets. Even if you don't expand into DOOH, the displays and players have found their way into radio remotes and station's public areas, with more likely to follow. Diversified Media Group's Tom Percich takes us through the business of building DOOH systems and in-station applications.

Ultimately, most of us are working towards ratings. We do a lot to get and keep listeners, and we do a lot to make sure our signals are counted in the right ways. How we get ratings and what we do to facilitate them is the subject of a presentation by Paul Kempter of the Kempter Group. This is definitely something broadcast engineers must understand.

There are other interesting and amusing pieces in the program, even beyond SBE Executive Director John Poray's stroll through the organization's archives. There are sessions featuring Jim Dalke speaking about his 5 kW, 500 kHz maritime CW station; Shane O'Donoghue on the Empire State Building's RF infrastructure endeavor; and Michael Pettersen's reminiscence on the occasion of the 75th anniversary of the Shure Model 55, the first unidirectional microphone using a single dynamic element — a microphone that is still being made.

Broadcast engineering is an expansive field with a lot of moving pieces. The Ennes Educational Foundation Trust and the SBE assemble this compact and educational day each year, in addition to a series of programs in a traveling "road show." The next event will be held May 30 in El Paso, Texas. If your chapter is interested in hosting, or your company is interested in presenting, contact Kristin Owens, SBE's education director, at the SBE national office. You'll also get to meet Owens and the other members of the SBE staff at the NAB Show.

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World Radio History

THE INTELLIGENT NETWORK

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This is a selection of exhibitors of interest at the 2014 NAB Show. Highlights are paid for by exhibitors; information is from the companies. Check on-site program for changes and full list. Booths preceded by C are in the Central Hall, N is North Hall, SL is South Lower, SU is South Upper, OE is Outdoor-Equipment, MR is Meeting Room, L is Lobby.

Exhibit Hours
Monday, April 7: 9 a.m. – 6 p.m.
Tuesday, April 8: 9 a.m. – 6 p.m.
Wednesday, April 9: 9 a.m. – 6 p.m.
Thursday, April 10: 9 a.m. – 2 p.m.

25-Seven Systems **C3007**
Established Products: Program Delay Manager, Audio Time Manager, Precision Delay, Program Length Manager

2wcom Systems GmbH **SU10202**
Intro: 1. NEW** AIC — Multiformat AIC over IP encoder/decoder — At NAB 2014 2wcom will extend its audio-over-IP offering with the new AIC, a 19-inch unit that combines IP encoder and decoder functions in one chassis. Supporting all current audio formats and providing solid network streaming connections (DDP, RTP, SIP/SDP) even under difficult conditions, the AIC is a powerful solution for in-house distribution in broadcasting centers, with multi-service infrastructure and centralized administration. *Also:* 2. FlexNsert/FlexXtract — DAB+ distribution via satellite — The 2wcom FlexNsert DAB+ Distribution Inserter receives a DAB ETI data stream (according to EN 300799), converts the stream into a standard MPEG2-TS signal and outputs it via ASI or Ethernet transport stream interfaces. The FlexXtract+ DAB+ Distribution Extractor demodulates a data stream (2048 kbps) from a DVB-S or DVB-S2 signal and converts the data into a standard ETI-signal according to EN 300799 or EDI-signal according to TS 102 693 to feed DAB or DAB+ transmitters. *Also:* FMC01 — FM/MPX Codec — At NAB 2014, 2wcom is introducing the new FMC01, a ground-breaking compact codec for high-quality FM MPX contribution and distribution via IP or E1 (G.703). In an industry first, the FMC01 can combine encoder and decoder functions in the same unit, offering significant infrastructure savings. *Also:* Single Frequency Network System Solution — Assured SFN synchronization with flexible modular configuration. 2wcom will debut a new solution for SFN FM networks at NAB 2014 that provides assured µs-accurate synchronization for implementing FM SFN networks with existing analogue transmission infrastructure. Distribution can be by E1, IP or satellite, and any one of the feeds can be selected for backup purposes without affecting the synchronization. Adjustment of runtime differences, jitter, etc. is automatic.
Established Products: FlexDSR02+/FlexDSR04+
Werner Drews, Managing Director
Am Sophienhof 8
Flensburg, 24941 / Germany
+49 461-66283015
Email: wdrews@2wcom.com
Website: www.2wcom.com

305 Broadcast/Elenos **C457**

42NETMedia Ltd. **N4322**
Intro: 42NET Radio Automation System does every radio production process: traffic management, newsroom, editing, scheduling, single and multiple playout, royalty reporting, media asset management, billing and more are included in our comprehensive and cost-effective automation solution. *Also:* 42NET X-link Pro Audio IP codec establishes connection with minimum latency to entertain listeners in real time. Your solution for a variety of applications, encoding and decoding, multicasting. *Also:* 42NET NewMedia is the solution to manage content you would like to share through the Internet, social media platforms, generate newsletters, update RSS, RDS and on other metadata automatically.

Acoustical Solutions Inc. **C3405**
Intro: PolyPhon polyester acoustical panels offer environmental advantages over traditional fiberglass sound absorption panels and are free of formaldehyde, binding agents, odors and dust. *Also:* Studio 54 cleanable wall panels reduce sound intensity and reverberation as well as the leading acoustical panel, but are wrapped in an easily cleanable acoustical fabric, available in 13 muted metallic colors.

AEQ Broadcast International Inc. **C3027**
Intro: AEQ NetBox, AoIP audio interfaces — We present two interfaces for multichannel AoIP under the common name NetBox. The interfaces allow for audio input and output system connectivity at locations where, for example, the installation doesn't count on AoIP networking capability. NetBox 32/8 AD features 32/8 input and 32/8 output channels, mono or stereo, analog or digital. It also incorporates GPI/O. Suitable for central controls and link dispatches, to increase or distribute the capacity of TDM-bus matrices. *Also:* ConeXia intercom system developed by AEQ and KROMA Telecom becomes a global audio solution; Systel IP4 and IP12, talk show and multiconference systems are built around a digital router and use lines from IP telephony systems; Sonata is a high-end, four-band digital audio processor.

Air Comm Radio **C12346**

Aldena Telecomunicazioni Srl. **C548**
Intro: FM high-gain log-periodic antennas have excellent electrical performance thanks to the absence of side lobes, high gain and front-to-back ratio. Custom directional azimuth pattern can be performed for meet FCC requirements. Aldena solutions are used all over the world (USA, Italy, Mexico, Brazil, Spain, Belgium, Algeria, Russia, Australia, New Zealand, others). *Also:* New Aldena antennas are available for DAB transmissions suitable for medium-/high-power systems along with high-performance RF accessories (coaxial power splitters, fine matchers, RF monitor probes).

Altronic Research Inc. **C154**

Ampegon **C447**
Intro: The next generation of shortwave transmitters, with advances in the transmitter control system, motor drive tuning system and measurement acquisition system. *Also:* Photovoltaic power plants at transmitter sites — As a leading supplier of radio transmission and antenna systems, Ampegon opened a new business in green technologies. The essential reduction of carbon dioxide emissions is one of the greatest challenges of the future. Ampegon developed a unique solution transferring fallow land at transmitting stations and antenna fields into photovoltaic power plants to produce renewable energy at the consumer site.

Anton/Bauer Inc. **C6025**

Arctic Palm Technology Inc. **C3031**
Featured: Center Stage Live (CSRDS), CS Contest Management, CS Copy Management, CS Call Management, CS Social
Stu Buck, Product Development
11 Camelot Cres
London, N5V 3L4 / Canada
519-452-0002 ext. 201
877-752-0002
Fax: 519-451-3692
Email: sales@arcticpalm.com
Website: www.arcticpalm.com

Armstrong Transmitter Corp. **C2033**

Arrakis Systems **C2324**
Intro: Introducing the most powerful and flexible radio automation system on the market. Digilink-HD saves the user time and money, without compromise. Whether you want to connect with eight or more studios from a single computer, or throw together a quick, brilliant sounding voicetrack that gives you a dynamic live sound, Digilink-HD will give you the power and flexibility you need. *Also:* ARC series consoles were the first to introduce PC and Mac connectivity with its USB audio channel. They also led the way with their use of the RJ-45 connection. Arrakis is excited to introduce Bluetooth connectivity built into the ARC-10-blue series and ARC-15BP-blue. *Also:* With a single stereo mixing bus, the ARC-8 broadcast radio console is ideal for fast-paced live on air, production, Internet streaming and remote applications. *Also:* The MARC-15 is a feature-laden, professional analog console for on-air radio, production and news.

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

Audioarts Engineering **C3112**
Intro: Audioarts Engineering will debut new digital audio consoles for radio and television.

AudioScience **C2024**
New: Breakthrough series of PCI express sound cards, the ASI6700 series. These professional adapters will provide mixing/routing, GPIO and eight stereo channels of analog/digital audio, for the first time in the smallest possible form factor, all on one card. In addition AudioScience will exhibit our Hono AVB Mini flagship product, currently in AVnu certification.

Audio-Technica U.S. Inc. **C1720**
Intro: BP894 subminiature cardioid condenser headworn microphone offers the ultimate in low-profile, high-performance audio. It features a rotating capsule housing with talk-side indicator for use on either ear and perfect polar pattern placement. The BP894 takes headworn microphones to the next level, by allowing the cardioid capsule to be aimed at the sound source. The uniform pickup pattern provides excellent rejection of outside noise, with exceptional gain-before-feedback when used with live sound systems and stage monitors. *Also:* ATH-M50x professional monitor headphones feature the coveted sonic signature of the ATH-M50, but with detachable cables. *Also:* ATH-M40x professional studio monitor headphones are tuned flat for accurate audio monitoring across an extended frequency range. Your studio experience is enhanced with superior sound isolation and swiveling earcups for convenient one-ear monitoring.

Avateq Corp. **SU11402**
Intro: AVQ1020 ActiveCore RF Layer Monitoring Receiver is an embedded RF layer monitoring

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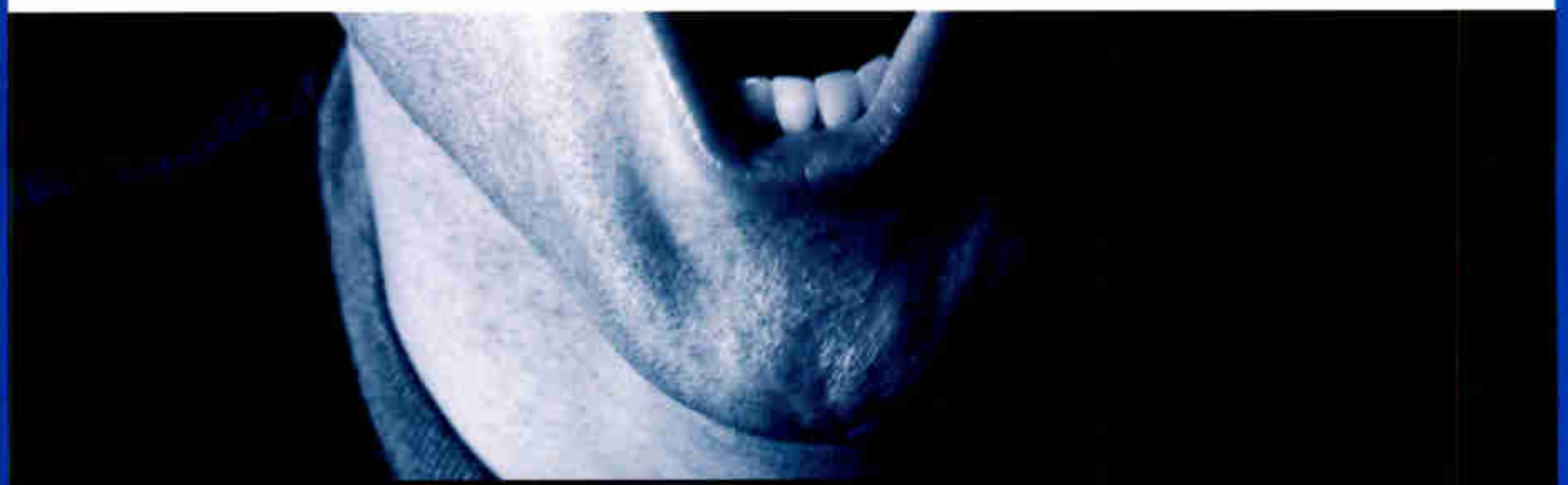

SOME WORDS SHOULD BE OBSCENE AND NOT HEARD

Eventide Broadcast Delays are designed to keep profanity off your air, and angry listeners, embarrassed advertisers, and the FCC off your back. We invented the obscenity delay and have a solution for stations large and small that provides up to 80 seconds of the highest quality revenue and license-protecting delay.

Our new HD compatible BD600, 24-bit delay, comes standard with AES/EBU, and provides up to 80 seconds of memory — twice as much as other delays. There are fully adjustable Delay and Dump functions, and a Sneeze function which "edits" audio entering the delay, allowing the host to sneeze, cough, or make a snort comment without being heard on a.r.

The BD600 offers two different methods of delay buildup and reduction: Eventide's catch-up and catch-down system, and an exclusive fast-entry-and-exit feature which allows starting a broadcast with the delay already built up to a safe amount and ending it with a rapid reduction of delay.

For HD, the BD600 offers MicroPrecision Delay™ mode which allows up to 10 seconds of delay to be adjusted in real time in 100 nanosecond increments. This is useful for synchronizing analog and digital signals while on-air, without audible artifacts, to maintain a seamless user experience.

Whatever your size, whatever your format, you can't expect to protect the integrity of your air and the foundation of your business without an Eventide Broadcast Delay in your rack.

Eventide®

HD COMPATIBLE

One Alsan Way Little Ferry, NJ 07643 tel.201.641.1200 www.eventide.com

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See us at NAB Booth C2917

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Myat's Bea Porta, right, discusses features of the company's N+1 switching matrix with Dan Barton from Alive Telecom.

receiver and signal analyzer for digital broadcasting. It supports all major digital TV and radio broadcasting standards.

AVT Audio Video Technologies GmbH **C1546**
Intro: Magic TH1 potsGo telephone hybrid a one-channel telephone hybrid for POTS lines. It is smart and simple; just connect it and start the show. *Also:* Magic TH1 ipGo telephone hybrid is a one-channel telephone hybrid for VoIP lines. It also provides HD Voice quality (7 kHz/G.722) in addition to the standard G.711 telephone quality.

Axel Technology **C3327**
Intro: Wolf 2MS is an FM monitoring system with two FM tuners, designed to receive up to 64 channels. Each RF tuner performs a complete analysis of RF, MPX, RDS, Audio and RDS data dynamic services, featuring a FM static or band-scan mode. Supporting SNMP, it can be integrated into any network and NMS (Ranger). Two built-in audio streamers allow users to access streamed audio through Internet and check data/alarms from PCs, tablets and smartphones. *Also:* Falcon FM Line includes state-of-the-art audio processors.

Axia Audio **C3007**
Intro: Fusion Modular AoIP Mixing Console is packed with features and capabilities. Four program busses and four auxiliary busses, onboard EQ and voice dynamics, automatic mix-minus, integrated Intercom capability. Virtual Fader and Virtual Mixer (VMix) technology, with 16 five-channel VMixers, help extend mixing capacity beyond physical fader count. Beautiful and rugged: anodized metal work surfaces feature rub-proof laser-etched markings and high-resolution OLED displays on each fader. *Also:* Axia xSelector combines the routing functions of an XY router control panel with the audio outputs of an Axia xNode AoIP interface. In addition to analog, AES3 and headphone outputs, xSelector features an analog and an AES3 input, suitable for production or news studios where operators create and consume audio streams. Six convenient "radio buttons" can be quickly programmed for access to favorite sources.

Barix Technology **C1139**
Intro: SoundScape helps businesses comprehensively manage audio distribution over IP networks, offering a centralized management portal and audio players at multiple locations. Users can manage, configure and group SoundScape audio players, schedule content and monitor device status network-wide. SoundScape supports live streams and stored content playback over the same network, with seamless switching between the two applications. Both options support targeted, location-based advertising insertions that seamlessly fade in and out of music programs. *Also:* Barix IC Paging offers a complete Intercom and paging/PA solution over IP networks.

Affordable Studio Furniture
STUDIO TECHNOLOGY Studio Furniture
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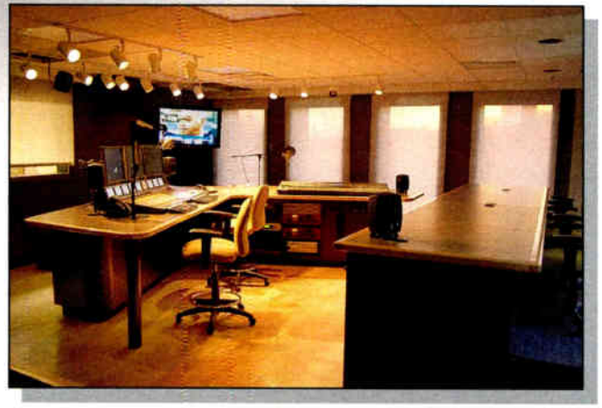
• Delivery & Installation
• Designed to fit your Budget

Voice: (610) 925-2785
Fax: (610) 925-2787
Studio Technology
529 Rosedale Rd. Suite 103
Kennett Square, PA 19348
e-mail: sales@studiotechnology.com
www.studiotechnology.com

Beat The Traffic **SL15416**

Belar Electronics Laboratory Inc. **C2436**
Intro: FMHD-1 FM HD Radio Monitor is a state-of-the-art HD Radio monitor with the capability to simultaneously decode up to four HD streams, monitor time and level alignment and support asymmetric sidebands. *Also:* FMCS-1 all-in-one FM modulation monitor provides a complete monitoring solution for the various components of the FM Analog signal. The unit combines the features and functions of a frequency agile RF amplifier, down converter, FM demod, stereo demod, RDS decoder, SCA decoder and FFT spectrum analyzer in one product.

Belden **N2513**

Bext Corp. **C1727**
Established Products: FM transmitters, exciters, translators, antennas, RF filters, RF combiners, radio STLs, RF accessories

Bittree Inc. **SU6521**

Broadcast Bionics **C1205**
Intro: PhoneBox & OASIS — PhoneBox software elegantly combines talk show call-in with a sophisticated social media system to provide the ultimate communications tool for your studio. Instagram, Twitter, Facebook, Google+ are all integrated along with professional tools such as Commotion and Audioboo. Innovative features help you to stay on top of hot topics. Perfect for news and talk shows for both radio and TV.

Broadcast Concepts Inc. **C547**

Broadcast Devices **C2920**

Broadcast Electronics **C2607**
Intro: STXe 500 is a revolutionary design, with controller built in and top-of-the-line audio specifications rivaling those of the legendary BE FXi series of exciters. Standard is an updated GUI. If your site has IP connectivity, you can access important parameters on your laptop, tablet or smart phone any place, any time. The STXe 500 ranges in power from 25W to 550W. *Also:* The FM 40T (40kW analog FM or FM+HD radio) is the newest addition to the T Series line of tube transmitters. The FM 40T is the best value per watt in high-power FM transmitters. *Also:* VPe XG is third-generation HD architecture for use with the STXe Series of 60W and 500W exciters/low-power transmitters. VPe XG is the easy, cost-effective solution for increasing your HD power level from –20 dB to –14 or –10 dB and everything in between. It combines a new crest factor reduction scheme and real-time distortion pre-correction to yield higher transmitter efficiencies and output power. *Also:* With the AudioVault FleX mobile app, AudioVault FleX users can interact with their system remotely in real time from their mobile device.

Broadcast Software International **C2635**
Established Products: Op-X radio automation, Simian radio automation

Broadcast Supply Worldwide **C1554**

Broadcast Traffic Systems - BTS **N4339**

Broadcasters General Store **C2920**
Featured: Studio equipment — Axia console and routing systems, furniture, mics, speakers, automation, acoustic treatments, cables, meters, delays, time management, processing, telephone systems. Remote broadcast equipment — Codecs, small mixers, headsets, cables. RF equipment — Transmitters, coax cable, antennas, towers, tower lights, STL systems, audio processors, dummy loads. Livewire — The largest broadcast AoIP system's team that includes Telos, Omnia, Axia, Linear Acoustic, 25/Seven, Nautel, Op-X

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Streaming Made Simple! With Simian 2.2 Pro & Lite

By Paul Anderson & David Bowman of KOUU

Paul Anderson at KOUU in Focatello, Idaho

Idaho Wireless Corp is a small market group in Pocatello, Idaho, and we're the only independently owned and managed radio group left in our market. As technology evolves we evaluate the costs and benefits of each change, and streaming was one of those projects.

When we changed the format January 1st on our 50,000 watt AM KOUU to Country Classics the response was immediately positive, but our audience wanted to listen in their offices and on their smart phones. We had considered streaming KOUU in the past, but the expense and complexity meant it was always a project that got pushed back to "later".

In 2009 we installed our first Simian system, replacing a beloved but tired Scott Studios system. We were ready for the benefits of a Windows based system that had more features, and we found that Simian is easy to use, powerful, and installation was a breeze. Since then we've converted all of our stations from Scott to Simian.

Simian offers many options to set up streaming. Country KOUU audio streaming is being outsourced to a third party (Crystal Media Networks) using data provided by Simian. Using the Metadata tab in Program options is where all the set up takes place. Crystal Media Networks required certain parameters to interface with their streaming player. The majority of the setup is all contained in an .xml file.

To create an .xml file, use Notepad and type in the syntax for each parameter required by the streamer (Syntax for Artist is <artist><![CDATA[%ARTIST%]]></artist>). Simian support can help with this, or a template is pictured in the Simian Pro Manual. In the case of KOUU, Artist, Title, Filename, Category, and Length of each piece of audio was provided to Crystal Media Networks. This file becomes the Template File.

Some final setup is required. The template file is loaded in the Metadata tab in Program Options in Simian. The IP Address corresponds to the computer that will be accessed by the streaming software. This computer needs to be networked to the on air Simian computer. The port and TCP/UDP address is set up with information provided by the streaming company (in the case of KOUU, Crystal Media provided this information).

All of the programming for KOUU is played by the Simian Pro system. In order to stream with more than one source (i.e. switching from local audio to network audio like a satellite receiver) Data Repeater-available from BSI-can handle multiple metadata sources and destinations.

Our streaming project for KOUU was easier than we imagined. The support team from BSI and the streaming features of Simian made it simple.

Paul Anderson is the General Manager of KOUU, KZBQ and KORR. David Bowman is the Operations Manager. KOUU uses Simian Pro, though the metadata output features of Simian Pro are also available in Simian Lite. Simian Pro & Lite contain built in metadata output templates for Windows Media Encoder, ShoutCast, IceCast, SAM Cast, Live365, Orban Optimod, and Omnia A/XE. Metadata output in Simian Pro & Lite is template based, so most stream encoders not listed are compatible.

Broadcast Software International

For More Information Call 1-888-BSI-USA-1 ~ Email: sales@bsiusa.com ~ Web: www.bsiusa.com

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Automation, ASI, Sound4, plus many more. *Also:* Products from BDI, Andrew, ERI, Proteus, Audemat.

BroadView Software **N3130**
Established Products: BroadView's information management solutions for broadcast operators provide comprehensive tools for programming, traffic, sales, OnDemand, satellite and cable. Expertise in workflow, content and media management maximizes value and productivity.

Burk Technology **C2030**
Intro: The popular ARC Plus Touch Remote Control System is shipping with Version 5 hardware and firmware. New is the RSI Recordable Speech Interface option, replacing the familiar ESI. The RSI provides telephone control, including a broadcast specific vocabulary and the ability to record custom phrases. *Also:* ARC Solo offers the power of the ARC Plus with the simplicity of the ARC 16 in a single package. Standard features include RSI speech interface for dial in/dial out control, as well as IP interface for computer and smartphone control. Built-in I/O includes 16 metering, 16 status and 16 relays. ARC Solo includes everything you need for uncomplicated remote control. *Also:* New Recordable Speech Interface provides telephone control for the ARC Plus Touch. RSI features a digitally recorded voice with broadcast specific vocabulary. Additionally, users can record words or short phrases to customize messages for their specific requirements. The new ARC Solo includes RSI as a standard feature.

Burli Software Inc. **C2035**

BW Broadcast Ltd. **C1336**
Established Products: V2 FM transmitter, FM receiver, audio processors, RDS encoder

Canare **C10848**
Established Products: L-4E6S, BCJ-XJ-TRC

Civolution **SU3224**

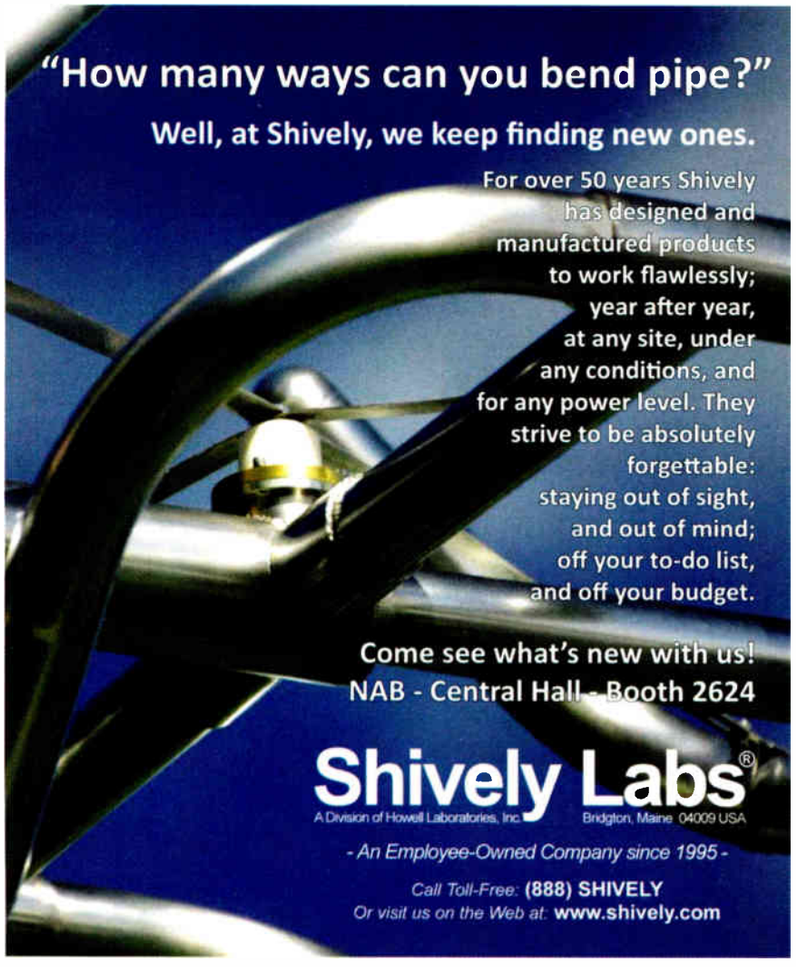
Clark Wire & Cable **C8315**

Clear Channel Satellite **SU10802**
Intro: Romantis UHP VSAT Platform is a high-throughput, compact VSAT platform. *Also:* XtremeSat Media revolutionizes audio delivery for broadcasters with features like AAC digital audio, efficient bandwidth usage and spot insertions. The DVB-S/S2 capable system allows economical expansion from SCPC to MCPC, fleet management and DVR-like capabilities. Internal storage and Icecast streaming protects your content during a satellite outage and sends notifications via SNMP traps. The GUI interface gives engineers the status of the tuner's audio levels and logs. *Also:* X-Digital Systems is now used on Ku Band. Affiliates can do time shift playback, receiver health checkups and set up schedules within the receiver on Ku Band. Clear Channel Satellite is the first to put XDS on AMC-1, Ku Band, giving networks the ability to control their own receivers, set up store and forward and perform copy split spot insertion.

Clear-Com **C8008**

Coaxial Dynamics **C1114**

Comrex **C2221**
New: The telecommunications infrastructure has been going through a massive transformation as IP-based technology continues to supplant traditional circuit-switched data services by providing greater efficiency and lower costs for consumers. Several new technologies stand ready to even further revolutionize the way people communicate across the globe.
Comrex has always strived to leverage new and future solutions for the benefit of broadcasters to allow them to provide creative and interesting content. NAB attendees are invited to visit Comrex and "step behind the velvet rope" for a special technology preview to learn about some of these transformational technologies and other new Comrex developments.
New this show, the P1L0T IP streaming server is a dedicated streaming appliance designed with hardened Linux based hardware and software and no moving parts … not even a fan. It provides AES3 and analog balanced inputs, special audio processing options enhanced for streaming and is configured through an intuitive Web-based interface that provides audio metering and status to any computer. P1L0T can deliver your source stream to any Shoutcast/Icecast-based streaming server, and given enough bandwidth, can deliver 100 streams directly to listeners. Listeners connecting to your audio stream have a choice of formats, either HE-AAC or MP3 because P1L0T is capable of dual mode encoding. P1L0T is a compact unit occupying 1/2 U of rack space, at very low cost.
Established Products: Access IP audio codec, LiveShot IP video codec, BRIC-Link IP audio codec, and the STAC VIP VoIP caller management system.
Chris Crump, Sr. Director of Sales & Mktg.
19 Pine Rd.
Devens, MA 01434-5068
978-784-1776
Email: chris@comrex.com
Website: www.comrex.com



Com-Tech Italia SpA **C1754**

Continental Electronics Corp. **C2017**
Established Products: 816 Series analog FM and HD Radio transmitters, 802 Series analog FM and HD Radio exciters, shortwave and DRM transmitter systems and high-power scientific application systems.

CPI **C1107**

Crown Broadcast IREC **C444**

Dalet Digital Media Systems **SL2725**

Dan Dugan Sound Design **C1120**
Intro: Dugan-VN16 16-channel automatic mixing controller plugs into a slot on selected Avid digital mixers and patches into the mic channel insert points. It detects which mics are being used and makes fast, transparent crossfades. It may be configured with 16 automixing channels or eight automixing channels and eight channels of ADAT I/O, and may be linked with up to seven other Dugans to expand the number of microphones. The Waves Dugan Automixer is a software version of Dugan Speech System Automatic Mixing Controllers for Waves MultiRack Native and MultiRack SoundGrid systems. The software manages the gains of multiple microphones in real time to create fast, transparent cross-fades. It reduces feedback, studio noise and comb filtering from adjacent mics.

Davicom **C1111**
Intro: Our FM Broadcast Monitor receiver (FMBM-2) adds MPX input and output capability and optional AES-EBU digital outputs to the FMBM-1. It offers advanced features in a compact, low-cost package. Also, a remote control interface for Inovonics 610 Internet Radio Monitor, the first direct-connect interface between Davicom and Inovonics products. Thanks to the Davicom's built-in SNMP manager and to the 610's SNMP agent, the interface allows one-cable interconnection. The interface consists of a Cat-5 cable, a DV configuration file that can be downloaded into any Davicom Mini or Davicom 208/216 unit and a DavLink Workspace file for the PC.

DAVID Systems **C7940**

DAWNco **SU3002**
Intro: LNB for satellite, HD ready ±5 kHz stability — C and Ku Band LNBs, recommended by major networks for use with HD satellite receivers. The stability rating results in interference-free reception, even when temps at the dish site range from very cold to extremely hot. *Also:* DAWNflex signal cable to improve signal quality on satellite downlink, by reducing loss on signal cable run from dish to building. Flexible coax passes signals up to 3 GHz, including satellite L Band. The cable is flooded for direct burial, quad shielded for protection from signal ingress, flexible 2.5 inch bending radius, with .61 inch overall diameter. New DAWNflex can cut signal path loss in half.

DaySequerra **N3839**
Intro: The M4DDC diversity delay control is a 1-RU, standalone AM-FM solution and runs DaySequerra's new proprietary TimeLock algorithm to automatically maintain time alignment of the HD Radio MPS and HD-1 audio streams. Get email alerts direct from your M4DDC for loss of TimeLock, Level-Lock (optional), program audio, carrier or OFDM HD Radio Lock. Also, the M4.2S TimeLock, our analog AM/FM and HD Radio AM/FM tuner, receives the off-air broadcast, measures the timing difference between the MPS and HD-1 streams. Out-of-tolerance conditions can be reported via email and its built-in Web server using any browser on your network. The M2HDSP AM/FM modulation monitor has a built-in web server that displays Artist Experience album art, station logo and advertisers' branding.

DB Elettronica Telecomunicazioni **SU5302**

Delta Meccanica Srl. **C549**
Intro: Keep an eye on power in dual antenna systems with our monitor. External power detectors can read forward and reflected power of two antennas at the same time. The detectors are able to correctly read the RMS power of multiple channels simultaneously present in antenna. The visualization takes place on two displays in order to better understand the status of the two antennas.

DEVA Broadcast **C1324**
Intro: DB6000 FM and digital radio audio processor; Radio Explorer II mobile FM radio analyzer and coverage survey tool; SmartGen 6.0 UECP-compatible RDS/RBDS encoder with LAN, USB and RS-232 connectivity; DB9009-RX second-generation advanced IP audio decoder and DB9009-TX second-generation multi-protocol audio over IP encoder.

Dialight Corp. **C1133**

Dielectric **C1707**

Digigram **C2849**
Intro: Iqoya Serv/Link is a versatile, robust multichannel IP audio codec dedicated to STLs, SSLs, Web radio delivery to CDN and audio program delivery to DVB operators. Providing up to 32 stereo channels in 1U, it offers several I/O configurations: analog, AES/EBU, MADI, Livewire, Ravenna. Link and

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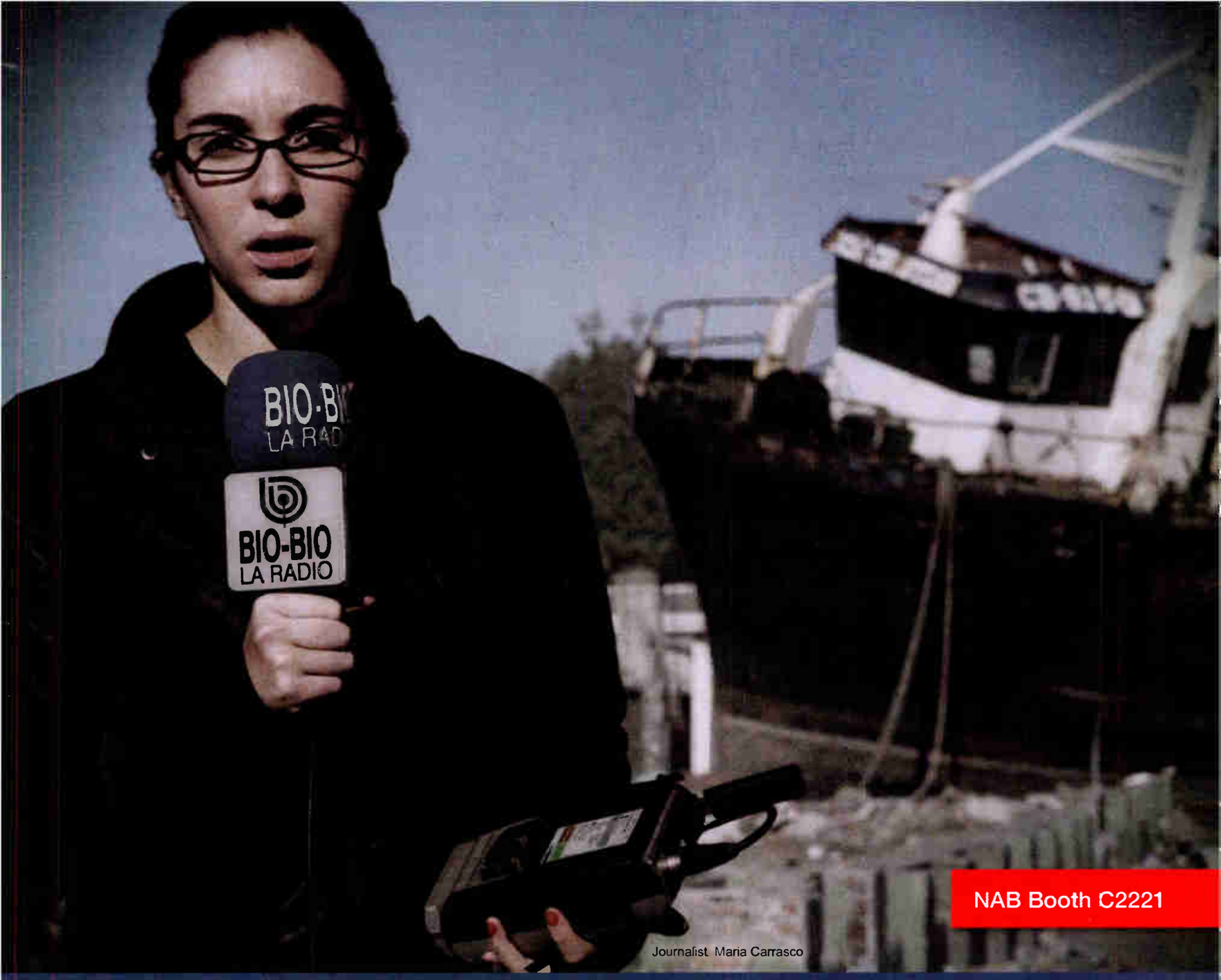

Journalist Maria Carrasco

NAB Booth C2221

ACCESS 2USB

We know that remotes generate revenue and can help boost ratings. But as broadcasters, we also serve the public trust. When called to that higher duty, such as going live from a disaster zone or breaking news location, the ACCESS 2USB BRIC IP Audio Codec delivers the clearest, most reliable connections.

With the touch of one button, your remote talent will be connected to the studio via available 3G, 4G, WiFi, BGAN or POTS/PSTN networks. They'll sound as if they're in the booth with you due to high quality AAC audio alogrithms and signal reliability only Comrex BRIC technology can provide. Add the optional 5-channel expansion mixer for panel broadcasts. *Contact your Comrex dealer for more infomation.*

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COMREX
BROADCAST RELIABLE

info@comrex.com 1 800 237 1776 1 978 784 1776

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Link/LE are the reference stereo IP audio codecs for STL and SSL links. Call and Call/LE audio over IP codecs enable low latency and reliable IP audio contribution links. These codecs belong to Digigram's Mobile Solutions, which bring professional quality to full-duplex connections between a remote site and a studio. *Also:* LX-IP Ravenna is Digigram's flagship AES67 audio over IP soundcard.

Digital Alert Systems **N4812**

Intro: DASEOC new "M" series of EAS/CAP decoders and encoders are FCC-certified and FEMA IPAWS-conformant devices capable of simultaneously providing all four EAS and CAP functions: CAP message origination, EAS encoding, CAP monitoring and EAS decoding. Simultaneous alert origination to both EAS and CAP servers avoids message duplication, and the single-unit, single-interface approach assures that emergency managers won't need to purchase separate and disparate systems. *Also:* MultiStation software with multilingual text-to-speech.

Digital JukeBox **C3017**

Intro: DJB-Logger-Advanced — Logs up to eight live streams and/or analog, digital audio signals any combination, user selectable. Per-channel silence sensors email or give a contact closure to warn of NO AUDIO. Records in a variety of sample rates in MP3, MP2, WAV, M4a, Ogg, WMA any channel, any combination. *Also:* Button Broadcaster Pro low-cost automation software with Drag n' Drop audio database, 10-stack player, hot button palettes, auto segue, auto pick, scheduler & as-run log. Plays audio in a variety of sample rates in MP3, MP2, WAV, M4a, Ogg, WMA any channel, any combination overlapped on a single stereo audio card. *Also:* Radio Spider-II, the Radio World 2013 "Cool Stuff" Award Winner, is adding full DropBox support, Scott Chunk audio header support for SS32 audio, other file tagging, and will also be Google Drive compatible. *Also:* DJB-Radio Central Server automation software focuses on small-mid market radio. Larger audio database, "record once play many audio" for clusters, in log schedule a Web link or play audio on demand, local weather to your ZIP code, expanded meta data for Web streaming. *Also:* iPhone Streaming App, new for NAB, allows user selection of any radio station stream in the network. New interactive listener features to be announced at NAB.

Established Products: DJB-II radio automation, Radio Spider-II automated download software, Button Box hot button audio player, STLware STL point to point software, iPhone Player App, Android Player App, DJB-Logger 1–8-channel logger

Mr. Ron Paley, President
3651 Lindell Rd.
Las Vegas, NV 89103
702-487-3336 ext. 1
702-487-3336 x 406
Email: sales@digitaljukebox.com
Website: www.digitaljukebox.com

DoubleRadius Inc. **C1844**

DPA Microphones **C3333**

Eartec Co. **C7237**

Elenos **C457**

Intro: Low- and medium-power FM transmitter 2U Line — Available with eight power levels (20, 100, 150, 300, 500, 1000, 1500, 2000 watts), these transmitter are elegant, compact and reliable. *Also:* ETG 5000 FM transmitter Indium series — 5 kW unit with audio MPX input, mono, stereo, AES EBU, TC TS card, OLED display, GSM telemetry, Web browser, SNMP agent. Latest RF LDMOS devices and planar technology. 3 AC/DC with PFC and protections. Six cooling fans. Electrical efficiency is 70 percent, installation and maintenance quick and easy. 4U dimensions, weight 84 pounds. *Also:* ET10000 solid-state FM transmitter features ICEFET, which ensures low temperatures, reduces consumption and extends product life; fast hardware protection and software algorithms control parameters. Ultra compact size, just one cabinet. *Also:* E-Box SNMP remote control system with Web interface and SNMP agent.

Emmis Communications **C1054**

Hank Landsberg, right, answers questions about the Henry Sports Pod mic and headphone controller for remotes from Richard Burden.

ENCO Systems Inc. **C1307**

Intro: iDAD — Remote control your DAD system from an iPad just like you were in the studio! Record voice tracks, make playlist changes, control playout and more with the new iDAD Remote app for iPad. *Also:* DAD v14, a complete audio playout, automation and control system for radio. From fully manual, to live assist, to fully automated, DAD's updated, intuitive user interface allows stations to create better sounding radio with ease. Manage your audio content and metadata from anywhere with that latest Web tools and remote voice tracking available in DADv14. The DAD suite now includes bidirectional communication with music scheduling and traffic systems as well as hardware manufacturers.

ERI - Electronics Research Inc. **C2612**

Established Products: SHPX Series Rototiller circularly polarized FM antenna, 1180 Series FM panel antenna, 788 Series all-pass diplexer for high-efficiency analog/IBOC combining.

ESE **C7406**

Intro: The ES-971 is a four-digit display featuring 7-inch-high red LED displays in a wall-mount enclosure. It accepts ESE, SMPTE LTC, EBU or RS-232C ASCII timecode. The ES-971 automatically determines which code is received. If receiving ESE Time Code from a timer, the unit will display minutes, seconds. The ES-971/NTP-C offers the unit the ability to read NTP and/or receive Power over Ethernet (PoE). Both units also offer optional blue or green LEDs. *Also:* The ES-289E provides a practical method of putting accurate time information onto a network by reading ESE or SMPTE/EBU timecodes. The NTP output is provided on a 10/100 Base-T Ethernet connector. A voltage-controlled temperature-compensated crystal oscillator is used to maintain the accuracy of the time code outputs when lock is lost. The ES-289E is an IPv4/IPv6-compatible NTP Time Server. NTP clients can authenticate the NTP server with MD5 or SHA1 Symmetric Key Authentication. *Also:* The HD-491/SD is an HD and SD SDI timecode decoder/generator. The HD-491/SD accepts an SDI signal, decodes the RP-188 or D-VITC and produces either a SMPTE or EBU LTC output. Simultaneously, the unit produces an ESE time code output that can be used to drive new or existing clock systems. The HD-491/SD can also be used as a translator/timecode converter (for shuttle speed applications) or can be jammed and used as a generator (real-time applications).

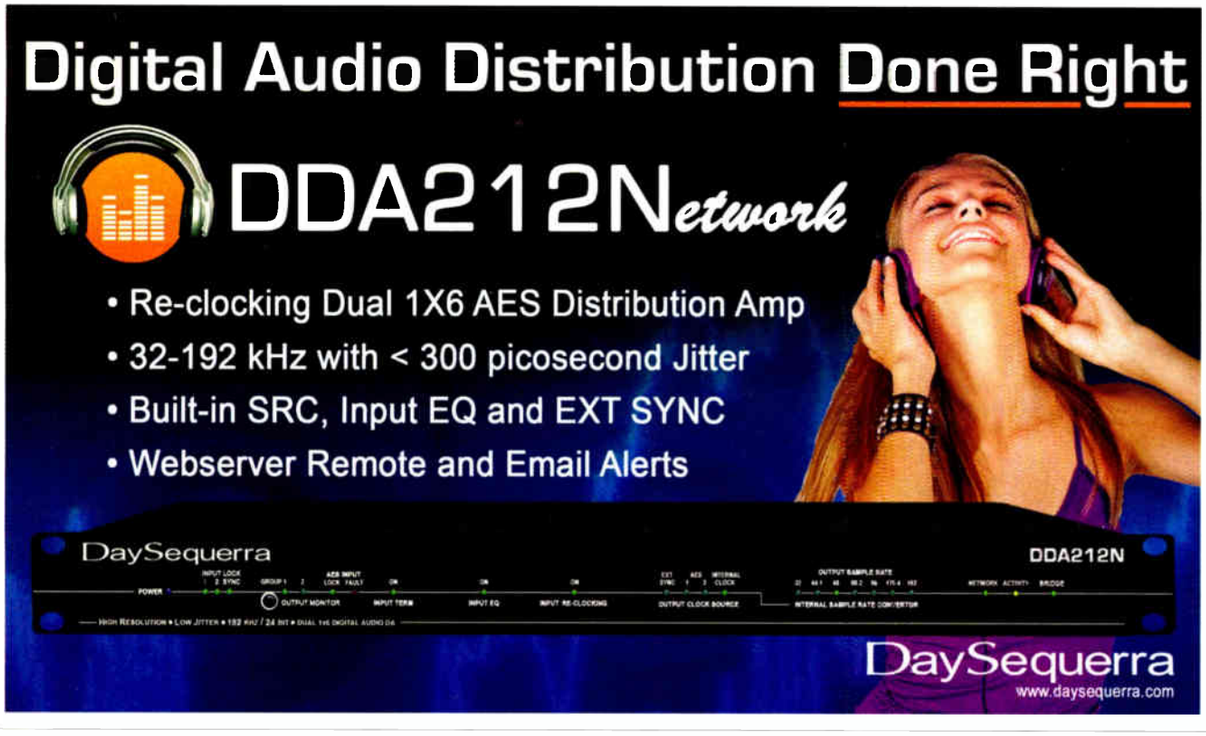
Established Products: Master clocks, remote clock displays, NTP products, frequency standard, SMPTE/EBU timecode, timecode converters, digital clocks/timers, distribution amplifiers, video and audio products, time control systems.

Mr. Bill Rajaniemi, Sales
142 Sierra St.
El Segundo, CA 90245
310-322-2136
Fax: 310-322-8127
Email: ese@ese-web.com
Website: www.ese-web.com

Eventide Inc. **C2917**

FEMA Integrated Public Alert and Warning Systems (IPAWS) **C2047**

Flash Technology **C1113**



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Fraunhofer IIS **SU6117**

GatesAir (see Harris Broadcast) **N609**

Genelec Oy **C1451**
Intro: The Genelec 8251 is the latest member in the Smart Active Monitor family, taking the line to five products covering a range of applications. The 8251 provides its user with neutral sound reproduction and durability. The 8010 is the smallest member of Genelec's analog 8000 series monitor family and features low frequency as well as SPL capacity.

Gepco/General Cable **C7708**

Glensound **C1131**
Intro: International launch of the Glensound CUB, a two-input, two-output digital mixer with USB interface to smart devices such as the iPhone. This is a portable unit and allows full interfacing for mic/line inputs and two sets of headphones. IP codecs such as Luci Live can then be used, or any of the available recording apps. *Also:* Glensound launches a new Dante-compatible commentary/announcers box. The (as yet untitled) unit will enable interfacing for a commentator to any Dante compatible router, console, or intercom.

Gorman Redlich **C1125**
Intro: The CAP-DEC1 CAP converter connects to any manufacturer's EAS equipment. The CAP-DEC 1 translates CAP alerts into EAS headers and analog audio that is connected into an EAS unit. Keeping EAS logs required by the FCC on the CAP-DEC1 eliminates the need for a printer connected to the EAS units. Logs are stored by the week for convenient access. *Also:* The CRW-S NOAA weather receiver is sensitive and selective for National Weather Service transmissions. It is equipped with SAME decoding and digital tone decoding that processes the 1050 Hz signal tone for automatic audible and visual alarm signals in the event of emergency situations. Model CRW-S has rear terminals for remote control and (F) connector for antenna.

Harris Broadcast **N609, N2503**
Intro: We are now GatesAir and Imagine Communications. Selenio MCP1 media convergence platform fuels operational efficiencies for broadcasters and media organizations that want the comprehensive on-air and signal transport capabilities of Selenio in a smaller, cost-efficient package. Retains the vision of Selenio by addressing how IP interconnects to legacy audio and video applications, but simplifies ongoing use and real estate challenges for less labor-intensive operations with a compact 1RU package. *Also:* High-efficiency, broadband DAB transmitters featuring PowerSmart 3D architecture, which elevates the PowerSmart technology at the core of the company's digital radio transmission solutions to deliver operational efficiencies and green transmission benefits to broadcasters.

HD Radio **C151**

Henry Engineering **C2133**
Intro: The Sports Pod system integrates everything you need for remote broadcasts: mic control, headphone mixing and volume, duplex talkback and remote mic control. Use any combination of Sports Pods, Talent Pods and MiniPods with a MultiPhones Master II unit for flexibility and ease of setup.

IABM **N6118**

IBC **C654**

IEEE Broadcast Technology Society **L28**
Intro: The society is offering show attendees a 50 percent discount on IEEE membership plus an additional discounted price of $7.50 to join BTS. IEEE membership includes attendance to local events and activities, discounted membership to individual societies, and educational opportunities including conferences and presentations. Members receive the latest industry news from IEEE, IEEE Spectrum, IEEE Standards News and The Institute. *Also:* Attendees will receive a discounted price to attend the Annual Broadcast Symposium, one of the world's premiere technical conferences on broadcasting technology, this year in San Antonio.

Independent Audio Inc. **C3139**

Imagine Communications (see Harris Broadcast) **CN2503**

Inovonics Inc. **C2330**
Intro: Aaron 650 FM rebroadcast receiver is an FM rebroadcast/translator receiver built to handle the most challenging reception scenarios. Offering sensitivity and selectivity better than most elite professional or consumer receivers, it combines premium features with outstanding receiver performance. Aaron operates in either a composite pass-through or composite-regeneration mode. Composite pass-through eliminates retransmission delay (latency). Composite-regeneration lends the ability to reconstruct the baseband signal, even altering RDS messaging prior to rebroadcast. *Also:* Aaron 640 provides many of the features of its big brother but at a budget-friendly price point. The sensitive and selective front end of the Aaron 640 digitally decodes the entire analog baseband for rebroadcast. *Also:* INOmini 402 RDS sign driver/receiver is a small form-factor RDS/RBDS message sign driver. It tunes the FM band, taking a station's "Now Playing" text and sends it to a variety of large-format scrolling LED/marquee signs. This provides for continuous RDS display of "Now Playing" messaging in station studios, control rooms and external billboards.

International Datacasting **SU3710**
Intro: Star Pro Audio Generation 2 (G2) receiver increases ad revenues by offering ad insertion for regionalized and localized campaigns — plus it reduces costs by lowering the cost-per-channel and using less bandwidth. Star G2 is a professional DVB-S/S2 audio receiver with integrated advertisement and content play-out system, offering live professional audio decoding and file play-out. The Star Two G2 is supplied with two audio decoders while the Star Four G2 is supplied with four. *Also:* Star Pro Audio receiver is a professional satellite receiver designed for radio distribution applications.

International Tower Lighting **C1249**

iZotope Inc. **SL9308**
Intro: iZotope Insight Essential Metering Suite is a metering suite for post-production and broadcast applications. Insight provides audio analysis and metering tools for visualizing changes made during mixing and mastering, troubleshooting problematic mixes and ensuring compliance with broadcast loudness standards. *Also:* iZotope Nectar 2 Production Suite provides tools designed for voice. Tools include modeled plate reverb, harmonic saturation and a wealth of creative effects. Other tools allow for staying in tune and removing distracting

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breaths without tedious, time-consuming editing. Users can transform a single vocal take into a dynamic, harmonized ensemble.

Jampro Antennas Inc. **C2617**
Intro: Java broadband log periodic FM Band II antenna is for high-gain directional applications, and is available on any standard FM channel (87.5 to 107.9 MHz). Java is produced from either rugged aluminum or hot-dipped galvanized steel for extreme conditions/environments. Custom directional azimuth pattern and FCC certification is available on a full-scale test range to conform to the customer's requirements. *Also:* JCPB broadband FM side-mount antenna is a broadband version of the Jampro Penetrator. It is available with radomes for durability.

JK Audio **C3249**
Intro: AutoHybrid IP2 VoIP/AoIP codec functions as a two-line voice over IP hybrid, providing all of the features of a phone line hybrid including call control, auto-answer, and conference. VoIP line set-up and advanced call control features provided through the internal Web server. Send and receive line-level audio provided through rear panel XLR jacks. AutoHybrid IP2 also functions as an audio over IP (AoIP) codec, streaming wideband stereo audio.
Established Products: RemoteMix series broadcast field mixers, Innkeeper series digital hybrids, Concierge talk show system, BluePack and BlueDriver Bluetooth interview tools, Broadcast Host and Innkeeper PBX desktop digital hybrids

Jünger Audio **C2134**
Intro: D*AP4 VAP Edition is a two-channel voice audio processor. It allows for creating, maintaining and controlling audio quality for presenters and voiceover artists. The multifeature creative toolset includes Dynamic EQ for consistent and repeatable spectral balance, de-esser, dynamics with compressor and expander, leveler for voice applications, voiceover functionality and a Web interface for set-up, configuration and presets. There's a status display on the front panel.

KAE Corp. **C10839**

Kathrein Inc., Scala Division **C1149**

Killer Tracks **SL7616**

Kintronic Labs **C3034**
Established Products: AM directional antenna system, FM patch panels, KinStar antenna, FM translator isocoils

KLZ Innovations Ltd. **C2127**

K-Tek **C1736**

Lawo North America Corp. **C1311**
Intro: mc²56 mixing console integrates the new mc² AutoMix feature. AutoMix automatically adjusts the levels of active and inactive microphones, while keeping a constant ambient level, a feature useful for talk shows and panel discussions. AutoMix minimizes background noise and crosstalk and thus provides for a reduced coloration. Truncated sentences and late fade-ins are now things of the past. *Also:* Lawo Plug-in Server has been redesigned provides significantly more performance and operational safety for Lawo plug-ins. It has improved graphics, enabling it to display complicated 3D graphics via its remote desktop. The plug-in server comes with an integrated UPS. *Also:* Lawo equipment is supports Ravenna networking technology for the real-time distribution of media content in IP-based network environments.

Anthony Battaglia of Richardson Electronics holds an Eimac 4CX15000A FM transmitter tube.

Lectrosonics Inc. **C1714**

Logitek Electronic Systems **C2026**
Intro: JetStream Plus is a 240-channel AoIP audio node that offers high-density, user-configurable I/O with ample support for multiple rack rooms and TOCs. Fifteen card slots are provided for analog inputs, digital inputs, analog outputs, digital outputs, SDI inputs and microphone preamps. Any size Logitek digital console (Pilot, ROC, Mosaic, Artisan or vMix+) may be operated with the JetStream Plus and multiple consoles may be connected to a single unit. VMix+ combines all of Logitek's virtual clients into a customizable, easy-to-use software package. VMix+ can take the place of or run in parallel with a physical mixing console or router control panels, and can provide more metering space than is available via a standard bridge. Features include individual faders for simple operation of a single source; router control "buttons;" single or multiple VU meters; and any desired user graphics or text.

Magnum Towers Inc. **C2335**

Matrox **SL5019**
Intro: Matrox Avio F125 KVM extenders give radio and television broadcast and post facilities the system performance required for remote computing applications.

Mayah Communications GmbH **C8147**

Megatrax Production Music Inc. **SL8424**

Merging Technologies **C3239**

Minnetonka Audio Software Inc. **SU6921**
Intro: SurCode for Dolby Pro Logic II AAX v. 3 offers Dolby-certified Dolby PL II encoding and Pro Logic II, Pro Logic IIx, and Pro Logic IIz decoding of up to eight channels of audio. The product enables auditioning, encoding and decoding of audio in Pro Tools 10 and 11, making it easy to produce surround-ready stereo mixes in real time. Real-time loudness metrics are also displayed for the LoRo stream, multichannel source or the undecoded LtRt.

Mobile EAS **N2537**

Moseley **C2213**
Intro: Starlink digital composite STL provides transparent transport from the audio processor and stereo generator located at the studio to the FM exciter at the transmitter site. The composite signal is transmitted digitally over the link, providing error-free end-to-end performance, which produces significant sonic improvement. SL9003C locates the RDS generator at the studio for seamless integration of the RDS data stream into the composite transmission. Starlink Composite covers all worldwide STL frequency bands.

Museum of Broadcast Technology **L8**

Myat Inc. **C1711**
Intro: Myat's FM analog/digital high-power combiner allows existing analog and digital transmitter installations that use "injectors" to overcome the –20 dBc power ratio.
Established Products: N+1 switching matrix, three- and four-section band pass filters, coax switches, switchless combiners, multi-station combiners, constant impedance, star point, junction designs, test adapters, rigid coax components, 1-5/8-inch aluminum coax.

Myers **N6415**
Intro: ProTrack is a broadcast management software solution for multimedia organizations that distribute video and/or audio based content. ProTrack's responsibilities include the acquisition of content, rights and program management, scheduling (linear and nonlinear), sales, trafficking and media management. Since content retention and usage is typically determined during the acquisition and scheduling process, ProTrack drives a station's workflow from point of content acquisition through to playout and reconciliation. ProTrack supports a variety of broadcast formats.

Narda **SU12005**

National Association of Tower Erectors **C1147**

Nautel **C2207**
Intro: The latest version of Nautel's award-winning Advanced User Interface (AUI) will be available. With one common interface, shallow learning curve and built-in Web-accessible instrumentation, metering

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and diagnostics help broadcast engineers save trips, save time and save money. *Also:* Nautel Release 4 firmware is available for new and existing transmitter customers. Enhancements include SNMP traps, AUI meter memory, port forwarding, secured SMTP password, Omnia Direct (MPX over AES — may require hardware upgrade), Icecast support, new scheduler and playlist editor, phone home, NTP (for super accurate clock), MER meters. Release 4 is available for NX, NV, VS and NVIt transmitters (feature availability may vary by transmitter).

Netia **C2950**

Intro: Radio-Assist 8.2 Automation Solution — Netia is unveiling version 8.2 of the company's Radio-Assist digital audio software suite at NAB2014. This latest release of Netia's flagship software boasts three powerful enhancements, all of which will be showcased throughout the show.
Also: Netia Radio Automation Cloud Management — Introducing cloud-based management for Radio-Assist, which gives users the ability to access the system database from any network-connected workstation. Particularly valuable for multisite radio broadcasters, this capability enables authorized users anywhere to access, retrieve and work on the same content without the need for time-consuming media transfers. In addition to enabling faster, more productive operations through shared media access, this enables broadcasters to reduce reliance on server infrastructures and, lower the total cost of ownership.
Also: Netia iSnippet Audio Editing Tool for iPhone and iPad — The Snippet range of editing tools available within the Radio-Assist automation products is now available for iOS devices. Sharing the same look and ergonomic principles as the Snippet desktop interface, the new iPhone- and iPad-compatible iSnippet tool allows field reporters and other remote users to enjoy the Radio-Assist audio editing capabilities — familiar from the desktop — on their portable devices.
Also: Netia Teleprompter — Radio Assist 8.2 — The new teleprompter module for the Radio-Assist suite gives presenters and journalists convenient visual access to news scripts, which scroll continuously down the presenter's screen and is linked to the playout system in the studio. Customizable features such as text size, color selection, automatic speed control that adapts to reading speed, and read length may be configured in user profiles that are tailored to presenter preferences.
Established Products: Radio Assist, Netia radio automation solution

Mr. Jeff Jaworski, Area Sales Manager
North America Globecast
10 East 40th Street - 11th Floor
New York, NY 10016-0201
212-332-2141
888-207-2480
Email: j.jaworski@netia.com
Website: www.netia.com

Neutrik USA Inc. **C7216**

NewBay Media LLC **C2844**

Featured: NewBay Media's mission is to connect our audiences to authoritative, informative and compelling content, in print, digitally and in person, and to offer unsurpassed value and innovation for our advertisers, sponsors and business partners. We are at the content center of the world's most dynamic industries: music, AV/pro audio, consumer electronics/gaming, video and broadcast, education. We connect and inform millions of constituents in these markets through our award-winning content, integrated media capabilities and high-profile network-building, informative events. Our unparalleled reach provides marketing partners with exciting, engaging and effective targeted communities, and connects them with decision makers and influencers across these markets. Parent of Radio World; see separate listing.

Caroline Freeland
NewBay Media
5285 Shawnee Rd., Suite 100
Alexandria, VA 22312
Email: cfreeland@nbmedia.com
Website: www.newbaymedia.com

NewTek Inc. **SL4610**

NPR Labs **N1434**

Featured: NPR Labs, part of NPR, is America's leading not-for-profit broadcast technology research and development center. We're demonstrating our radio-based, accessible alerting for the deaf and hard-of-hearing, which is being tested in the Gulf Coast states by 26 public radio stations and hundreds of deaf volunteers. The alerting infrastructure uses a new RBDS Open Data Application, new encoder hardware and specially-designed receivers that display a full, FEMA-originated alert message. NPR Labs also offers customized consulting for engineering, broadcast, and digital projects, such as its accurate mapping capabilities for radio and television using advanced terrain and propagation coverage models. NPR Labs is promoting its efforts to measure and manage audio loudness for audio broadcast and streams, and showing its RF measurement and laboratory testing products.

NPR Satellite Services **SU6821**

Nugen Audio **C561**

OMB Sistemas Electronicos **C1751**

Omnia Audio **C3007**

Featured: Recipients of some 20 major industry awards for innovation and design, Omnia audio processing solutions are recognized as technological

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leaders in the development and refinement of the art and science of audio processing for radio broadcasting, Internet streaming, microphone enhancement and analysis tools pertaining to the integrity and management of audio transmission.

Omnirax Furniture Co. **C1837**
Intro: eDeskTop is ergonomic private office furniture. UnCube provides open office systems. Our patented eDesktop design (U.S. Patent: 7,438,002 B2) provides more usable desk surface, for more people, in less space — while promoting collaboration in the workplace. *Also:* Radio-on-TV On-Air Sets — Blair Garner, host of "America's Morning Show," said of the set Omnirax built for the show: "I think Omnirax pulled off what no other company could. They built us a one-of-a-kind piece of art that is as functional as it is breathtaking. When someone like Taylor Swift walks in and says, 'Oh, my God. Look at this,' you know you've hit it out of the park. I couldn't be happier." Omnirax works directly with engineers, station owners, architects and facilities managers to provide services and products.

OMT Technologies **C3031**
Intro: iMediaTouch Enterprise is the next-generation content management and delivery platform designed for the radio enterprise. Enterprise incorporates a new SQL-based content management system and features a new and innovative customizable on-air user interface. *Also:* iMediaLogger has new features including doubling the number of recording channels with discrete L/R mono; real-time preview recordings; an enhanced Web access portal with an advanced Web server; a new SQL-based content management system; and distribution of supplementary media such as audio, video and graphics.

Orban **N5006**
New: Optimod-FM 8600 Digital MPX provides a digital composite output using a 192 kHz AES3 connection; it appears on a male XLR-type connector on the breakout cable supplied with the Optimod. The output is compatible with and interoperable with the de facto industry standard digital connection implemented by transmitter manufacturers and others. *Also:* Optimod 1550 multistream audio processor and codec provides an integrated audio processing and network streaming solution in a 2U chassis. *Also:* Version 2.7 of the free Orban Loudness Meter for Windows (Vista/7/8) and Mac (OS X 10.6 or greater) adds support for up to 7.1-channel surround and the ability to analyze files in several common formats off-line to measure their ITU-R BS.1770-3 Integrated Loudness and Loudness Range.

The show might sometimes seem like a circus; last year it really was. Face painting at Cirque de L'Absurde.

Paravel Systems LLC **C1121**

Phasetek Inc. **C1739**

Porta Brace Inc. **C7221**

Potomac Instruments Inc. **C2433**

Prism Sound **C1944**
Intro: Prism Sound Atlas is a USB audio interface with high-quality preamps and converters. Eight channels of analog I/O. Compatible with Mac or Windows. Runs up to 192 kHz. Offers up to extra 10 channels of digital I/O plus dual-headphone outputs and MIDI.

ProConsultant Informatique **N4429**

Propagation Systems Inc. (PSI) **C757**
Intro: PSIFMT is an "off-the-shelf" antenna designed for FM translator applications. Two standard directional patterns are available with either 3 dB or 6 dB reduction in the horizontal plane. Reduction is based on mounting to a vertical support mast.

R.V.R. Elettronica SpA **C3322**
Intro: The 10 kW Plug-in Green Line transmitter uses hot-swappable and broadband power amplifier modules. Each module features switching mode power supply to control and stabilize power supply voltage. Each amplifier module provides Automatic Power Control. Overall efficiency is better than 70 percent. Protection against high VSWR, overdrive, overcurrent and overheating is included. *Also:* Holiday air-cooled transmitters are modular and available in power ranges from 3.5 kW to 20 kW. Holiday is compact — only 6 RU for the 3.5/5 kW. It has low power consumption and high efficiency. *Also:* Barracuda liquid-cooled transmitters are modular and available in power ranges from 10 kW to 40 kW. Ultracompact.

Radio Frequency Systems **C2621**

RadioDNS **C755**

Radio World **C2844**
Featured: "I watched you from the beginning when you started on this publication, and today it is the premier magazine for radio news all over the world," one veteran engineer writes. "In every broadcast organization office that I have visited all over the world, there it was: Radio World sitting on top of the desk." The people who manage and operate radio stations, networks and new media organizations face a bewildering world of available platforms and tools: licensed transmission, online streaming, mobile apps, multicasting, translators, podcasts, RDS, metadata and much more. Radio broadcasters have become cross-platform providers. We help our readers — the engineers, operations managers and top executives of the U.S. radio industry — understand this world and thrive in it. We're part of the growing NewBay Media family, which includes other leading titles like Broadcasting & Cable, TV Technology and the NAB Daily News.
Caroline Freeland
NewBay Media
5285 Shawnee Rd., Suite 100
Alexandria, VA 22312
Email: cfreeland@nbmedia.com
Website: www.newbaymedia.com

RCS **C2631**
Intro: Selector2Go is a feature of GSelector tailored for the Web. Selector2Go works on contemporary browsers and across platforms and mobile devices. This includes most Windows and Mac computers as well as the majority of current smartphones and tablets including the iPad and iPhone. Data flow is kept small to enable fast performance, even on mobile networks like 3G. Selector2Go gives you powerful core scheduling, schedule editing functionality and essential analysis details of your rotations. *Also:* Zetta2Go is an application that allows the control of a Zetta automation/play-out system from an Internet browser. Using a tablet or smartphone a user can view and fire off hot keys for a station, from a laptop or remote desktop a user can control much more. *Also:* Aquira 2Go lets you stay in constant contact with the traffic team back at the station. The benefits speak for themselves: easy and convenient access — interact with Aquira from any location with Internet access; better customer service — access data fast and deliver a prompt and accurate service to your clients; controlled security — see only your own proposals and your own clients; increased efficiency — no rekeying data required.
Established Products: Zetta, GSelector4, Aquira, RCSnews
Mr. Neal Perchuk, VP Sales
445 Hamilton Ave. 7th Floor
White Plains, NY. 10601
914-428-4600
Email: sales@rcsworks.com
Website: rcsworks.com

AM Ground Systems Co.
www.amgroundsystems.com
866-227-2346
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We will be on the floor at NAB 2014. Give us a call to meet and discuss upcoming AM Transmitter Projects
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RDL Radio Design Labs C3336

Richardson Electronics C2249

Richland Towers C1723

Riedel Communications C4937
Intro: Riedel has enhanced its MediorNet family of real-time networks for video, audio, data and communications with MediorNet 2.0, a firmware update for MediorNet. The company will show how the firmware provides video router functionality and high-speed re-routing.

Rohde & Schwarz SL1605
Intro: The R&S THR9 FM transmitter family maximizes energy efficiency, minimizing space requirements and delivers Rohde & Schwarz reliability. The THR9 provides FM output power up to 40 kW per rack while delivering up to 75 percent efficiency to reduce energy costs. The transmitter's liquid-cooling system and innovative design save space. The R&S THR9 is HD Radio-capable. *Also:* R&S THV9 VHF high-power transmitter family provides efficiency, reliability and configuration flexibility in a small footprint. With maximum output power of 30 kW for digital TV and radio (58 kW for analog standards), the THV9 provides up to 46 percent efficiency in Doherty operation for COFDM TV and DAB. This efficiency performance (including the cooling system) enables users to save up to 50 percent of energy costs compared with conventional transmitters. *Also:* R&S TMV9 VHF family provides efficiency, reliability and configuration flexibility in a small footprint for medium & low-power broadcasts. The TMV9 provides a maximum output power of 4.3 kW for digital TV and radio (up to 6 kW for analog standards).

Rohn Products C12141

RTS Intercoms C6908

RTW / RTW International Corp. C1246
Intro: LQL Loudness Quality Logger is a software license that provides the export of measured loudness and TruePeak data via IP connection or USB flash drive. Another feature is the two-stage definition of thresholds. While the new PC software is free to users, the SW20014 Logging Data Server license is required to enable a TM7, TMR7 or TM9 series meter to be compatible with data export and additional display functions.

RUSHWORKS SL7627
Intro: Ctrl+R and PT-Mini Pan Tilt Head — Ctrl+R is a touchscreen PTZ camera control software application for Windows 7 and Windows 8 systems and supports up to four standalone PTZ cameras. The new PT-Mini pan/tilt head lets you use your favorite HD camcorder that supports LANC (Sony) or JLIP (JVC) control protocol. Pan, Tilt and Zoom are controlled via VISCA command protocol from the Ctrl+R software. *Also:* VDesk Lite is the new entry-level offspring of our VDesk/Remo Integrated PTZ Production System. It has four inputs that can be configured for analog or SDI sources, and it supports both SD and HD production switching, encoding and streaming. PTZ camera control is also included. *Also:* Segment stand-alone video file segmenting utility supports fast, accurate trimming of segments within MPEG-2 or MP4 files.
Established Products: VDesk Radio/TV transforms your radio station into an Internet TV station. Generate additional revenue streams by placing your brand "where the action is" … on mobile media and Internet TV screens.

Rymsa RF C1717
Intro: TV and radio antenna system — The systems built by stacking our new CPOL/EPOL panel AT15-245 provide excellent scalloping features at the horizontal radiation patterns, within a 240 MHz bandwidth. The use of this type of polarization for TV propagation emerges to satisfy the market needs on mobile DTV radioelectrical coverage, and it is also suitable to optimize that of the current digital and analog services for some particular situations. *Also:* We design, manufacture and distribute a range of channels combiners for DTV standards and FM signal transmission, covering different needs, from low-power sites to high-power multichannel main sites, supplying technical solutions tailored to the needs of clients.

Scisys C451
Intro: Optimized for self-operation and DJ usage, dira! Onair Player is an alternative to traditional studio automation. It features multiple playlists, embedded content browsing, segue editing and a flexible layout for tailoring the user environment. Built on the same playout cache and engine as the dira! Onair Control, it combines the power of full automation with the flexibility of a cartwall player. *Also:* dira! Regio Split is a flexible and reliable way to customize a centralized radio program for regional needs, whether for commercials or editorial programming.

S.W.R. Inc. C1126

Sabre Towers & Poles C1831

Screen Service Broadcasting Technologies SpA SU3202
Intro: Our new series of FM transmitters deliver output power of up to 60 kW and are energy efficiency of up to 75 percent. *Also:* Compact, flexible and easy to use, digital SDT ARK-DAB transmitters features a built-in SFN adapter and advanced SWDT (Software Defined Transmitters) technology. Supported standards: DAB, DAB+, T-DMB, from 1 mW rms to 28.8 kW rms. *Also:* Ultra HE wideband transmitter series.

Sennheiser Electronic Corp. C3217

Shively Labs C2624
Intro: Come see our new products including the

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6828 high-power, broadband system and the low-power tunable Versa2une.

Shure Inc. **C2923**

Sierra Automated Systems & Eng. Corp. **C1330**

Sine Systems Inc. **C2033**

SMPTE - Society of Motion Picture & Television Engineers **L30**

Society of Broadcast Engineers **L29**

Solid State Logic **C2317**

Sonifex Ltd **C2333**
Intro: RB-DDA6A3 six-way stereo AES3ID digital audio distribution amplifier is used for distributing AES3id digital audio, repeating both the audio data and the status information of the input whilst re-normalizing to standard digital audio levels. It has a single BNC AES3id audio input which is distributed to six BNC AES3id audio outputs. Applications include distributing audio from a Blu-ray player to recorders, or feeding multiple studios with an output from a master clock. *Also:* RB-SD1IP silence detection unit with Ethernet and USB is a 1U rack-mount device used to monitor an unattended stereo studio feed and in the event of the signal going "quiet" after a given period the unit will switch through an alternative stereo audio signal. This could be a recorded message, a feed from a flashcard player, audio from a connected USB flash drive or an alternative recorded program. Controls are provided to start external equipment and to provide remote status indication.

Sony Electronics Inc. **C11001**

Sound Devices LLC **C2546**

Sound Ideas **SL7620**

Soundproof Windows Inc. **C1044**

Staco Energy Products **C3205**
Intro: FirstLine PL/PPC is an electronic precision power conditioner 208VAC, 10-40kVA; continuous voltage correction and conditioning providing clean regenerated waveform. Our FirstLine PPC 10-40kVA innovations have expanded into the broadcast studio and transmitter data center marketplace through pioneered design and expertise. *Also:* The FirstLine P/PPC is an electronic precision power conditioner 480VAC, 65-250kVA; continuous voltage correction and conditioning providing clean regenerated waveform. The FirstLineP/PPC gives cost-effective protection from a range of power quality anomalies, while providing regulated output power. It's designed for use in broadcast transmitters, to protect them from damage by poor power quality. Saving money by extending the life of the equipment and keeps operations up and running through unstable power situations. *Also:* With our ServiStar program, a range of planned maintenance and extended service options are offered to maximize equipment life and reliability of our products.

Stagetec (Salzbrenner Stagetec Mediagroup) **C2449**

StreamOn **C2739**

Studer **C2627**

Superior Broadcast LLC **C1730**

Superior Electric **C1109**

Switchcraft Inc. **C6949**

TASCAM **SL4230**

TC Electronic **C2644**

Telos Systems **C3007**
Established Products: ProStream streaming audio processor/encoder, Zephyr iPort MPEG gateway, Hx1 POTS hybrid, Hx2 POTS hybrid, VX broadcast VoIP phone system, Zephyr Xstream ISDN codec, Z/IP ONE IP codec, Nx12 POTS/ISDN phone system, Zephyr Xport POTS + ISDN codec, Hx6 six-line phone system

Thermo Bond Buildings LLC **C2137**

Thomson Broadcast **SU7111**
Established Products: S7HP high-power medium- and long-wave radio transmitter range

Thomson Video Networks **SU2610**

Tieline Technology **C3331**
Intro: Genie Distribution is the world's most powerful IP audio codec for multipoint audio distribution. The codec offers a range of solutions including six channels point-to-point, three channels bidirectional stereo or six channels bidirectional mono, multicasting, multi-unicasting and more. Includes dual Gigabit LAN ports, dual internal power supplies, IPv4/v6, and 24-bit/96 kHz audio sampling. Features SmartStream Plus IP management software. WheatNet-IP version available. *Also:* Save money on hardware costs by using Merlin Plus to create two bidirectional mono or stereo remotes, each with a separate bidirectional IFB channel, or create up to six independent bidirectional mono connections with IP codecs or smartphones using Report-IT. Includes SmartStream Plus dual streaming software for reliability over public IP networks like the Internet, plus simple command and control and recallable connection configurations via programs. WheatNet-IP version available. Opus and IPv4/v6 compatibility. *Also:* Bridge-IT XTRA IP Codec is Tieline's inexpensive STL and multipoint IP audio codec, featuring a range of algorithms, including aptX Enhanced as standard. Includes an LCD display, PPM metering and dialling key pad, plus dual internal power supplies and SDHC card audio backup.

Tower Consultants Inc. **C1605**

TSL Products **N1123**

VidiGo **SL12105**
Intro: VidiGo Visual Radio turns radio broadcasting into an entertaining and compelling visual show. Visual Radio is an add-on to your radio production without the need for extra staff. It enables you to take radio broadcasting to the next level, by giving your audience the change to experience unique radio moments. Visual Radio turns your listeners into viewers.

Viking Satcom **0E1321**
Intro: 3.8-meter motorized dual-axis Tx Rx VSAT antenna system; 4-meter quick-deploy antenna; 1.2-meter quick-deploy Manpack antenna system.

Vocalbooth.com Inc. **SL10124**

Vorsis **C3112**
Intro: Vorsis will debut several digital audio signal processing designs.

V-Soft Communications **C2023**
Intro: RFHaz-3 — New version 3.0. Predict your station's RF hazard compliance for multiple antennas using the FCC's OET #65 standards. Quickly calculate, graph and print out non-ionizing radiation levels found near towers with multiple FM and TV transmitting antennas having various powers, antenna types, heights and distances from the radiator. A module is included for calculating non-broadcast antenna R.F. emission levels. *Also:* InterMod is designed to perform detailed intermodulation analysis at a specific site and globally across your station's coverage area. It includes an advanced study mapping capability to identify intermodulation issues within a station's coverage area. *Also:* Microwave-Pro Version 1.29. Many powerful new features and updates have been added. Microwave-Pro performs frequency searches for the Part 101 and the broadcast auxiliaries frequencies. This program calculates C/I ratios that consider terrain obstructions, and among other features, it can plot terrain profiles of protected and interfering paths. It provides a quick map of the geometry of protected and interfering paths. The program is ideal for all microwave frequency allocation and path analysis work.

Ward-Beck Systems Ltd. **N1202**

Wegener **SU2602**

Wheatstone Corp. **C3112**
Intro: Wheatstone Corp. will debut several digital audio consoles for both radio and television, as well as new signal processor designs and its latest audio networking equipment.
Established Products: Audio mixing consoles, signal processors and audio networking systems

Whirlwind **C4749**

WhisperRoom Inc. **SL12416**
Established Products: Portable Sound Isolation Enclosure (20 Sizes)

WideOrbit **N5129 & N5829**
Intro: WideOrbit Automation for Radio v3.7 is a powerful, modern solution that features centralized content creation, centralized playlist creation and editing, multimarket voice tracking with multistation and multicasting capabilities, live log edits with WO Traffic and remote management for real-time control outside the studio. A new MusicMaster widget allows on-air announcers with the necessary privileges to make intelligent choices about the songs played on the air. Announcers can get real-time information about a song's play history and other information needed to determine whether a song is eligible for airplay based on rules defined in MusicMaster. The information appears on WO Automation for Radio's on-air screen. If the announcer selects a song for air, the MusicMaster database is updated in real-time. This widget augments the product's integration with MusicMaster.

Will-Burt Co., The **C11123**

WinMedia America **C1259**
Intro: As an automation software suite, WinMedia offers broadcasters a range of modules and functionalities ranging from live-assist, media asset management, multi-radio and multi-zone management/production to complete automatic program generation, all in a single Windows icon.

WireCAD **N3225**

Wohler Technologies **SU4410**

World Teleport Association **SU12907**

WorldCast Systems **C1633**
Intro: Ecreso Helios FM 250W transmitter, ideal for the LPFM market. With a direct-to-channel digital modulator and exceptional efficiency of up to 74 percent, the system provides reliability so solid that Ecreso offers a warranty of up to 10 years. It also features powerful tools such as the on-board instrumentation of the Advanced Metering Interface, proactive Expert Maintenance Reporting service and TCP/IP, stereo encoder, auto failover, dynamic RDS encoder and more. *Also:* Audemat FM-MC5 is the most comprehensive platform for professional mobile measurement of FM signals. It offers excellent RF coverage measurement for on- and off-site monitoring as well as highly accurate modulation analysis. Built on solid digital architecture, the FM-MC5 can maintain its exceptionally precise performance without the need for annual calibration. *Also:* APT AoIP codec — APT's major new system release offers increased compatibility and plug-and-play ability on their award-winning IP audio codecs. For maximum compatibility, this upgrade ensures support for leading algorithms including MPEG Layer II, MPEG 4 AAC-LC, -LD, –ELD, and HE-AAC and HE-AACv2. Additionally, new methods such as Dynamic DNS and NAT traversal mode allow a user to get their system running quickly while IP Packet forwarding enables configurations similar to Drop and Insert over T1.

Yamaha Commercial Audio Systems Inc. **C2143**
Intro: Yamaha R Remote software app joins the Yamaha R Series input/output rack units, making significant advancements in audio, creating natural sound quality, Dante audio networking and system flexibility. The new Windows-based PC standalone application enables remote control of R Series Rio3224-D, Rio1608-D, and Ri8-D rack unit head amplifiers directly from a computer.

Yellowtec GmbH **C2259**

World Radio History

HAM RADIO

(continued from page 27)

involved with AM, FM and television most of his life and is a broadcast engineers who spends hours in front of his home transmitter after spending the whole work day in front of one.

David said that he enjoys ham radio because it provides a constant learning and sharing opportunity. He has made contact with hundreds of hams. He has found that fellow amateur radio operators who hold professional occupations such as his are more willing to share technical information about broadcasting issues and to make suggestions about "problems dealing with RF black magic." It's like having a staff of RF consultants at his disposal. According to David, he is able to gather opinions about new equipment and to apply what he hears to save money for his company.

Kelly Weldon, KD7IMZ (Technician), is not a commercial radio or television station broadcast engineer, but he knows broadcasting. Before retirement, he headed up the electronics maintenance department for Salt Lake City's Community College television and studios. He had the task of keeping all of the 13 campus locations' electronic equipment in working order. (Think about 60,000 students, faculty and staff, all who count on their equipment working properly.) He also led the emergency response team at SLCC. His ham license was (and still is) a vital part of his job when it comes to instant communication via the Salt Lake community Amateur Radio Emergency Services network, of which he is a member.

Kelly and his wife Doris — KF7SIP (Technician) continue to use their amateur radio interest to benefit Salt Lake City's community activities. Both have assisted with communications for Salt Lake City Marathon weekend races. Kelly has participated in a weekend statewide earthquake simulation emergency response drill. Doris plans to continue to assist with Scouting food drives, and she provides security and logistical communication when Scouts door-to-door collections.

Pete Zillox, K5PZ, could best be described as a "ham's ham." His call letters alone indicate that this gentleman has been enjoying amateur radio for many years. He's an electrical engineer with degrees from Penn State and USC; however, his broadcasting takes place at home in Huntington Beach, Calif., and he's proud of what he has assembled. His radio station is filled with vintage radio gear, and it is here that he took WPX honors, working 11 countries in 30 minutes with 10 watts.

Pete's amateur radio credentials began in 1965 at age 13 with call letters WN2RNW (Novice), and a few months later he graduated to WB2RNW (General). Two years later, Pete's family moved to Pennsylvania, where he became WA3EQK (Extra General). Then while attending USC and working for Hughes Aircraft in California, his call became WA6DYC. In 1977, Pete applied with the FCC to get the initials of his name and was awarded K5PZ. Prior to 1977 no two-letter "K5" signs were ever issued by the FCC, although there were two-letter "W" signs beginning in the '20s.

Pete now serves as volunteer for his community Radio Amateur Civil Emergency Service communications.

Robert Kegerreis, KD8UDQ, is a retired broadcast content producer.

COMMON IDEALS

There was a resounding message that came through as I talked with hams from all over the United States. Most hams may not be broadcast engineers, but many people who work in various fields of electronics and broadcasting are hams. They share a common set of ideals about their hobby:

1. Hams like people, and they like to communicate.
2. Hams enjoy developing friendships with people they may never meet in-person.
3. Hams find electronics and radio frequency energy to be amazing, a little bit like black magic.
4. Hams enjoy using their talents to address community needs and to assist in emergency response.
5. Ham radio frequently yields business resources and contacts.
6. Hams learn something new everyday, and they have fun doing it.

World Radio History

TECH SESSIONS

(continued from page 22)

Luncheon on Tuesday.

He is a popular tech columnist and media personality who recently ended a long stint at the New York Times, moving to Yahoo; he also hosts Nova's "ScienceNow." Pogue usually discusses consumer and "personal" technology.

When he spoke at the fall Radio Show in 2008, Pogue — whose his background includes 10 years conducting and arranging Broadway musicals — gave a most entertaining speech. He also sought at the time to soothe those who feared technological obsolescence: "Things never wholly replace things. That never happens. Things just add on."

We like that a lot.

GET THE BOOT FROM BISSET AND FRIENDS

Launched last year, the "RF Boot Camp" takes place on show Wednesday. It promises to explore basic knowledge regarding the operations of a broadcast radio or television RF plant.

The program covers distribution of program and data content from the studio to RF transmission points, the organizers say.

"Our team of instructors will address the types of hardware and software typically used at the RF plant. They will explain remote monitoring and telemetry scenarios. Towers, transmission lines and antennas will be the focus of an interactive discussion tailored to attendees who are unfamiliar with maintenance requirements and safety concerns. Specific FCC and OSHA rules related to RF transmission will be addressed along with methods commonly used to ensure compliance with those rules."

Lending their expertise will be John Bisset of Telos Alliance, who is Radio World's *Workbench* columnist; Garrison and Cindy Cavell of Cavell, Mertz and Associates; and Paul Shulins, director of technical operations for Greater Media Boston.

WE INTERRUPT THIS RADIO WORLD STORY ...

Emergency Alert System is a subject that keeps on giving.

"EAS alerts are now received on mobile phones, the FCC is starting to reboot the process for State EAS Plans, and the FCC has stepped up enforcement on the unauthorized use of EAS tones," show organizers note. So there will be plenty to talk about in Wednesday's **"The Status and Security of the Emergency Alert System,"** featuring speakers from FEMA, the FCC, law firm Wiley Rein and the Wisconsin state EAS committee.

Separately, Larry Wilkins of the Alabama Broadcasters Association and Gary Smith of Cherry Creek Radio will share information about a statewide CAP-based system that uses Web-based origination.

Yet another EAS panel is "Effectively Integrating EAS With New Possibilities for Alert Messages," on Wednesday afternoon. The organizers say that during storm events, local National Service offices can "flood" the EAS with warnings, as many as 15 Flash Flood Warnings in a few hours; the panel will talk about the problem and what's being done.

A MAN FOR ALL PLATFORMS

The 2014 NAB **Radio Engineering Achievement Award** goes to **Jeff Littlejohn**. As mentioned previously, he is executive vice president of engineering and systems integration for Clear Channel's Media & Entertainment division.

Littlejohn's career arc mirrors changes in radio itself, having encompassed both traditional engineering, as well as key development areas, such as data services and new platforms. He also has helped create the company's Market Engineering Management Development program.

The TV recipient this year is Robert Seidel of CBS. They'll be honored at the Technology Luncheon on Wednesday, April 9. NAB has given the award since 1959.

Radio World, which honored Littlejohn with its Excellence in Engineering Award in 2008, will feature an interview with him in an upcoming issue.

LPFM? ☑
Canadian CAP-CP? ☑
Still the best at CAP/EAS? ☑

The FCC CAP rules took effect in 2012, and more radio stations chose the Sage Digital ENDEC 3644 than any other for CAP compliance. Building a new station? Ready to upgrade? LPFM? We have what you need.

Canada is considering a CAP requirement for the end of 2014. Sage supports CAP-CP with English and French Canadian text to speech. ENDECs are already on the air, or being installed, in more than 250 Canadian stations.

New for 2014, in Canada only, our 4644 ENDEC supports four independent CAP stations in a 1U enclosure, useful when multiple stations are run from a single location.

The Sage Digital ENDEC, for TV or Radio, your best choice for CAP and EAS.

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World Radio History

Celebrities Fuel Success

Even small markets can take advantage of the "celebrity, content, marketing" principle

Simple questions regarding media from people who don't work in our business are the best! Why? Because the people who ask them don't have the baggage we do and are able to dive right in without getting mired in detail.

Here's one I got from a friend last week: "In one sentence, can you tell me the fastest possible path for a radio station to have success on-air and online?" It took me awhile to distill my opinion and when I did, my answer was three words: celebrity, content, marketing.

I have had the privilege of working with stations and websites that have taken off like rockets fueled on the power of a well-known and loved celebrity. With very few exceptions, audiences follow high-profile performers to new destinations. When this phenomenon doesn't occur, it's often due to that person not having the status we thought they had attained, or because we invested nothing in marketing — which would have told their audience where to find them.

WHO DO YOU LOVE?

Obtaining celebrities begins like most efforts — with a brainstorming dream list.

In the initial stage, do not limit your list based on what you think you can afford or who might be open; just make the list. Next, upper management needs to agree on targets. Then comes the reality check of who would be open to your approach.

While things may later fall apart due to terms, sometimes I have been surprised in this phase by candidates who are willing to listen.

If you find a match, do not rush through checking references from others with whom they've worked. After all, it is rare to meet a successful personality or journalist without a large ego, as this is a necessary motivating component in the business.

In the '70s, The Michael Stanley Band ruled in Ohio. Now Michael rocks Cleveland 3–7 p.m.

The sports format lends itself well to leveraging the power of celebrity. Red Zebra Broadcasting's multi-station ESPN 980 in Washington employs former NFL players like Doc Walker and Brian Mitchell, far left, and Chris Cooley, at right in main box.

PROMO POWER

Mark Lapidus

That said, you do need to know whether or not your dream choice can take direction, and if they can't, only you can decide if you can live with that lack of flexibility in your working relationship. As hard as it is for most managers to understand, there are those few prima donnas who do great on their own, succeeding with very limited input from others.

Which brings us to content.

Buyer beware! You have picked a celebrity who is known for generating a certain kind of content. Radically changing this content — either because the celebrity wants to change what they do or because you want to pick a new path — is not for the faint of heart.

Audiences have expectations about celebrities, and when those expectations aren't met, you'll see it reflected it how they feel about that person. I've been in a few unfortunate situations with media companies who hired outspoken personalities and then attempted to tone down their presentation or even asked them to alter their opinions to match the company line. Once this friction starts, you can bet on an unhappy ending.

TELL EVERYONE

Okay, you've now got your marquee player. How are you going to tell the world?

Sorry, but running promos on your airwaves and messaging on your own

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World Radio History

Podcasts Offer Low "Barrier to Entry"

On-demand distribution of content can build loyal listeners and boost brand recognition

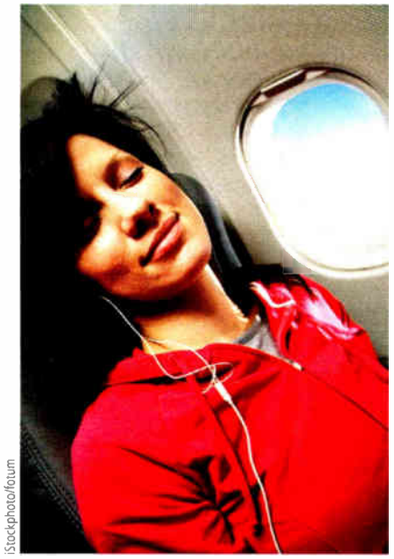
BY ELIZA KRIGMAN

Podcasting offers many rewards and virtually no risk, radio executives say.

Radio stations have more competition for listeners than ever, but they also have more opportunities to leverage their content. Podcasts, audio shows available for download, have become a popular medium for show distribution.

The 800-pound guerillas over the air, like ESPN and NPR, enjoy considerable success in the podcast arena. But they aren't the only ones: Some independent stations have found that podcasting offers numerous benefits, including building listenership and boosting brand recognition.

In an effort to understand how podcasting fits into a broader marketing strategy and what it takes to succeed on this platform, Radio World spoke to the producers of three shows: "The B.S. Report" of ESPN; NPR's "Fresh Air" and "The Bill Handel Show" of KFI(AM).



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BOOST YOUR BRAND

Arguably the most important advantage of podcasts is expanding the pool of potential listeners beyond the reach of a broadcast signal.

"Local listeners use word of mouth to introduce the show to their out of state friends," Michelle Kube, executive producer of "The Bill Handel Show," wrote in an email. "We're getting emails from listeners out of state and out of the country that are new listeners to the show."

And that also helps raise the profile of the station, Kube said.

The podcast "has definitely boosted the KFI brand because it enables listeners, both locally and out of state, to listen on their own time, at their leisure, when it's convenient for them to do so."

It also offers another means of generating revenue.

"The B.S. Report" has two sponsors, Subway and Stamps.com, according to David Jacoby, the show's producer. Exactly how much money it makes is difficult to tell because the sponsorship agreement extends across all of Grantland's podcasts, not just "The B.S. Report."

Kube advises against placing more than one short commercial spot before the podcast. One of the principle advantages of this format, the producers say, is that it's generally commercial-free. Some stations charge for the podcast itself. Such is the case with "The Kim Komando Show." In order to access her podcast, fans have to pay $5.95 per month to join Kim's Club.

RECIPE FOR SUCCESS

While it may be a different technology, the same ingredients that make a radio show successful are likely to make a podcast thrive, the producers said.

"The most important thing is the chemistry between two hosts or the host and a guest," Jacoby said.

Danny Miller, executive producer of "Fresh Air," agrees. Just like on broadcasting, it's about finding a "compelling guest" and a "good interviewer," he said.

Being "authentic" and finding "fun and interesting content to provide" are key, according to Kube.

There are, however, distinct advantages to podcasts over broadcasting. One is more flexibility with time.

Kube looks for ways to create "new exclusive podcast-only content" that enhance listeners' experience. To wit: some of her podcasts have included additional audio of producers' discussions and behind-the-scenes information about the hosts and topics that were not a part of the live broadcast.

"It's a fun way to show listeners how things work behind the scenes," Kube writes.

Turning a broadcast show into a podcast is relatively easy to do, the producers said.

"We don't really think of the podcast as a different entity," Williams said. "Fresh Air," like many other shows, is simply redistributed as a podcast.

One of the most exciting things about this platform is that the "barrier to entry is so low," Jacoby said, estimating that it only costs several hundred bucks.

This is not to say that podcasts suit every type of broadcast content or don't present some challenges.

The weather, Williams points out, is a terrible topic for podcasts. It has to be something with a longer "shelf life," he said.

And in order to maximize revenue opportunities over podcasts, the industry needs to find a way to better measure listenership.

Because of the podcast, the audience for "Fresh Air" has increased, Williams estimates, but the measurable audience number has decreased.

"I think we lose measurable listeners because of the podcast, but we gain a significant amount of listening that's not measured because of podcasts. It's a really important issue for the online world trying to measure what the listening is ... you can measure downloads, but there isn't industry standards for measuring listening ... That can be misleading. That's another real big issue in all of radio broadcasting. [And] how can we capture the numbers when we are seeking underwriting?"

Eliza Krigman wrote about "Podcast Success Stories" in January; see radioworld.com, *keyword Krigman.*

PRODUCT SPOTLIGHT ADVERTISEMENT

Audio-Technica BP894 MicroSet Subminiature Cardioid Condenser Headworn Microphone

With its innovative rotating capsule housing, the new BP894 Headworn Microphone is designed to produce an unparalleled level of intelligibility. Unlike its counterparts that face forward, the BP894's uniform cardioid element can be aimed directly toward the user's mouth, providing crystal clear sound while effectively controlling feedback and eliminating unwanted background noise – so it's the perfect choice for a wide variety of settings and applications. Each unit comes equipped with a dual-ear microphone mount for maximum stability and comfort.

www.audio-technica.com

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CELEBRITY

(continued from page 45)

digital properties will only take you so far. Consider hiring a locally wired public relations agency that specializes in obtaining earned media (interviews on TV, articles in newspapers and websites, etc.) Brainstorm a stunt (legal, please) that could garner attention.

Most important, invest in a medium that gives you mass reach and frequency, like television or outdoor. Concentrate your campaign during the first three weeks of launch and buy enough coverage to reach at least 85 percent of your market. If you don't have enough money to do this for three weeks, concentrate your dollars on one solid week.

Can social media marketing play a part? You bet! Especially if your celeb has tens of thousands of followers. This social media angle should be discussed as part of an overall advertising plan and not just as a one-off.

How does a small- or medium-market station afford a celebrity? Go local. Consider local sports heroes, popular former politicians, newspaper writers, television anchors and yes, even bartenders. Perhaps one or several of these would be willing to do an on-air test for one week.

Finally, an outside talent coach can be a real asset with big names, especially someone with a popular performance background. Hiring a pro to work with your star shows how much you care about your mutual success. Plus, a proxy can touch on sensitive subjects with less risk of damaging a relationship.

We live in the age of celebrity, so grab the ride while it lasts!

The author is president of Lapidus Media. Email marklapidus@verizon.net.

World Radio History

FROM THE FIELD

Live2media Uses Digigram Pyko to Intensify America's Cup

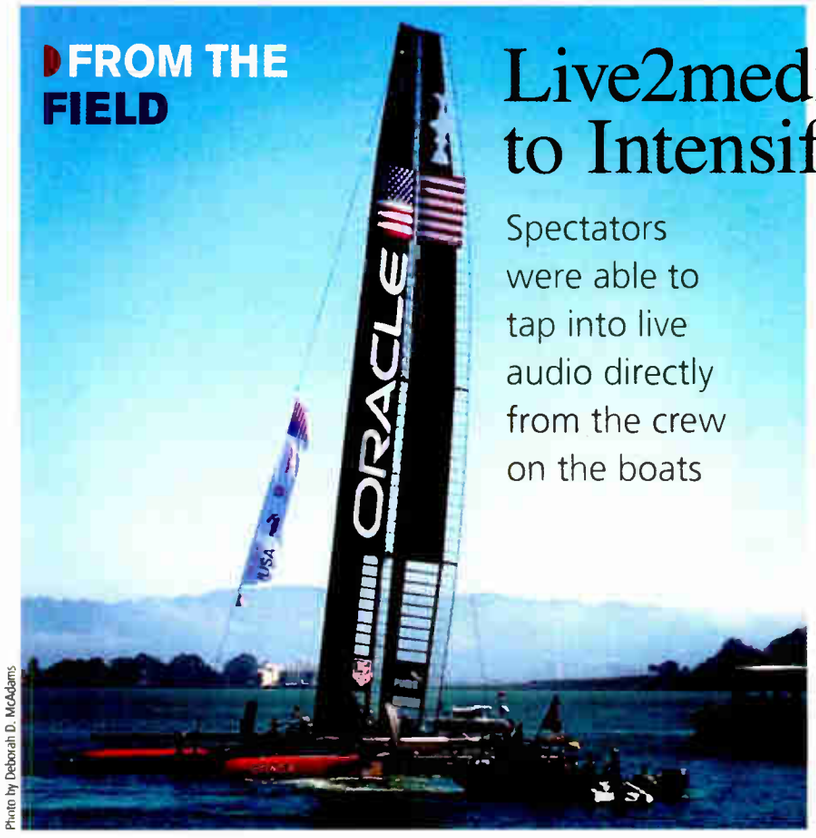

Photo by Deborah D. McAdams

Spectators were able to tap into live audio directly from the crew on the boats

BY JAY ROSE
Chief Engineer
Jay Rose Broadcast Engineering

At the 34th America's Cup Finals in September, Live2media partnered with race organizers to allow spectators on the San Francisco shore to listen to real-time live audio feeds from race boats sailing between Treasure Island and the Embarcadero.

Live2media is a provider of real-time audio to sports fans at live events, and for this spectacular race featuring extreme-performance sailboats and the world's best sailors, the company supplied equipment that let fans tap into live conversations between the skippers and crews, as well as expert commentary and sound effects from the race boats.

FINDING SUCCESS

Greg Moyer, CEO of Live2media, brought me onboard to assist in engineering a system to deliver eight channels of discrete audio in a live streaming audio solution that ultimately would provide multiple channels of proprietary audio to the spectators. Mark Haynes with Advanced Systems Group, an audio and video integration and services group, got us in touch with James Lamb of Point Source Audio, Digigram's master distributor in the United States. He provided us with one of the key tools of success, Digigram's Pyko IP audio codec. I have to say, these guys get it, and they gave us the tools to take advantage of the most cost-effective and flexible broadcast-quality audio over IP solution to date: their Pyko product range.

To enable the Live2media audio offering, we transported up to eight channels of discrete, linear audio from our studio at the America's Cup broadcast facility, located at Pier 23, to Treasure Island to three transmitter sites: one main

(continued on page 48)

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World Radio History

LIVE2MEDIA

(continued from page 47)

transmitter site at the Admirals building through a 100 Mbps bidirectional microwave system and the two other transmitter sites, Marina Green and the Presidio, through public Internet access as part of our WAN.

Our WAN thus existed over both microwave and land-based Internet connections.

We got our feeds directly from the network mixers, as well as a video feed. The America's Cup production facility was quite impressive. Mostly of Australian and New Zealand origin, the whole show was contained in a small city of shipping containers loaded with semi-permanent audio and video suites. All of these suites had a common I/O area and everything terminated in several full 8-foot racks.

We were the only ones to use the Analog I/O devices. There were two audio suites, one mixing in Dolby 5.1, and the other a stereo mix. They were kind enough to give us a mono sum of each stereo program mix. These guys gave great, consistent levels and never once did we have any issue.

We rented our own shipping "container" and we were literally the first 8-foot x 20-foot container as you entered the 75-yard-long, 50-yard-wide small city, known as the Broadcast Center. We chose to take our feeds analog, using XLR connectors and ran our standard Belden eight-pair snake over the top of about 10 containers. All container units were connected by cable tray. As you can imagine, there was a vast highway of every kind of cable and signal (including power and RF). Even so, there was no noise or crosstalk as we were analog, the +8 dB helped keep us away from the noise floor. Additionally, all feeds were terminated at our mixer. We chose the Midas X32 provided by Stanton Burns of Broadcast Audio Services. It was absolutely flawless and provided pristine audio and quick DSP as needed. The name of this game was quick routing and flexibility.

Digigram Pyko In

Digigram Pyko Out

Clipper terminal. The discrete audio channels delivered to our media center via the Pyko systems were used to feed individual exciters, each its own FM radio station, using a standard 75 kHz deviation within the old analog NTSC Channel 5 (76 MHz to 82 MHz). During races, spectators were able to select and listen to the four audio channels using the Live2media Livecard receiver and personal listening device.

Channel 1 was the broadcast commentary; Channel 2 was the isolated Emirates boat audio, a mix of wireless microphones on each team member; Channel 3 was Oracle Team USA's isolated audio summed mix; and Channel 4 provided traffic and weather from Clear Channel. Weather conditions are very important in sailboat racing.

To deliver the incoming stream to the waterfront media center, we installed a single small antenna on the roof of the historic Pan America Clipper terminal.

Each produced audio mix was fed into one of four stereo Digigram Pyko-in units. Because I tested each unit for latency and found it to be roughly 200 ms, the propagation between multiple sites was mitigated and — as we did have a little co-channel — very little synchronization was needed. The Pyko systems allowed us to encode and send audio as a standard IP stream over a microwave link. Because a single Pyko-in has the unique ability to stream to multiple decoders (Pyko-out units) simultaneously, we delivered audio to multiple transmitter sites with ease.

We deployed four Digigram Pyko-out systems at the media center on the Embarcadero. To deliver the incoming stream to the waterfront media center, we installed a single small antenna on the roof of the historic Pan America

Throughout the event, the Digigram Pyko systems proved to be reliable. Even more important, the propagation delay was an amazing constant once the Pyko units made their connection. Large ships would periodically block the microwave, and I was amazed by how the Pyko units would rarely lose audio, even during short interruptions in the system. When there were sufficient bit errors to cause an interruption, recovery was automatic and swift. Given this high level of performance, I have plans to use Digigram Pyko units to replace expensive long-haul point-to-point T1 lines for transport of linear audio from anywhere I can get a good Internet connection. Finally, we can start to think about the Internet as a reliable means of linear audio transport.

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MARKETPLACE

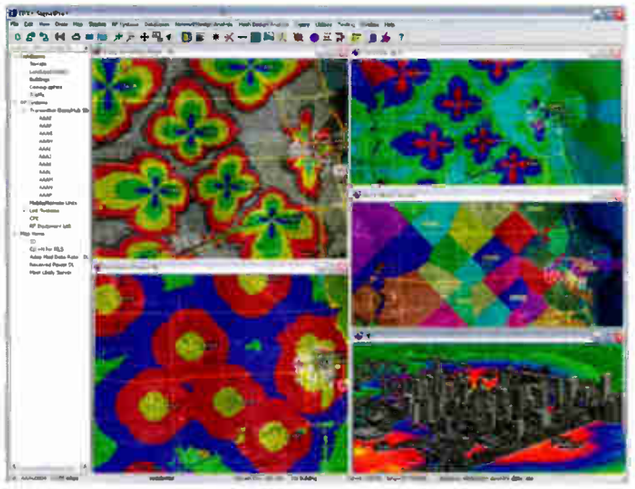
Enhanced Propagation: EDX Wireless has announced a new release of its SignalPro RF propagation, wireless network design and optimization software.

Version 8.1, the company says, "has been enhanced with new and improved features including the ability to open a Google Earth map or street view window centered on the project map point of interest. The Google Earth features include 2D and 3D visualization of network assets with system coverage and performance, as well as the ability to change antenna location or characteristics."

In addition, SignalPro 8.1 includes a new Propagation Model Tuning utility with an interactive visual display. This new utility provides a simplified approach; automating model tuning while providing extensive user control and interactive feedback on convergence. The hybrid studies have been expanded in SignalPro 8.1 that allow for complex studies using multiple study results, such as areas where the simulcast spread is below a user-defined threshold and the field strength is above a threshold.

EDX SignalPro models radio and TV broadcasting and broadcast microwave STL and ENG systems from 30 MHz to 60 GHz and offers over 15 propagation models including Longley-Rice, Free Space+RMD, FCC+RMD and Okumura (Hata).

Info: edx.com



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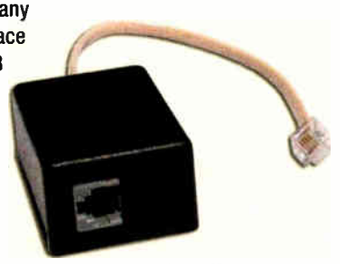

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Looking for a broadcast excerpt of a SanFrancisco Giant's taped off of KSFO radio from 1959, interviews with Willie Mays, Dusty Rhodes & some play by play excerpts, also features a homerun by Willie Mays and Felipe Alou stealing second base, running 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.

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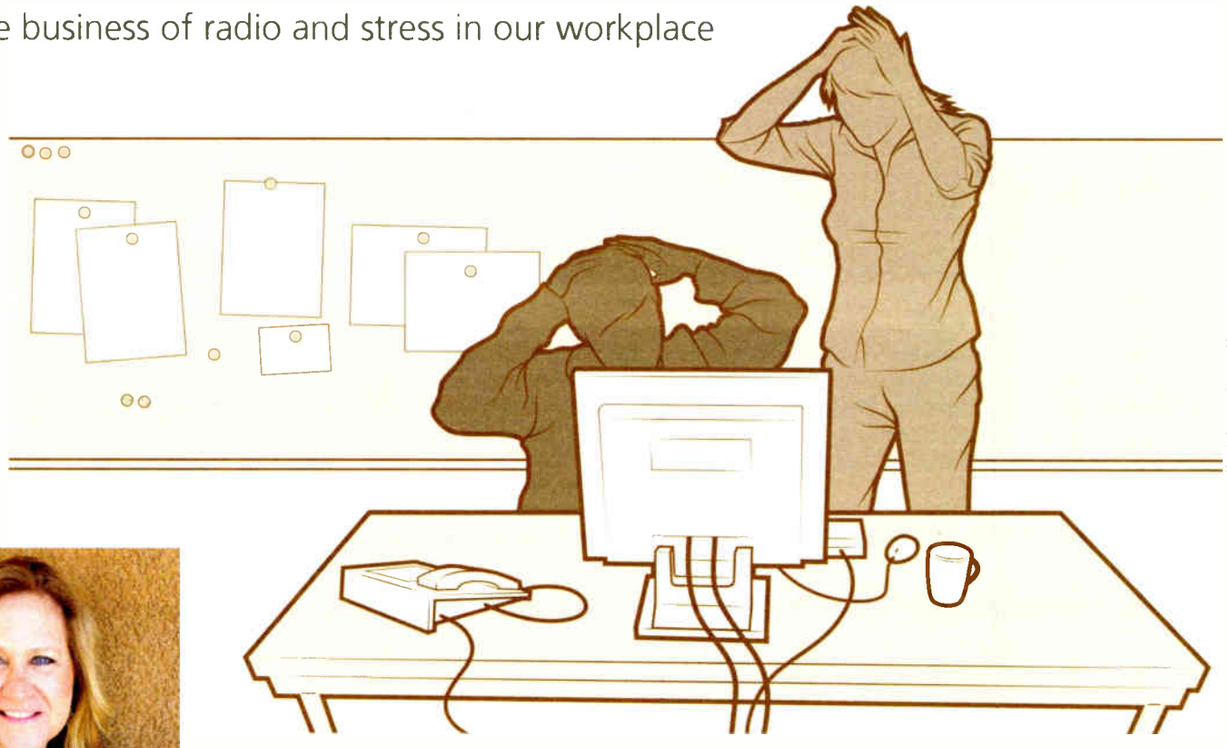

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When I visit stations, as I often do, I am very aware of the "mood in the room." Often, because I pose no threat, and because I'm a trained mental health clinician, I glean from conversation a lot of underlying issues that perhaps management doesn't have time to pay attention to.

Aside from anything happening in their personal lives, station personnel are concerned about what's happening with their jobs, their sources of income, the stress level of their bosses, who is going to get laid off next, and — if they're in sales — how they are going to make their targets.

Kelly Orchard

Leadership should understand that an attitude of "I don't have time to worry about how my staff feels" will end up costing the company in the long run.

People who are stressed and depressed are more likely to call out sick, to be less productive and less creative. In the radio business, the ability to be productive and creative is a quintessential requirement.

Here is a great resource for tips on minding stress on the job: *www.mentalhealthamerica.net/go/mind-your-stress-on-the-job.*

LISTEN AND OBSERVE

If I were to propose a concept for your station to build a more effective team, it would be in the context of family therapy. When you consider the station as a family, there is a strong possibility that there are multiple dysfunctional aspects here. When I discussed my theories with several broadcast professionals, their response was unanimous: "Oh yeah, stations are very dysfunctional."

In the words of Jerry Maguire, "Help me help you." Family Therapy 101.

I'd first encourage all staff members, not just management, to take a look around.

Owners and general managers have no outlet to talk about their stress levels. They must present themselves as captains of the ship and are quite possibly faking it. When they leave the station, they may well experience emotional eating and drinking

These are high-pressure positions. Somehow, in some way, the stress of the job is going to take a toll on their health. Stress hormones result in weight gain, heart attack, memory loss and other health crises. It is imperative that people in such circumstances maintain a work/life balance.

As stations downsize and eliminate jobs, remaining staff struggle with added responsibilities; some feel overwhelmed and underqualified. There are ways that stations — at least those that wish to be productive and increase revenue, listenership and development — can take care of staff who remain, even if budgets are tight.

QUALITY OF LIFE

Radio people do not have the exclusive on struggling economically, feeling obsolete or having a sense of "trying to just hang in there until the economy turns." In my private practice, I see it all the time.

I teach stress management skills to help clients cope. There are no quick fixes, but when you realize that you are in over your head stress-wise and that your quality of life is suffering, you will begin to seek ways to overcome it.

You might have that familiar excuse, "I don't have time to take care of myself," or one that I recently heard, "When the dust settles, then I'll take a vacation or something."

Be aware of your surroundings and circumstances. Take a breath; and acknowledge that your station staff is made up of human beings with lives outside of the station walls. You, too, are in that category.

There is no "cookie cutter" plan, because each company culture and circumstance is unique. But let me be clear: The dust will never settle unless *you* do something to settle it.

The author is CEO of Orchard Media Services Inc., a consultant specializing in FCC compliance for radio/TV. She is a graduate of the NAB Broadcast Leadership Training Program and a licensed marriage and family therapist, author, speaker, podcaster and professional development coach. Email kelly@orchardmediaservices.com.

She wrote in September about questions that a therapist would tell radio to think about when considering its relationship with audience. See radioworld.com, *keyword Orchard, to find "You've Lost That Loving Feeling."*

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READER'SFORUM

AM AMBIENT NOISE

I enjoyed Paul McLane's editorial in the Feb. 12 Radio World on AM noise ("How to Improve Ambient Noise"). The ham community has been impacted by noise producing consumer electronic devices for years.

I personally tried, unsuccessfully, for three years to quiet down a plasma TV owned by our next-door neighbor.

This thing was terrible as you can see and hear when you check out my link (below). A manufacturer's rep technician that visited couldn't quiet it down, and no amount of grounding, shielding, common mode or differential mode filtering that I installed even touched it. I suppose a Faraday cage may have worked, but the TV viewing would have been slightly impaired!

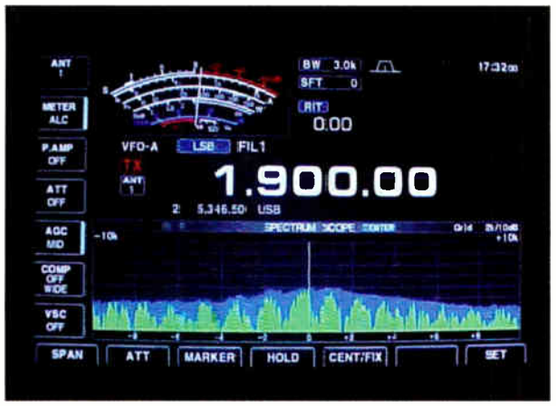
Once I identified the noise source, the neighbors were stunned their own TV was wiping out their portable AM radio, as well as the entire neighborhood; they even bought another AM receiver thinking the original model was defective. This noise source was 200 feet from my receiving antenna and had harmonic content all the way up to 30 MHz! The neighbor and I finally agreed to split the cost of a brand-new 60-inch LCD TV to resolve my QRN problem; thank God for understanding neighbors!

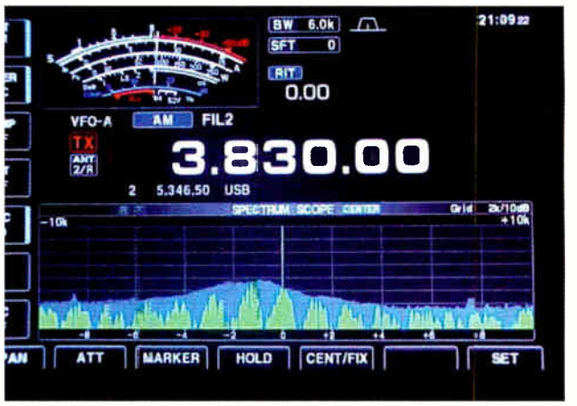
Hopefully articles like yours will wake up the FCC to start reevaluating unintentional emitters.

P.S.: The plasma TV is now in Austin, Texas, tearing up someone else's neighborhood.

Joe Vlk, W8DCQ
Oxford, Mich.

Hear an audio clip of the noise described by Joe Vlk at http://bit.ly/O8jIYW.





Joe Vlk writes: Fig. 1 (left) captures the spectrum display on an Icom IC-7700 transceiver tuned to 1.900 MHz in the middle of the 160 meter amateur band (just above the AM broadcast band). As you can see the TV-generated noise is broad banded in nature. The interference would change frequency and amplitude with modulation of the TV video and averaged a signal strength of 5 dB over S-9. Fig. 2 (right) captures the spectrum display on the same transceiver tuned to 3.830 MHz showing a similar noise signature.

Fig. 3 displays a different plasma TV in the neighborhood as heard on a Flex 5000 software-defined radio tuned to 3.860 in the middle of the 80 meter amateur band. Too bad I never took a screen shot of the infamous plasma TV in the middle of the AM broadcast band; it was off the S meter scale (60 dB over S-9) as I approached the neighbor's house with a handheld portable radio.

KEEP THE SCREWDRIVER IN YOUR POCKET

Mark Persons, I totally agree with your article ("Adjust Rules for NRSC Measurements," Feb. 1). I was talking about it on the Chapter 73 net last evening.

I have found with the new solid-state rigs that the best advice is to keep the screwdriver in your pocket and not allow adjustments by anyone to any piece of processing or RF equipment in the station, unless under the direction of a qualified broadcast engineer, most importantly continual monitoring the station under your care for any sign of maladjustment, and finally, keeping maintenance history of all technical work done in the station. Unfortunately, most of these basic practices of the past are things ignored anymore.

Keep up the good work. For sure your article got some broadcast engineering people thinking and shows they are reading the good publications on good practice.

Dean Sever, W8IM
D&L Communications
Pinellas Park, Fla.

THE ECONOMICS OF AM

Scott Clifton's comments on AM improvement in the Feb. 12 issue ("AM, You Want a Fix? I Got a Fix!") can possibly be summarized as "abandon medium wave."

Moving AM stations to VHF (whether with a frequency swap or through program duplication on VHF with FM translators) appears to do little to increase listenership on the MW band. Further, allocating MW to local broadcasting appears to be the least cost-effective use of the band.

The cited costs (towers, land, ground systems, etc.) are similar for low-power and high-power stations, especially non-directional stations. It seems more cost-effective to spread these costs over a wide coverage area as a high-power AM would do. Further, with its over-the-horizon and skywave capabilities, AM is more suited for long-distance use.

However, low-cost long-distance transmission (terrestrial fiber or satellite) of audio for local broadcast on VHF may make the economics of long-distance broadcast over MW not work.

It would be interesting if someone who owned more than one FM in a market were to convert one to pure digital (perhaps DRM) and put radios in local stores (I think some of the original AM broadcast stations were often owned by stores selling radios).

Finally, perhaps the time for MW has passed. Throughout the history of radio, there has been a trend toward the use of higher and higher frequencies.

I don't have a solution for AM. It does not appear that anyone else does, either.

Separately, regarding Edward Schober's Feb. 12 letter on audio codecs for streaming and John Kean's response: It may become less important as to what codecs are supported by what browsers. With the HTML5 Audio tag and the audio API, audio decoders have been implemented in JavaScript (see *http://audiocogs.org/codecs/*). With this approach, a browser can download a codec if it does not natively support the stream format.

Harold Hallikainen
Engineer
USL Inc.
San Luis Obispo, Calif.

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READER'SFORUM

BRING SPEAKERS BACK TO LIFE

Resuscitating old speakers doesn't have to cost a fortune.

I appreciated Chuck Bullett's article on rebuilding the JBL speakers ("You Can Repair Old Speakers," Feb. 1 edition).

A couple of years ago one of my Advent speakers sounded like it was blown. This system is in my office and not used much. Upon removing the front cloth grille, I noticed the foam had deteriorated and fallen off. I, too, did an Internet search hoping to find an inexpensive replacement speaker. As in Chuck's case I found this was a common condition but with an inexpensive solution.

I bought an Edge-It rebuild kit from *www.simplyspeakers.com*. I installed it as he did, and both speakers now sound like new. I believe Chuck has done an admirable service by showing how great speakers can be inexpensively brought back to life. I was completely unaware that such repair kits existed.

Tom Osenkowsky
Brookfield, Conn.

TAP TALENT AMONG GROWNUPS

Mark Lapidus: Your article in the March 1 edition ("Small Market? Hire Local. Hire Smart.") nails it! Why do so many people in broadcasting not "get it"?

I would only add to consider hiring older people, not just teens. There is a lot of talent out there among grownups just waiting to be tapped for part-time work.

I always look forward to reading your columns.

Dale Adkins
Semi-Retired Broadcaster
Murphysboro, Ill.

Mark Lapidus replies: Great addition, Dale. Wish I had included that thought. I so appreciate your kind words.

AM TOWER TOOL AVAILABLE

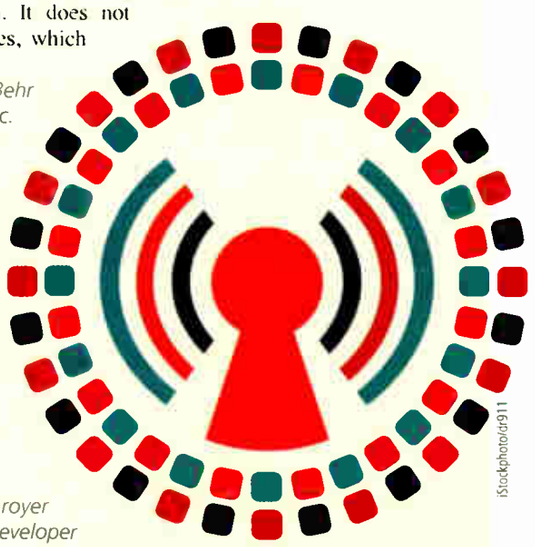
Readers should be aware that the [FCC] AM tower tool ("AM Tower Tool Available," *radioworld.com*) only indicates the legal necessity for a new tower proponent to notify an AM station. It does not assess the extent, if any, of possible interference to an AM station. It does not screen existing detuned tower changes, which all require AM notification.

Lawrence Behr
CEO, LBA Group Inc.
Greenville, N.C.

DITCH IBOC, UPGRADE

A voice of reason in the AM wilderness ("Improving AM: Some Tough Decisions Ahead," March 1). Ditch worthless IBOC, upgrade receivers. Manage bandwidth for best sound. Sounds like common sense to me!

Fred Schroyer
Freelance Writer/Editor/Book Developer
Waynesburg, Penn.



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