NAB RADIO SHOW PREVIEW SPECIAL

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Crack Boom!

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Youth Radio powers up young folks at its new facility in Oakland.

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Shown: Brandon McFarland

Radio World

$2.50 The Newspaper for Radio Managers and Engineers September 10, 2008

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NewBay Media

Read the current digital edition of any issue at radioworld.com.

NEWS MAKER

Could EXB Band Be Your New Home?

Engineers Would Move AMs, LPFMs And Non-Coms

DALLAS A new group — made of up prominent consulting broadcast engineers and a broadcast lawyer — has proposed a dramatic change in spectrum management: They would like the Federal Communications Commission to repurpose TV Channels 5 and 6 for radio's use after the DTV transition is complete.

Bert Goldman, vice president of engineering for Dallas-based Independence Media and a member of the group, spoke to Radio World News Editor/Washington Bureau Chief Leslie Stimson about its dramatic proposal.

The background

TV Channels 5 and 6 are located at 76–88 MHz. According to the FCC, 1,814 DTV allotments would be operational post-transition. Of those, only 24 would be located on Channels 5 or 6.

Others have called for using Channel 6

See MOVE, page 5 ▶

An NAB-sponsored team is developing the business requirements, system architecture and specifications for an electronic program guide, an interactive on-screen schedule of programming suited to the HD Radio market. How this might work is one of the topics likely to dominate discussion at the upcoming NAB Radio Show. Our big preview, inside.

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World Radio History

NEWSWATCH

REVENUE: Off-air revenue for commercial U.S. radio is expected to approach $2 billion by the end of this year, nearly a year ahead of earlier predictions, according to the Radio Advertising Bureau. Such revenue consists largely of online activity and "experiential marketing partnerships," as opposed to traditional radio commercials. It was up 12 percent in the first half of this year.

But radio revenue overall fell 5 percent in the first half of the year and 6 percent in the second quarter. Local sales were off 6 percent in the first six months, national was off 11 percent.

WIRELESS MIC BAN: The Federal Communications Commission proposed a ban on wireless microphones and other low-power auxiliary stations from operating in the 700 MHz band after the end of the digital television transition come February. The point is to eliminate harmful interference to new public safety and commercial wireless services in the band. Also, manufacturing, importing, selling or shipping of devices that operate as low-power auxiliary stations in the 700 MHz Band would be prohibited after Feb. 17, 2009.

Low-power auxiliary stations are authorized for such uses as wireless mics, cue and control communications and synchronization of TV camera signals. Radio broadcasters are among those allowed to use the stations.

SIPORT CHIP: SiPort Inc., which has been developing a single chipset solution for HD Radio tuners, says Ibiquity Digital has certified its new IC.

The SP1010 single-chip HD Radio Receiver provides digital and analog FM performance for the mobile, tabletop and automotive aftermarket markets. The SP1010 is in production and SiPort will begin shipping the receiver chip in volume in September. SiPort said LG-Innotek is the first manufacturer to have the new chip, sampling the IC for its HD Radio module based on SiPort's SP1010 single-chip HD Radio receiver for the automotive, tabletop, home theatre and mobile HD Radio markets for Q4 production.

NXP CHIP: A new multi-digital radio technology chipset reduces development costs and logistics complexity for car manufacturers, its maker says. NXP Semiconductors, founded by Philips and now an independent company, worked with Ibiquity Digital to include HD Radio reception on a vehicle chipset that also supports DAB, DAB+, DRM and T-DMB Radio. The solution, says NXP, can serve United States, Europe and Asia markets. The SAF3560 supports the latest HD Radio features, including iTunes tagging, and provides software upgradeability.

AUDIO LAB: Fraunhofer and the Friedrich-Alexander University Erlangen-Nürnberg opened a new audio lab to focus on digital processing. The Erlangen International AudioLabs, according to Fraunhofer, will employ an international staff of scientists working on audio and multimedia technologies over the next 10 years. University scientists will develop technologies for digital processing of multimedia content.

SAT RAD LETTERS: As part of its agreement with the FCC in exchange for merger approval, Sirius XM sent letters letting subscribers know they may own satellite radio tuners that contain wireless FM transmitters that could overmodulate and interfere with terrestrial stations. The letter to XM customers states it's generally referring to receivers purchased before

See NEWSWATCH, page 53 ▶

MEET THE SQUARE

The Wheatstone E² (E SQUARE) gives you the convenience of Ethernet audio without all the IP hassle. It just *knows*. The built-in Setup Wizard lets you configure an entire system with just your browser and a laptop. Unplug it when you're done and there's no PC between you and system reliability.

SQUAREs are totally scalable: use one as a standalone 8x8 studio or transmitter site router, with browser access from anywhere. Plug two together and have a standalone digital snake. Add a fanfree mix engine and build yourself a studio using analog and digital I/O SQUAREs.

All the power is *in* the SQUARE. Distributed intelligence replicates all configuration data to every unit. Profanity delay and silence detection are done *in* the SQUARE. Even virtual mixing (w/automation protocol) —it's *in* there; all with real front panel meters, 32 character status indicators and SNMP capability.

88E DIGITAL ENGINE: Just plug an E-SERIES control surface or GLASS E computer interface into this engine and get all the mixes, mic and signal processing you need. Fanfree, so it can stay in the studio where it belongs.

Because the E² system doesn't rely on a third party GUI, tech support is straightforward (and 24/7). Likewise, system operation doesn't require external PCs for continued full functionality. Best of all, 1 Gigabit protocol eliminates the latency and channel capacity restrictions associated with older technology.

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88D I/O: 8 digital inputs and outputs. You can headphone monitor and meter any of the SQUARE's inputs or outputs in real time. The 32 character display gives you all the information you need about your audio and system configuration. And because you can operate in either 8-channel stereo or 16-channel mono mode, 16 channels of metering are provided.

88A I/O: 8 analog inputs and outputs. You can bring a new SQUARE up in seconds and of course use the front panel encoder for your X-Y control. Front panel status LEDs give you continuous link, status, and bit rate information as well as confirmation of any GPIO activation.

88AD I/O: 4 analog plus 4 digital inputs and outputs—perfect for small studios or standalone routing.

88 I/O CONNECTIONS: E² has both DB-25s for punchblock interface and RJ-45s for point-to-point interface. All SQUAREs have 12 individually configurable opto-isolated logic ports that can be either inputs or outputs.

Studio 1

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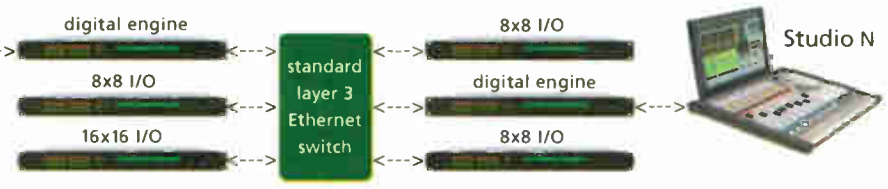

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World Radio History

Rigid Coax to Get Size Makeover

Manufacturers Hope to Address 'Fit-up' Issues With Revised Standards

by Randy J. Stine

BRIDGTON, Maine Faced with a higher occurrence of ill-fitting rigid coax connections, most major U.S. manufacturers of coaxial broadcast products are backing a change in Electronic Industries Alliance standards intended to limit the problem, which often directly affects broadcasters by delaying radio and TV projects and presumably adding to costs.

The companies are banding together to amend EIA rigid coaxial transmission line standards — RS-225 and RS-259 — that haven't been updated in nearly 30 years. Members of an EIA subcommittee working on the revisions call the standards "obsolete and outdated."

The point of the effort is to standardize line sizes to ease compatibility among different products made by manufacturers, keeping possible future applications in mind.

While the majority of new FM transmission installations in this country now use some version of semi-flex coaxial transmission line, demand for rigid coax has been up recently with the increased consolidation of FM radio stations into multiplexed antenna and transmission systems, projects that almost exclusively use rigid coax transmission line, industry experts said.

Single FM transmission projects typically call for 3- or 4-inch rigid coaxial. Larger rigid coax, 6 inch and larger, is used for multiplexed FM antenna sites and in nearly every high-power TV installation, industry experts said.

It's in those larger dimensions of rigid coaxial transmission line — 6 inch and over — that most of the incompatibility issues are occurring, said Adam Jones, director of manufacturing for Shively Labs.

New standards

"Having coax connectors mate properly has been a major issue throughout my time in the business," Jones said. "I've had a fairly easy time convincing [other coaxial manufacturers] that we need a revised standard."

Jones mentioned Electronics Research Inc., Dielectric Communications and Myat Inc. as "being supportive of updated rigid coax standards" and being active in the standards process. Representatives of Jampro Antennas/RF Systems Inc., Radio Frequency Systems, Bird Electronic Corp. and Altronic Research Inc. have also been involved with EIA subcommittee meetings, Jones said.

Still to be determined is exactly what the new standards will look like and when the changes could take effect, he said.

Jones, committee chair for the EIA CE 4.1 Rigid Coax Subcommittee, said the group is working through specifications and determining ways to limit the impact of new standards on manufacturers and broadcasters.

"I do not expect these revisions to result in broadcasters seeing a price increase. I can't speak for all of the manufacturers. There will be some non-reoccurring engineering cost and manufacturing costs that the companies will likely just eat," Jones said.

Adam Jones of Shively Labs, with Ansoft HFSS and Autodesk's Inventory software on his computer screen.

Dean Spooner of ERI

A larger issue, he said, is the rising price of copper and other metals, which adds to the cost of transmission projects.

Industry experts say interface issues can occur in both semi-flex and rigid coaxial systems when trying to connect RF components using bolted flanges and inner connectors.

"One of the more fundamental 'fit-up' issues is with manufacturers who make slightly different inner and outer tube diameters for the same nominal line impedance," said Dean Spooner, transmission line engineer, manager for ERI.

Spooner said current standards simply define a proper mechanical interface of coaxial flanges and tubes.

"They do not define a proper electrical interface. Neither do they define inner connectors or address thermal expansion differentials," Spooner said.

Specifically, he often sees connection issues with components such as reducers and directional couplers as well as other specialty interfaces such as antenna inputs and filter or combiner inputs and outputs.

Compatibility

Stephen Kolvek, director of coaxial products for Myat, said, "The purpose of

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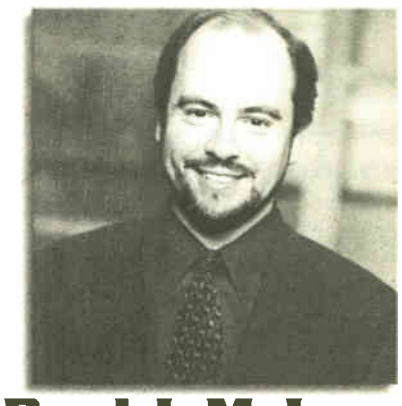
Give Credit Where It's Due. Please.

From the Editor



Paul J. McLane

Oy, those organizations that profess to honor top radio people but neglect the technical folks.

Announcements typically go something like this: "We salute our employees, who are leaders in *every* niche of radio: general management, programming AND sales." What message does such wording send to an engineer, an IT professional or a new media technologist about how top management views them?

Let me salute a handful of organizations doing things right.

First up is Entercom Communications, one of the few that take the time to put out even occasional press releases about engineers.

I received such a release a while back when it named Dan Pregnar DOE for its four stations in Wilkes-Barre/Scranton, Pa.

The press release consists of exactly 161 words. A PR professional could write something like that in her sleep and click "Send" without moving off her pillow.

So why do so many other radio broadcast companies — who can crank out announcements ad nauseum about new air talent and their hires of general sales managers — find it so hard to do the same for technical staff? Answer: They just don't think about it. Which is telling.

Kudos to Entercom. Keep it up.

Hall of Famers

Second cherry goes not to a company but to the Michigan Association of Broadcasters, which inducted Larry Estlack, its director of technology, into its Broadcasting Hall of Fame.

Imagine, choosing an engineer for your hall of fame — and someone who made his mark years after Marconi, no less.

"Larry began working in Michigan broadcasting operations in 1970, and has been involved in just about every area of broadcasting from engineering to programming," the organization announced.

"Larry has been the chief engineer at several radio and television stations in Michigan and is widely respected as an engineering consultant. He was named MAB Engineer of the Year in 1997." He also has been the Michigan chairperson of the Emergency Alert System since 1985 and a teacher at Michigan State University.

But wait. There's more! I have to rub my eyes, but *another* state organization is honoring a techie.

Jerry Arnold

When this year's class of the Richard M. Fairbanks Indiana Broadcast Pioneers Hall of Fame is inducted next month, bumping elbows with other big shots will be Jerry Arnold, director of engineering at Midwest Radio in Terre Haute.

A former radio newsman, he has written in Radio World and other publications. He once invented and manufactured an interface for satellite-delivered programming to work with radio automation; and he is active in his local community.

The Indiana Broadcasters Association called him one of the "native or adopted Hoosiers who, through their chosen radio and/or television careers, have had significant and historic impact on their communities, state and world."

By contrast, a qualified raspberry goes to Beasley Broadcast Group, an outstanding broadcast company in so many respects, which again announced winners of its Annual Operating Awards. It named a company-wide GM of the year, two PDs of the year, sales manager of the year, even a business manager of the year.

Guess which job title was missing again?

I e-mailed President and COO Bruce Beasley to ask: Why no engineers? He wrote back, "That's a very good question because we have some of the best engineers in the industry in our company."

Recall that in September 2005, Radio World criticized Beasley in a back-page editorial for not including engineers in its awards (that year we also saluted Clear Channel for launching an award just for engineers).

Chairman/CEO George Beasley wrote to me then in a letter we published, saying the company was grateful for the reminder: "Not a day goes by that we don't appreciate their hard work and what it means to the future of our company," he stated. "Nor are we shy about vocalizing that appreciation to fellow employees, advertisers and investors."

I believe he was sincere but I would like to see a technical person on that annual award list when the broadcast group honors its top people next summer. You can't approach 50 years as a top broadcast company without serious tech help.

To its credit, Beasley did issue a press release about hiring Michael Cooney as its VP and CTO a year ago; thus my qualification on the raspberry. Let's give credit where 'tis due.

If *you* run a radio group or a broadcast association, do you give out awards? Do you issue press releases about star radio people? If so, do you include engineers and related tech fields?

Why not?

★ ★ ★

I mentioned Jerry Arnold. He's had an interesting career. It dates to 1967 when he was hired at KIEV(AM) in Glendale, Calif., during high school. He spliced tape, swept the floor and ran the board.

Graduating from the University of California, he took a year off to play pro baseball (lucky dog). Broadcast stops included Bishop, Calif., in the Sierra Nevada Mountains at KIBS(AM), where he was evening disc jockey, news and sports man and fill-in engineer.

He moved to Indiana to do radio news at WILO (AM/FM) Frankfort, where he says he put in many 100-hour work weeks helping build that station's news reputation.

Rep. John Myers helped convince Jerry to take the position of news director at WAAC(AM) in Terre Haute, where it enjoyed ratings success; he interviewed presidential candidate Ronald Reagan in 1980. He worked at WTHI(AM/FM), helping improve the AM format, and did live boxing coverage (boxing?!) at WTHC(FM), calling called the 1999 knockout that gave Terry Ray the WBF Cruiserweight title.

Jerry founded an old-time radio recreation group and he is on a committee trying to bring minor league ball back to Terre Haute. He also writes to me when he sees something he likes or doesn't like, keeping us honest. My favorite kind of reader.

Oh and he keeps four stations on the air.

Congratulations on the honor bestowed by your state's broadcasters, Jerry.

Move

▶ Continued from page 1

spectrum to expand radio; but the Broadcast Maximization Committee has laid out a specific, long-term migration plan that, unlike others, also emphasizes the benefits for current AM stations.

The group says most AMs should move to the new band, where they would operate as FMs on channels of 100 kHz width, enjoy more parity with current FM stations in terms of audio fidelity and gain the ability to go all-digital.

AMs could transition to 100 channels and operate in the all-digital mode. In this way, AMs "can solve the current digital problems they are experiencing, especially at night," the group states.

But while most would move, the existing band could, under their plan, also remain populated with clear-channel stations that would enjoy more elbow room. Under the proposal, filed with the FCC in its diversity proceeding (Docket 07-294), the old AM band would be "re-packed."

Furthermore, the group proposes that the FCC relocate LPFMs there and also expand the noncommercial service into an adjacent portion of the new FM spectrum. The entire process might take 10 to 20 years.

BMC is proposing:

• The FCC would extend the FM band to include frequencies 76.1 to 87.7 MHz FM Expanded Band (EXB) with a 100 kHz channel spacing, creating 117 new channels.

• The first eight channels (87.0 to 87.7 MHz) would be reserved NCE channels since they are contiguous to the current NCE band. The proposal would add new 100 kHz digital channels adjacent to the noncom band and remove the existing Channel 6 protections that limit FM stations on the existing NCE band to open opportunities on the existing NCE band.

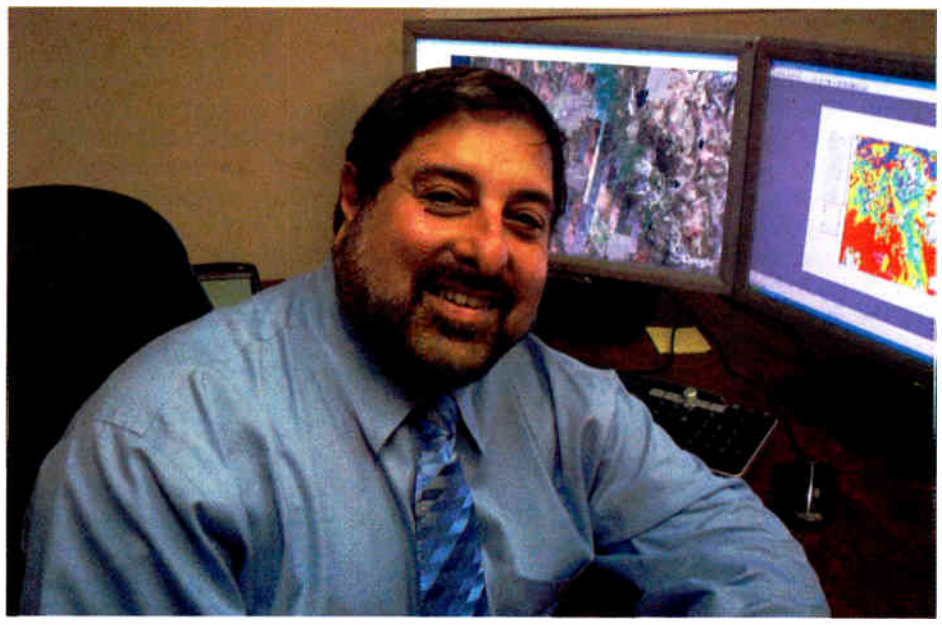
• The next 100 channels (77.0 to 86.9 MHz) would be used to migrate AM stations to the proposed FM new EXB band channels, where they would operate in digital mode. BMC says after a long transition period, either all stations or all stations except clear channels (Class A AMs) would make the move. It would be up to the FCC to decide whether a sunset provision would apply to analog AM. BMC says it's up to review as to whether the FCC or the stations themselves decide who moves.

• One channel on 76.9 MHz would be set aside for NOAA/DHS use nationwide.

• The last eight channels (76.1 to 76.8 MHz) would be for LPFM use. BMC says existing LPFMs or those that fully meet appropriate protections (including second- and third-adjacent protections) could at the option of the FCC remain under their existing secondary service status. Otherwise, on the EXB they would be protected as a primary service and likely have better coverage.

• The mostly vacated AM band (540 to 1700 kHz) could open up for multiple uses, including improved AM broadcast service or other use.

Also, the group has conducted some initial research into digital transmission technologies, but BMC is not recommending a particular one.



Bert Goldman

RW: *What is the Broadcast Maximization Committee and why did it form?*

Goldman: We're a loosely knit group of primarily engineers. ... Our first official meeting was in December 2007. It's been kind of held together and sponsored by Paul Reynolds of Reynolds Technical, an engineering consulting group in Birmingham. ...

This was one of those situations where we felt like everyone's complaining about the weather but no one's doing anything about it. You've got the LPFMs, which want more space; and the existing broadcasters don't want more interference. The non-commercial people want more stations. ...

Unfortunately, what the FCC insists on continually doing is further relaxing interference standards, which causes interference, not only to broadcasters, but these LPFMs are going to find that their coverage, when they sign on, is going to be dramatically reduced by interference *from* the full-power broadcasters. ... There will be effects on the overall noise on the FM band and further impact on the ability to operate stations digitally.

The other part of it is the continuing problem we keep hearing from the AM stations that the noise is getting worse and worse on the AM band. Coverage is getting worse. Land use issues and environmental issues are getting bigger. It's getting more expensive to operate and maintain AM stations. ...

Our thought was, rather than just complaining about it and having a standoff of existing broadcasters against everybody else, why not take a long-term view of the future and try to come up with a method by which there could be an orderly migration? And, in addition to the existing band, [a method that] could satisfy the obvious needs of all of these existing users, and potential future users, of the broadcast band.

See MOVE, page 6 ▶

Coax

▶ Continued from page 3

updating the standard is not to redesign rigid coaxial components. It is to standardize line sizes and make some minor corrections to existing designs. Compatibility is one of the committee's concerns." Myat manufactures transmission coaxial and a number of other RF products. It and the other vendors are seeking to control the future of rigid coaxial products, Kolvek said.

"If we have the updated standard, that would mean the end users would see systems with clearly marked compatible components."

Officials at Dielectric Communications believe the most important aspect of standardization is to attempt to anticipate future applications and provide guidance on a standard design procedure in order to avoid fit-up problems.

"Even more new sizes may be appropriate for new applications. A standard that anticipates this can help in the development of new services for our industry," said Kerry Cozad, senior vice president of broadcast engineering for Dielectric.

"The use of standards will help avoid misunderstandings that can cause significant issues during installation and operation of transmission systems that utilize larger rigid coaxial lines."

The rigid transmission coaxial subcommittee hopes to address more than just fit-up issues, Jones said. The group also wants to standardize the calculations manufacturers use when marketing their rigid transmission coaxial products, such as "the power rating for rigid transmission line or the attenuation. Right now each manufacturer uses their own general formula," he said.

"They are all based on basic physics, but one might be using a different safety factor when they rate their coax. Or one might be using a slightly different number for the connectivity of the copper they use."

The CE 4.1 Rigid Coax Subcommittee hopes to meet this fall at the IEEE Annual Broadcast Symposium in Alexandria, Va., held Oct. 15 to 17.

Jones said his committee is interested in broadcaster feedback and participation in the standard setting process. Interested parties may contact him at Shively Labs.

The subcommittee intends eventually to vote to approve wording in the new standards before turning finalization over to EIA.

"There is a public review and discussion period before anything is adopted. To get the full standard adopted takes some time. We expect to be done with [subcommittee] work by next summer."

World Radio History

Move

▶ Continued from page 5

RW: What is the basis for the plan?

Goldman: It's a recognized fact that due to the inherent noise limitations on the lower VHF frequencies, for TV the digital doesn't work so well. It would behoove the television stations to vacate those frequencies and get up into the UHF bands where it works better.

... You can go right down from the FM band and go into Channel 6 and then Channel 5. It makes sense to have a contiguous block of broadcast frequencies. We said this is a once-in-a-lifetime opportunity, with the analog [TV] stations essentially vacating Channels 5 and 6.

RW: From reading the filing, it doesn't look like you're expecting all AMs to move.

Goldman: We're not intending this document to be an allocation — a final document. We don't expect the FCC to say, "Okay, this is what we're going to do. And we'll do it exactly like this." I think this is more of "Let's begin this dialogue" and use this as a framework to make this transition.

I think there's obviously going to be a lot, a lot of controversy and discussion before anything is adopted by the FCC. There will probably be other viable plans, or modifications of this plan that will be set forth that will require changes or modifications to what we've filed.

Could you move all of the AMs to this band? Absolutely. We've proved that you can do that. We've got all the allocations listed on the table. Would you necessarily want to? I don't know. Maybe, maybe not.

One of the things we looked at was migrating everybody and not leaving anyone behind, and trying to, as close as possible, replicate at least the daytime footprints of the clear-channel stations.

But the other option might be, as we also put forward in this, is to take the daytimers and the small stations, 500 watters, and stuff like that that's really just adding interference to the AM band, take them out and transition them. And then ultimately leave a lot of the larger stations on the AM band but increase their spacing so that instead of being 10 kHz channels, they're 20 kHz channels. If you have that kind of spacing available to you, *then* you can do digital day and night.

RW: You're showing how it would be possible if some stations were left ...such as if the clear-channels stayed with extra protection but everybody else moved.

Goldman: Yes. We talked to some of the operators. A lot of them just couldn't get their arms around the idea of abandoning those big old clear-channel footprints. So the thought was, if you either tried to duplicate as much as possible the footprints on the new band or if you improved their situation on the existing band, that makes everybody as happy as possible.

RW: Were the people you talked to worried about giving up their nighttime clear-channel signal? Would there be skywave at night with this proposal?

Goldman: There wouldn't be skywave on the new band, but if they were to stay on the existing AM band and increase their separation they'd have *better* nighttime.

If they moved to the new band, they'd be, for all intents and purposes, giving up their skywave. But a few years ago I did an informal survey, when I was at ABC [he was vice president of engineering for its Radio Division] and there were really only one or two stations then that sold the nighttime skywave. Both stations didn't particularly care so much one way or the other about their nighttime skywave. But, from a political standpoint, nobody wanted to give it up.

This was an opportunity to come up with a plan that could theoretically go both ways. You could either try to duplicate your daytime footprint on the new band or improve your existing lot on the AM band by getting rid of some of the clutter and interference.

That, of course, would be up to dialogue between the broadcasters and the FCC as to which one or a combination of those ideas, or other ideas, were used to do this.

RW: To be clear, what you're proposing is that everybody wouldn't have *to move. It may or may not be up to them, whatever the FCC decides. You're providing a framework.*

See MOVE, page 8 ▶

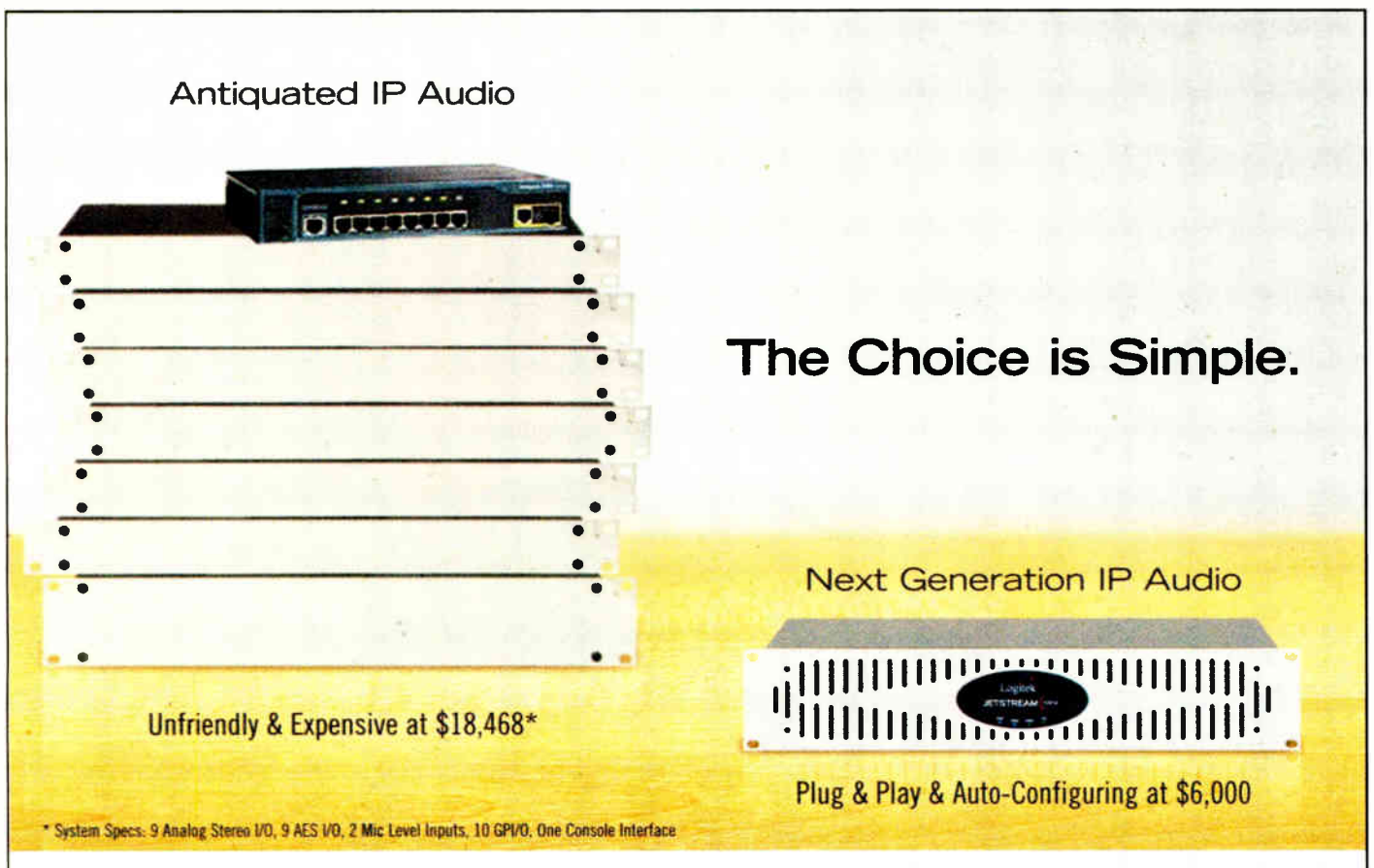
The BMC

The members of the Broadcast Maximization Committee are:

John J. Mullaney
Mark Lipp
Paul H. Reynolds
Bert Goldman
Joseph Davis
Clarence Beverage
Laura Mizrahi
Lee Reynolds
Alex Welsh

All are broadcast consulting engineers with the exception of Lipp, a communications attorney at Wiley Rein.

'I would much rather build a 1,000 watt digital FM station than a six-tower directional AM any day of the week.'



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World Radio History

Move

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Goldman: Yes, though I can't imagine why a daytime-only AM would not want to migrate to the new band. I couldn't comprehend that ... at least after a transition period. We are not locked into any specific requirements. This should be left up to the FCC.

We have pointed out that, at the discretion of the commission, they *could* move everyone if they wanted to and sunset the AM band, keep the clear channels there, repack the AM band to make it digital-friendly or any iteration. We simply demonstrated that *if* it was desired to move everyone and match their existing 2 mV/m contour that it is technically possible under our plan to do so.

This is not, in any way, shape or form intended to be an overnight fix. ... I figure it's going to take at least 10 years before you start getting reasonable penetration, and probably 20 years before you can say "We're done with the migration."

I figure we've got a few years anyway before we settle all of the differences to the point where we can say, "This is the final allocation scheme, now you can start filing applications to make these moves."

***RW:** Would there still be expanded-band AMs in this scheme?*

Goldman: I guess that would be up to the FCC and broadcasters if they want to continue that or not. The plan put forward takes the AM expanded-band stations and gives them a similar footprint on the EXB expanded band. It would be up to the FCC as to whether they said that after a transition period that you'd have to give up the AM analog or not.

***RW:** Overall you're talking about changing the channel spacing on existing AM?*

Goldman: Ultimately, after you get everybody moved over, like the daytimers, once they give up their AM footprint, and once everyone who's going to make the transition [has moved], the idea would be that you'd have mostly clear-channel stations left. The existing AM band could then be re-packed to provide greater separation to allow analog and digital without interference to each other, day and night.

***RW:** So some legacy stations that had decided to remain in the old AM band would have their frequencies changed anyway?*

Goldman: That would probably be necessary and not a small issue. There are international treaties involved so it would be a long road to see that part of the plan through if that was the desired path. This was just an idea we kicked around, but if the AM band were retained, repacking it would be a good way to solve a lot of problems.

***RW:** The non-commercial stations also would love to be re-packed. They say they're too tightly packed at that end of the FM band.*

Goldman: One of the things about this beyond the AM stuff is you add all of these channels for the non-commercial folks and because they're digital you have a considerably different allocation scheme. You don't have nearly the same protections to worry about. So you can pack a lot more people in because of the digital.

'Due to the inherent noise limitations on the lower VHF frequencies for TV the digital doesn't work so well. It would behoove the television stations to vacate those frequencies.'

***RW:** Because each station isn't protecting adjacents?*

Goldman: Right. There are no second- or third-adjacent issues, and even the first-adjacent issues aren't a big issue particularly. In fact, on one of the systems we looked at, you can put a first-adjacent EXB station on the same tower — in other words two channels right next to each other on the same tower. The allocation process becomes a lot less restrictive. ...

One of the other things we talked about was the fact that a digital exciter isn't the cheapest thing in the world, and digital transmitters aren't particularly cheap. LPFMs are not going to have a lot of money to spend on the facility. ... They'd use the same transmitter. It would be a multiplex thing, kind of like Eureka-147 but on a much smaller scale. You'd have maybe four or five people that would be sharing maybe $50,000 worth of equipment.

***RW:** And for the non-coms?*

Goldman: They would each get their own 100 kHz channels. That's how'd you differentiate an LPFM and a non-commercial station, although they would also be in different frequency blocks, too.

***RW:** What about power levels?*

Goldman: To clarify, LPFMs would probably be equivalent to Class A FM station coverage but several stations would divide up the channel so, say four or five LPFM stations would simultaneously use the same channel by dividing up the bit stream. Noncoms would not typically have to divide up the channel with others so they could have multiple program streams and the noncoms would also have different power levels similar to the class designations now on FM.

How those designations were doled out would probably be up to the FCC after a lot of public comment. The AM stations that move to the EXB would also have different power levels and classes that closely match their current 2 mV/m daytime contour.

***RW:** For the non-coms, you're talking about extending their portion of the reserved band?*

Goldman: Yes, but adding digital channels as opposed to analog channels.

***RW:** Let's discuss costs. The filing says some stations would be able to use nearby towers, for example.*

Goldman: For an AM station that gives up their AM operation, we talked about the ability to sell off the property and move to an existing tower or something like that. There would be cost savings, environmental savings. Say you've got a six-tower array, you could theoretically perhaps chop down five towers, leave the sixth one up and operate from that.

But if you have short, say 200 foot, towers, you wouldn't want to do that. At that point, you'd probably chop down all of your towers, sell your property and move to an existing tower that's maybe 300 feet high.

***RW:** What about the other equipment costs to go onto the new portion of the FM band?*

Goldman: They'd essentially have to buy the components of an FM station, an antenna, transmission line, transmitter and a digital exciter.

Let's put it this way, I would much rather build a 1,000 watt digital FM station than a six-tower directional AM any day of the week. These people are spending a fortune on maintaining some of these [AM] arrays. A lot of them can't afford to maintain them anymore. So they're letting them go into disrepair. ... If they can take all that property, say, 50 acres and sell it and take $150,000 or so from the proceeds to finance and build an FM station, maybe that's not such a bad idea.

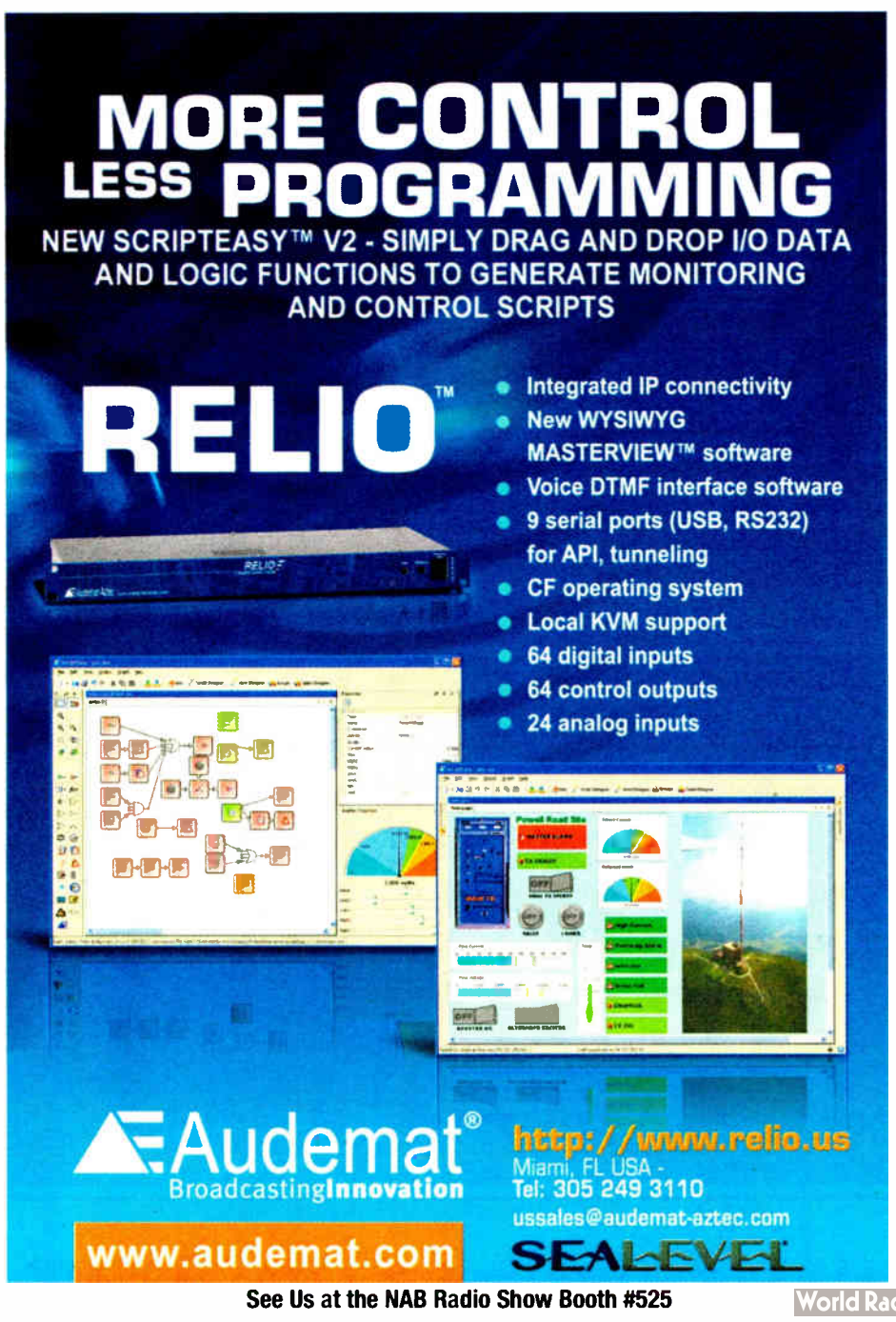
***RW:** Tell me about the migration plan*

See MOVE, page 10 ▶

Proposed Allocation Scheme for AMs

Reynolds Technical of Birmingham, Ala., developed the frequency allocation scheme for AMs as proposed by the Broadcast Maximization Committee. Here's the background on that development as explained by Alex Welsh of Reynolds.

— Gathered information on all licensed AMs from FCC's database
— Used distance formula described in 73.208 (c) to calculate distances (formula is only valid out to 475 km) between all licensed AMs
— Calculated each AM's average distance to 2 mV/m or 0.5 mV/m contour and assigned it a new class
— Created the minimum spacings chart from suggestions by DuTreil Lundin and Rackley engineer Charles Cooper and based on Canadian DTV standards
— Started alphabetically with call letters in Alaska, assigned the first station in the list a fixed channel (#92) and allocated all other stations in the nation with respect to the first station, based on the minimum separations and calculated distances. We then kept the second station's new channel fixed, along with the first, and repeated the process. This was done until all stations had a fixed channel that met minimum separations.



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World Radio History

Move

▶ Continued from page 8

to move the TV stations off of Channels 5 and 6.

Goldman: I thought it was one of the most exciting parts of the proposal because everybody said, "There are people that have to stay there, what are you going to do about them?," in particular Philadelphia. But our crack engineers came up with ... feasible plans to move those stations off Channels 5 and 6 and up into the UHF band where they'll operate better. I suspect a lot of those TV stations are going to say, "Yeah, great. I just spent all this money on a new transmitter on Channel 6. I am not going to go out and spend another half million dollars on a transmitter and antenna."

And I'd say I don't blame them; so what you may want to say — and I think this may be up to the FCC — would be that people moving to the new band would have a fee that they would have to pay that would be, say a few thousand bucks — a fee that would go to the people on Channels 5 and 6 to help them move.

***RW:** You told me the group is not proposing a digital standard, but it sounds like you're thinking about it.*

Goldman: We did look at the DRM Plus system, which is going through final trials in Europe now. We hear it's going well and its standard is 100 kHz spacing. They're talking about being able to get at least between two and five audio channels in 100 kHz of bandwidth. It was all subject to their final testing and final revision of the standard. Assuming that it plays out the way it seems to be playing out, that would be one possibility.

Ibiquity doesn't want me to say anything about their interest or disinterest. I have to be careful about what I say. If you look at the NRSC-5 standard I personally think that there might be a way to design a subset of the NRSC-5 standard to be compatible with the 100 kHz [channel spacing].

Ibiquity is owned in large part by major existing broadcasters, and the large broadcasters are going to be very protective about adding new spectrum. They always have been. The fact that it's 10 or 20 years in the future may temper it a little bit but I suspect that they're still going to fight it. The fact that Ibiquity is sponsored primarily by large broadcasters — I'm not sure Ibiquity will choose to play in this game if [the plan] gets favored by the FCC.

I don't see that as a problem though, because interoperable radios are not that big of a deal. Once you have the digital signal processor built into the radio, it's just a matter of programming it for different standards. You could have a DRM+/Ibiquity/Eureka-147 interoperable radio that's essentially software-defined that would pick up all the different standards.

'If they can take all that property, say, 50 acres and sell it and take $150,000 or so from the proceeds to finance and build an FM station, maybe that's not such a bad idea.'

***RW:** Isn't it expensive to build a radio with all of those chips in it?*

Goldman: It's probably more expensive, at least initially. But there are multi-standard radios in Europe right now.

There are chipsets, in fact I just read about a new multi-standard chip being introduced by NXP and they are saying they expect their chip to actually be cheaper to implement because manufacturers would only need one chip for whatever system or systems being used, thus simplifying the manufacturing process.

***RW:** The DRM/Eureka radios ...*

Goldman: Right. It's just a matter of processing power and memory. ... From what I've been told it's just a matter of having enough capacity in the chip to be able to have the software and processing power on board to process the different standards. They don't have to process them at the same time, but they've got to have the capacity to process them individually.

***RW:** Backing up a little bit, what kind of reaction do you anticipate? Do you think the big groups will like this plan or no?*

Goldman: I think there will be mixed feelings. Having been on that side of the aisle before, there will be an incredible pushback based on fear of new competition and loss of potential asset value by basically diluting the field. ...

There have been a number of people who have filed, pro and con. There have also been other people who have filed alternate plans, some of which take components of ours and add to them ... some of which say that we're crazy.

I know we're going to get a lot of opposition from the existing Channel 5 and 6 users that do not necessarily want to stay there but don't really want to move, either. ABC/Disney in particular, I think, will be very upset with our plan and I believe they've filed something.

But I think overall, something has to give. Because you have to look at what is more in the best public interest. If you go all the way back to what the FCC's supposed to be doing, is the best opportunity going to be keeping a handful of VHF Channels 5 and 6 operating because they just can't figure out how to move someplace else? Or, is it going to be opening up service to thousands of new and existing AM broadcasters?

It seems to me that if a case can be made for an orderly transition, this solves an incredible number of problems and opens up an incredible number of opportunities to make broadcasting rejuvenated, vibrant and viable, allow more people to have a voice in their community and just so much more exciting on every level.

***RW:** You're getting a mixed reaction, in part, because AMs would all of a sudden be powerful?*

Goldman: AMs would have similar parity to FMs after the transition but it would take 20 years or so before you had penetration at the same level and don't forget, existing FM stations would retain their 200 kHz bandwidth so they would still have twice the bandwidth of stations on the EXB.

On the good side, existing broadcasters might benefit from this because this would provide additional incentive to get digital radios into the marketplace, which would, I assume, include HD-R. And it would also reduce the interference for existing stations by clearing the LPFMs out of the FM band. So yes, from that perspective it might help. Then, of course, existing AM broadcasters, I think would generally be for it.

Some of the big AM, historic, large-footprint AM stations might not be as excited about it. But I think the struggling daytime AM operators would probably in favor of doing something like this. So you're going to have a mixed bag.

And even the LPFMs, I'm finding the response from them is mixed. Some are saying, 'This is a great long-term solution, but we need a solution right now, today.' Obviously, this isn't a solution today.

***RW:** When you said earlier that AMs would finally have parity with FMs, did you mean in terms of coverage area and signal strength?*

Goldman: I'm talking about for the ones who chose to move to the expanded band. The way we allocated the AMs may send a chill down some existing broadcasters. The 50 kW day *and night* AM would have the same coverage day and night as the 50 kW daytime-only. That's a huge difference for that daytime-only AM guy.

I did a couple of comparisons, and you've got a guy who's a marginal player, yes he had a great signal during the day but he went away at night. Who now all of a sudden has a huge footprint day and night. That's going to, ultimately, really help his value. It's typically the minority and less well-financed operators that have these daytime-only signals that would benefit from that.

RW: *Big AM groups might see this plan as a way to clear out "nuisances" from the band. Smaller AMs, many already strapped, would end up incurring more costs just to move to FM, and then might languish on a new undeveloped spectrum. Why would smaller AMs like this plan?*

Goldman: Because the smaller AMs would have the same coverage day and night. Ultimately, they would be on a level playing field with FMs. Long term their asset value would improve substantially I would think.

As far as languishing goes, we would hope that this plan would help develop *both* the existing FM band digital plan *and* the new EXB band. Manufacturers and consumers have been saying that

See MOVE, page 12 ▶

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NEWS MAKER

Kim Sacks, 'Hybrid Engineer'

Technology Is All in the Family for Young Broadcast Designer

by Randy J. Stine

HOLLYWOOD, Md. One day you might see Kim Sacks speeding down side streets in this town in southern Maryland's St. Mary's County on her 250 cc Piaggio and think not much of it.

However, the fact that her motorized scooter is outlined in brightly colored LED running lights she mounted to enhance her visibility tells you something about her love of electronics.

Sacks is a little unusual in the world of broadcast and studio equipment design. She's only 24; she met her husband on an online technical message board; she has had a hand in the design of several award-winning products.

She's taking classes through the Cleveland Institute of Electronics and expects to graduate in about a year with a Bachelor of Science degree in Electrical Engineering.

Describing herself as a hybrid engineer, Sacks admits she is still "getting her chops" in the world of broadcast engineering. She has helped rebuild an AM transmitter site and can make sense of phasors, inductors and schematics. Her strength right now is in product and circuit board design using CAD/CAM software.

Sacks does design work for both Jensen Transformers and Henry Engineering, working on USB audio devices for the latter. Since 2005, Sacks has co-designed four products for Henry Engineering that have pleased Radio World's Cool Stuff judges, including this year's SixMix USB Broadcast Console.

Kim Sacks makes field measurements with an FIM-41.

"I designed the USB audio adapter section of the SixMix," Sacks said. The Henry SixMix is a compact USB 10-input, six-channel broadcast audio console.

Other Sacks co-designed Henry products include the Studio Drive, USB Matchbox and Matchbox Plus, and AES Matchbox in 2007.

Tearing down, building up

"The past few years have been just a tremendous learning opportunity for me. I really ended up in all of this by pure accident," she said.

Sacks had early career advantages growing up in southern California during the age of Nintendo. She was taking apart game cartridges by the time she was 10 and later rebuilt computers and even networked several home computers, she said.

"I would fix toasters and vacuums. I rewired the phones in my parent's home just for fun," Sacks said.

A self-professed "Goth computer and band geek" in high school, Sacks started hanging around technical message boards to quench her thirst for electronics. It's where she met her future husband and began her radio broadcast adventures.

Sacks was taking apart game cartridges by the time she was 10 and later rebuilt computers and even networked several home computers, she said.

"Bill (Sacks) completely changed the way I looked at electronics. I asked him what analog was and it all began."

Bill Sacks is a former chief engineer, consulted for Carl T. Jones Associates and founded Straight Wire Audio Inc. Kim and Bill are partners in their broadcast consulting firm Wireless Connections and several other business ventures.

"We provide our clients with a top-notch specialized audio service facility for analog processing and studio gear. I also do a variety of custom designs, including small batches of modules and PCBs for various industrial and government contractor types," Sacks said.

In addition to consulting and design work, the couple sells bidirectional cell phone amplifiers to enhance cellular service inside buildings. She and her husband also refurbish legacy analog Optimod on-air processors (RW, June 4).

"We refurbish other high end analog audio equalizers and processors, too," she said.

Kim Sacks, a member of the Society of Broadcast Engineers, said her first AM experience came when she had the opportunity to help rebuild and tune a four-tower array in northern Virginia. She worked on the project, which was designed by Ron Rackley, with Bill. CBS Radio's Tom McGinley, also an RW technical consultant, provided consulting assistance via the phone during the tuning process.

"Ron showed me how the network does phase shift and how the design pulls the power back into the system. I really didn't know how much the environment affects things," Sacks said.

"The best part of that project was building something from the dirt up. I learned to use the antenna-tuning unit. It was awesome figuring how to get that energy out into the air. Putting all of that energy into the air was very cool.

Circuit board action

Today, Sacks said she has a basic understanding of RF, reactance and impedance.

"I've learned from some of the best in the radio business," she said.

For most of the schematic capture and circuit board layout, Sacks uses Eagle Layout Editor by Cadsoft, she said. In addition, she uses GraphiCode GC-Prevue Plus Gerber format editor.

"I have the ability to print prototypes of my own circuit boards instantly in my workshop for testing of an idea or to make special boards without going to a printing house."

Sacks assembles and tests boards in-house, she said.

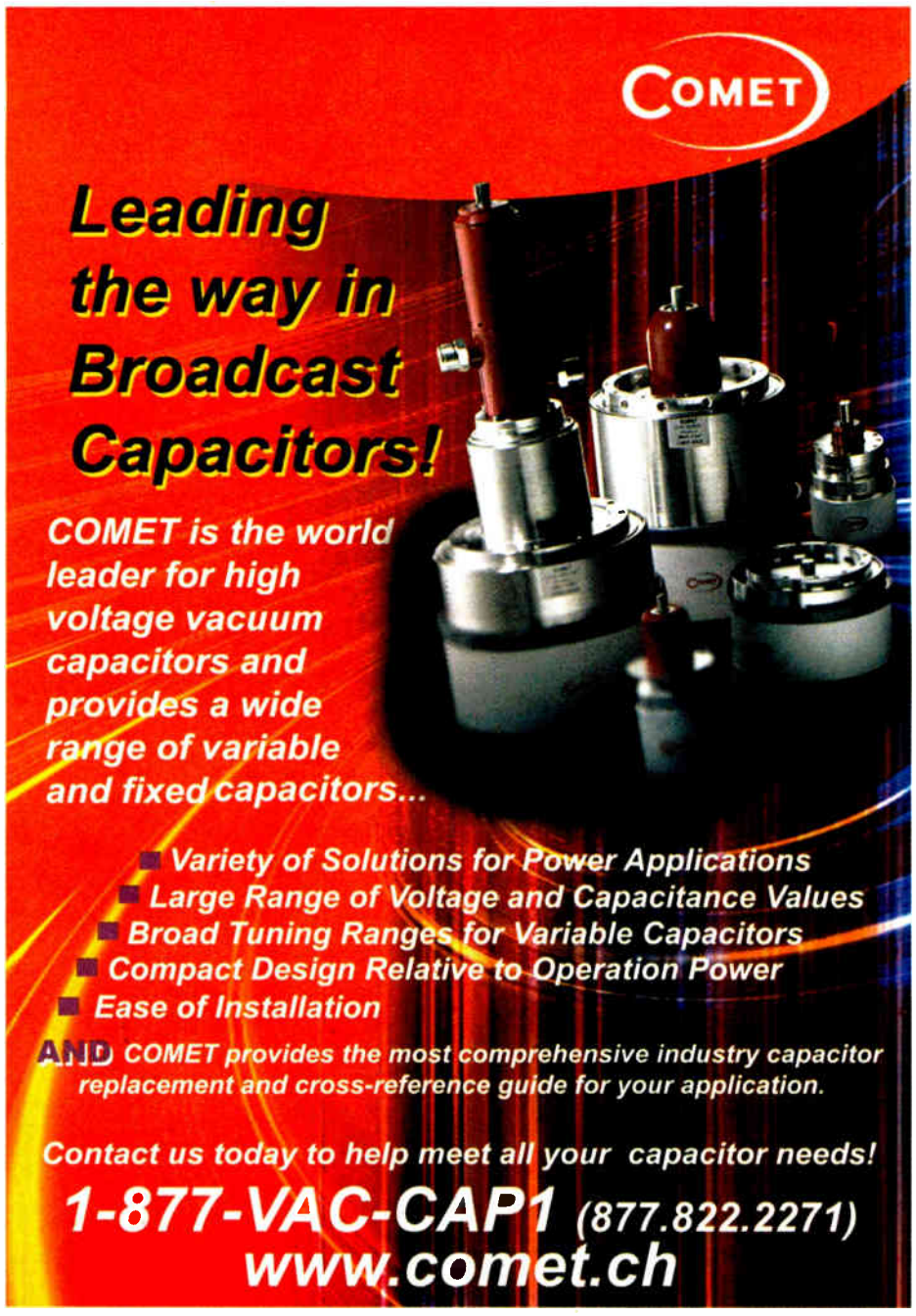
"I'm very nimble at soldering surface mount components and I have all of the tools to do it properly."

Sacks is working on a project for BBC America in New York City to integrate a SNMP (Simple Network Management Protocol) system that will be used to monitor, manage and control network-attached devices.

"The particular unit I'm working on also has the ability to connect to non-network attached devices so they can be remote controlled and monitored over the network," Sacks said.

Sacks is still undecided about long-term career plans. She just wants to finish her degree and keep designing.

"It will be either radio or TV. Or maybe some other form of top secret communication," she said.



Move

▶ Continued from page 10

they're not interested in digital until there's significant new content to justify spending money for new receivers, well, this will be a *lot* of new content.

RW: Do you believe that if most AMs are given an option, rather than ordered *to move — and further, if they must pay a fee to help "buy out" TV occupants — that they will move rather than stay?*

Goldman: I think it will depend upon the station. The AM operators I've talked to who are smaller ones and daytime operators are thrilled at the prospect. The issue may be similar to that faced by digital stations today — the chicken and egg thing. If the receivers are out there, and the AM stations can significantly improve their sound and coverage, I think the EXB plan will be very popular.

Comment on this or any story. Write to radioworld@nbmedia.com *with Letter to the Editor in the subject line.*

The reply comment period for the diversity proceeding (Docket 07-294) was due to close prior to our publication date. Those wishing to give the FCC input concerning the proposal may submit late filed reply comments at fjallfoss.fcc.gov/prod/ecfs/upload_v2.cgi.

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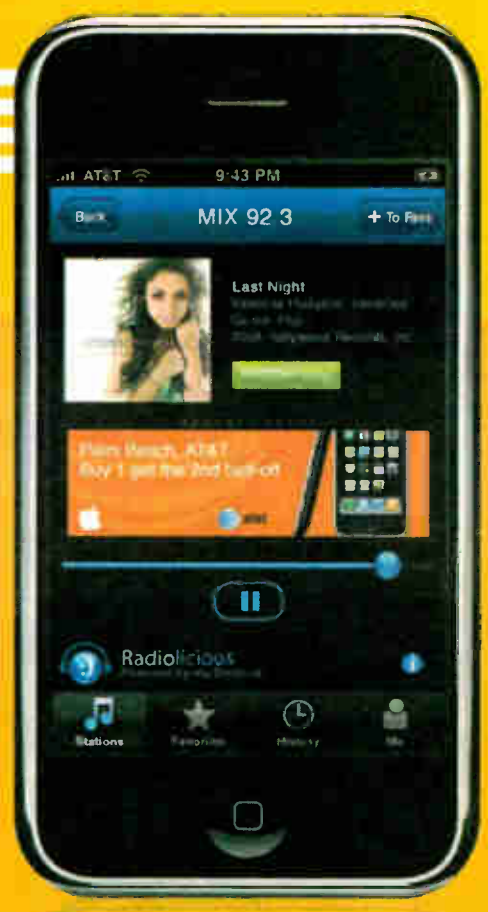

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Is EPG on a Fast Road for Radio?

Technical Team Working on an Electronic Program Guide Will Report on Its Progress

by Bob Kovacs

What the heck is an EPG for radio? When will such an electronic program guide be available? Will it generate consumer excitement? Could it become yet another regulatory requirement for broadcasters?

These are just a few of the questions that will be answered, or at least discussed, during the NAB Radio Show at a Friday session titled "The HD Radio EPG Project."

EPG on HD Radio started with an NAB project called FASTROAD, or Flexible Advanced Services for Television & Radio on All Devices. The NAB signed a contract with BIA Financial Network Inc. and its partner Broadcast Signal Lab to create a practical system for an electronic program guide for local broadcasters in the United States.

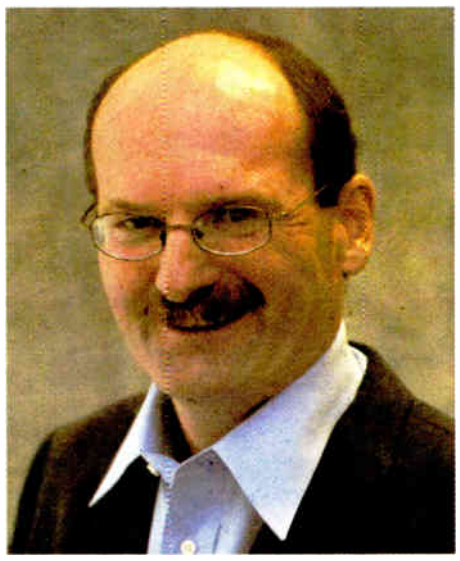
As with any new technology, not everyone thinks EPG has a future in radio.

"Broadcasters at first blush often were not supportive of the concept of a market-level guide to radio stations," said Rick Ducey, chief strategy officer for BIAfn.

"However, when compared to the playing field set by satellite and Internet radio, it seemed clearer that an HD Radio EPG would help level the field."

Meeting the bar

The first step in the project started by BIAfn and BSL was to interview executives in the broadcast, consumer electronics and technology sectors.



Rick Ducey, BIAfn

David Maxson, Broadcast Signal Lab

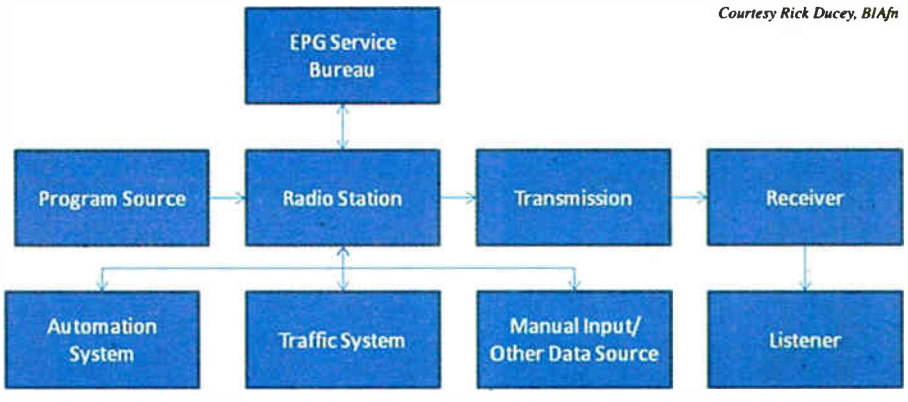
"We played out a scenario of HD multicasting and the day when there will be two, three or even four times as many 'radio stations' on the dial. That gets confusing for listeners to navigate without a guide," Ducey said.

Then there's the competition from satellite and Internet radio, which are raising expectations for what can be provided by radio broadcasters.

"In a digital media environment that's full of user interactivity, metadata, search, content-on-demand and time-shifting, local radio stations are not meeting the bar set by the competition," he said. "We really see that an EPG service goes a long way to add to local radio's competitiveness."

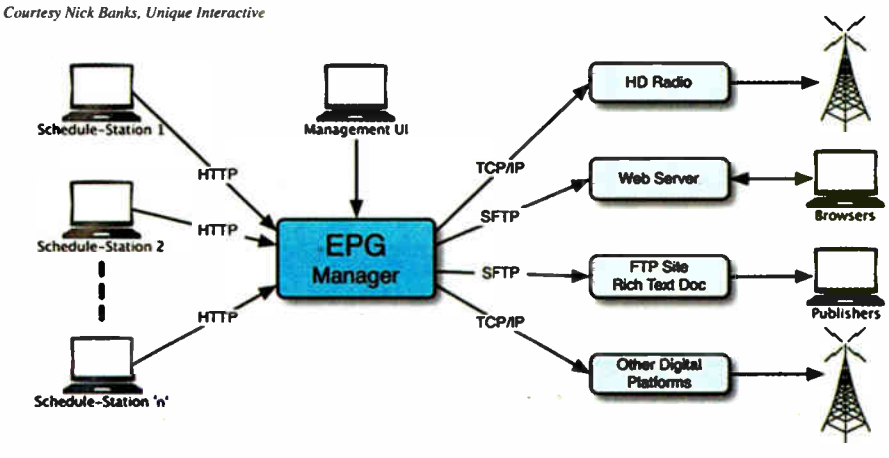
See EPG, page 18 ▶

Courtesy Rick Ducey, BIAfn



Signal flow for an EPG system at a single station is likely to look something like this.

Courtesy Nick Banks, Unique Interactive



A market-wide implementation of EPG will involve multiple stations and various means of retrieving the information.

Actual, unsolicited email from one happy *Ariane Sequel* customer...

"...At the station site we use the Ariane Sequel in front of an O[redacted] with its internal agc turned off. The Sequel works in matrix mode.

This chain ... oh baby ... it is MAGIC !!!

We sound louder, more punchy AND way less distorted than all other stations in the market. It is really unbelieveble. I would not have imagined this big a difference. The smooth non-distorted sound all over the spectrum is so different from other stations. The difference is actually easy to hear on any playback system. Small kitchen radio, big reference speakers, car radio etc. ... Well I know I sound excited and I really am! Just wanna share - the Sequel really is the magic ticket for being loud, punchy and non-distorted!"

-- B. R.

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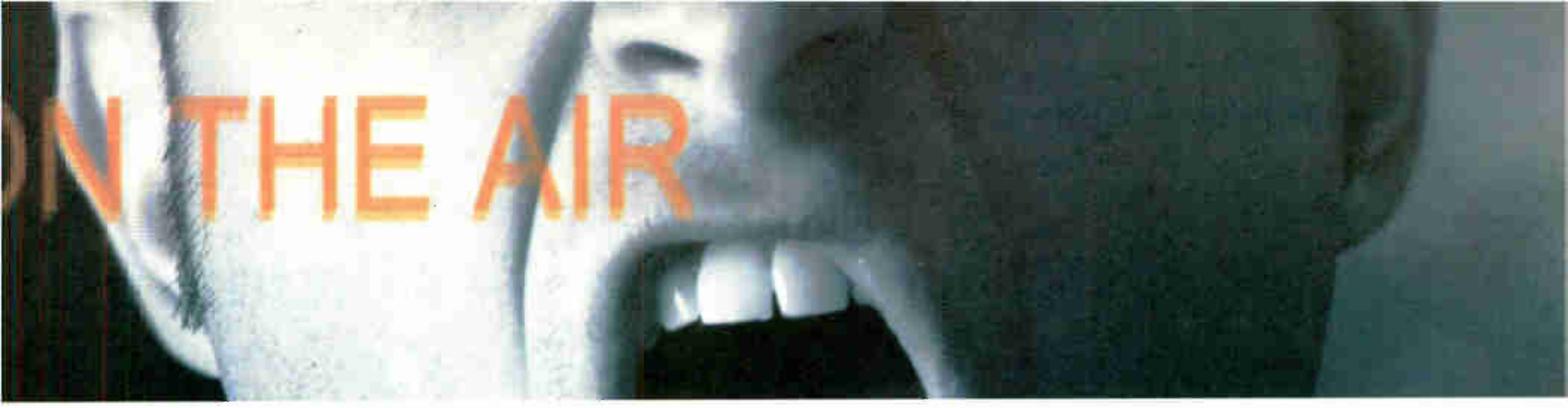

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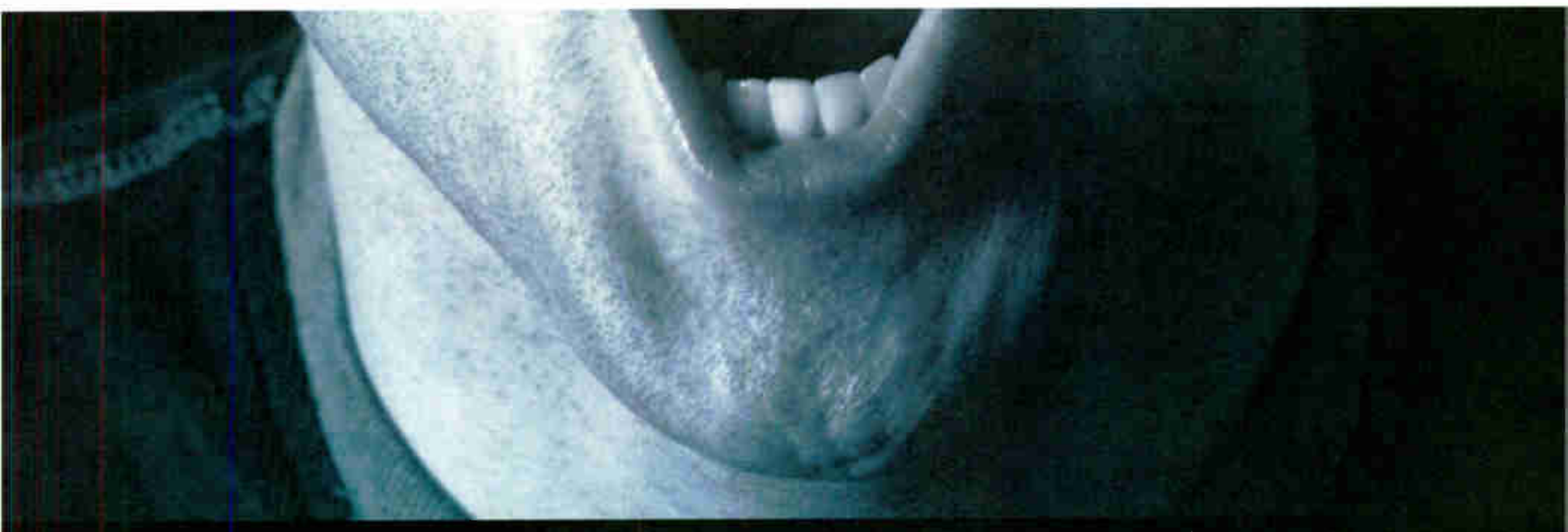

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For HD, the BD600 offers MicroPrecision Delay™ mode which allows up to 10 seconds of delay to be adjusted in real time in 100 nanosecond increments. This is useful for synchronizing analog and digital signals while on-air, without audible artifacts,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

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World Radio History

EPG

▶ Continued from page 16

Ducey said the interviews generated considerable positive energy for EPG, with many broadcasters seeing how a program guide can add value to their signal. However, there are real-world constraints, starting with bandwidth.

"Broadcasters told us that something on the order of 1 kbps would be a comfortable data rate," Ducey said. "That's okay, particularly if data can be trickled on a full-time basis with prioritized packets for more current information."

Unique Interactive, a British company, developed an EPG technology for the Eureka-147 DAB digital radio system used in the United Kingdom. The company has been consulted for the NAB FASTROAD project and is described by the participants as a key member of the EPG development team.

BIAfn's primary partner on the EPG project is Broadcast Signal Lab, which has experience in radio broadcasting and HD Radio technology. David Maxson, managing partner for BSL, is the author of "The IBOC Handbook: Understanding HD Radio Technology," a technical guide on the principles of HD Radio broadcasting.

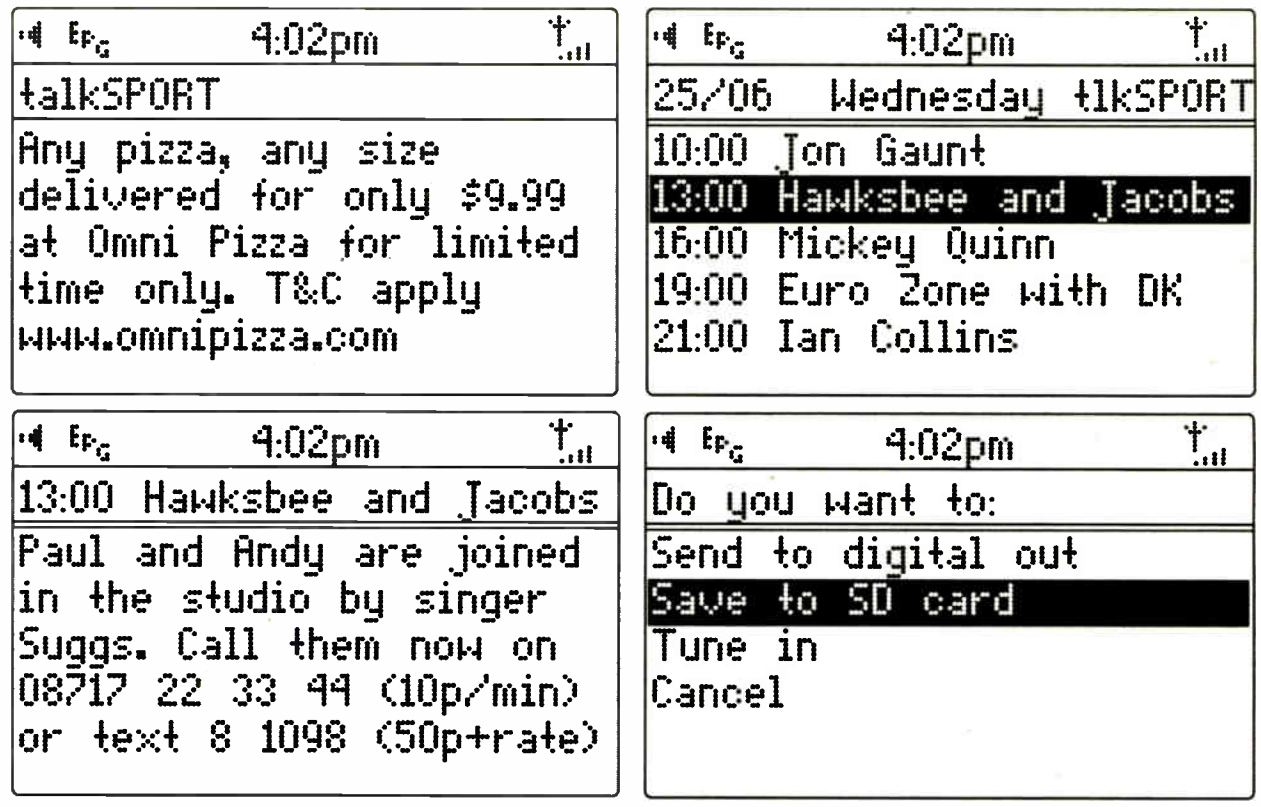
Maxson said the experience with EPGs in the U.K. is helpful but the landscape of U.S. radio broadcasting presents challenges not seen there.

"Much of what EPG does on DAB can be applied, carefully, to EPG here," he said. "One key difference is that the DAB technique of transmitting a consolidated EPG for a dozen or more audio channels on a single set of DAB transmitters will not work the same in the U.S."

The sheer physical size of the country and the number of radio stations create a complexity at which the U.K. system only hints.

We played out a scenario of HD multicasting and the day when there will be two, three or even four times as many 'radio stations' on the dial. That gets confusing for listeners to navigate without a guide.

— Rick Ducey



These images of a typical ENG-capable digital radio display are based loosely on a DAB European receiver; they demonstrate how EPG might work. The first shows the typical state of a radio that has detected an EPG data feed but is still showing the display text (RadioText) associated with the audio stream — in this case, an ad for an imaginary pizza parlor. The second is the display when the EPG button is pressed, showing EPG info for the current station on the current day. The third, at lower left, provides more information on the particular show highlighted in the previous image. The last offers choices the user can make for the selected program.

"Our stations are so geographically diverse, even within a given radio market, that a consolidated market-wide EPG would be large, and will contain stations that some listeners cannot receive," Maxson said, "and would overlook stations in adjacent markets that many listeners can receive." (See sidebar, page 19.)

The FASTROAD project hasn't gotten far enough since its inception in February to develop actual software that would be used for EPG creation.

However, the project team feels it has a great advantage since one of its members, Unique Interactive, has commercially deployed EPG software and services in use by U.K. broadcasters and others around the world using the DAB system.

So although the HD Radio system and U.S. broadcast radio environment have different requirements from the DAB market, the participants have a good idea what the process and equipment must do to be effective and affordable.

In addition, Maxson expects that future HD Radio software releases from Ibiquity will support EPG transmission.

"On the transmission side, it will be quite simple to add EPG to an HD Radio transmission," Maxson said. "Operationally, some software will be necessary to aggregate, organize and send the EPG data to the HD Radio Importer, and stations will have to allocate a minimal amount of time to setting up the EPG and keeping it current."

One of the goals of this project is to develop an approach that minimizes the workload on station staff. Taking a lesson from the U.K. EPG model and from other broadcast data services, Maxson said there is a role for a service bureau that can provide stations with as much or as little support in publishing their EPGs as they require.

Ducey will moderate the panel at the NAB Radio Show. He expects to report on Phase 1, which will include the successful completion of these four objectives:

1. Develop a business requirements document;

See EPG, page 19 ▶

World Radio History

What's in a Market? Variation Across a Single City

Broadcast Signal Lab conducted tests to determine how many AM and FM stations were receivable at each of 25 locations within 40 miles of the Boston market. BSL researchers used the "scan" button on a receiver and counted the number of stations at which the scan stopped.

Depending on the receiver's location, there were substantial differences in the lists of stations that could be received. This is due in part to having overlapping coverage from stations in the adjacent markets, and from the availability of lower-powered stations within the market that do not cover the entire market.

First, a listening point in the market center was used as a reference to identify all the stations that could be received at the reference location. Then all other locations were compared to the results at the reference point.

A count was made of the stations received at each location that were also received at the reference location (called "Matching"). The stations received at the reference but not received at a test location were counted and called "Missing." Finally, each test location received new stations that were not heard at the reference point. These are called "Extra."

For all 25 sites, the Matching, Missing and Extra stations were tabulated and combined statistically. Shown is a table with the results for the commercial portion of the FM band (the same thing was done on the AM and noncommercial FM bands, not shown here).

	Average	Standard Deviation	Maximum	Minimum
Matching	17.0	3.4	24.0	11.0
Missing	9.8	3.4	16.0	3.0
Extra	14.0	6.9	27.0	3.0

At the reference point, 27 commercial FM stations were captured in the scan. At the 25 test sites, there were an average of 17 Matching stations and 10 Missing stations. The 25 sites had an average of 14 Extra stations not received at the reference point.

This study revealed that conventional thinking about providing an EPG for each "market" may not be the most effective way to provide listeners with a full EPG relevant to where they are located. There may be too much unnecessary information and too much missing information for the listener in a one-EPG-per-market model.

— Based on information provided by David Maxson

EPG

▶ Continued from page 18

2. Create an EPG overview specification;
3. Recommend a field test market; and
4. Develop reference architecture specifying a practical and market-oriented EPG system.

According to Ducey, Phase 2 work will begin according to NAB FASTROAD's timetable and is planned to include computer and lab testing, then a field trial in a test market. He expects this work will begin soon. FASTROAD's requirement is that the eventual solution be compatible with Ibiquity's HD Radio technology.

"Happily, we've established a very productive relationship with Ibiquity," Ducey said.

Television has had EPG capabilities for years, with cable TV and satellite providers creating an on-screen grid of the programs available on their services. Radio has had a taste of some EPG-like capabilities with HD Radio, where stations identify songs, artists, programs and even commercials on radios' alphanumeric displays.

EPG for HD Radio should take that to the next level, a future that may be upon us as soon as 2009.

NRSC at DAB

DRB Subcommittee
Wednesday, Sept. 17
1:30 p.m.
Room 17A (on level 4)
Austin Convention Center

NRSC (Full Committee)
Wednesday, Sept. 17
Following the DRB Sub. meeting
Room 17A (on level 4)
Austin Convention Center

The National Radio Systems Committee is sponsored by the National Association of Broadcasters and the Consumer Electronics Association. Its purpose is to study and make recommendations for technical standards that relate to radio broadcasting and the reception of radio broadcast signals. Anyone who has a business interest in the technology being investigated by the NRSC is welcome to join and participate; press are excluded. For information visit *www.nrscstandards.org*.

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Cris Alexander CPBE, AMD, DRB
Director of Engineering,
Crawford Broadcasting

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Designed to transport both compressed and uncompressed linear audio along with voice and data over T1 & IP links, the WorldNet Oslo has the capacity for up to 28 mono channels or 14 stereo pairs.

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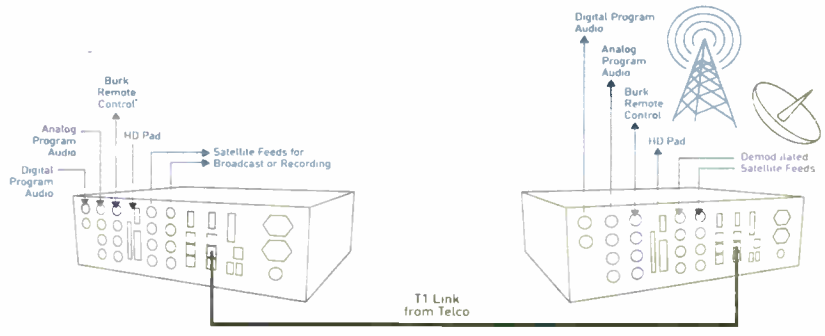
All unit settings can be managed remotely using APT's highly acclaimed Codec Management System (CMS); a powerful graphical user interface that provides extensive configuration, control and fault monitoring capability of multiple WorldNet Oslos and other APT IP Audio Codecs.

"At Crawford Broadcasting, we are currently running the WorldNet Oslo in two markets, Portland and Detroit.

In both locations, our network consists of the APT units running over T1 and conveying both analog and digital program audio from the studio to the transmitter site. We also use the WorldNet Oslo to carry data, including serial remote control, HD Radio Program Associated Data or PAD, and to bring other studio LAN functions to the transmitter site.

KKPZ Portland Studio **Transmitter Site**



In Portland, the station's satellite receivers are located at the transmitter site and so, in addition to the STL functionality, the WorldNet Oslos are also serving as multi-channel backhaul, bringing demodulated satellite feeds back to the studio for air and recording for later broadcast.

We're running Enhanced apt-X® coding which ensures our multiple channels of audio and data will fit easily in the T1 link without compromising the quality of our output. Additional card capacity in the units also enables us to run back-up feeds to the transmitter should the primary source fail.

I've been particularly pleased with the performance of the WorldNet Oslo and the flexibility, reliability and quality it offers."

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World Radio History

Radio Must 'Remap, Reform and Reinvent'

Chris Redgrave Believes the Industry Must Better Sell Personal Ways to Touch Listeners

by James G. Withers

Consolidation and decreasing budgets have taken their toll on convention attendance over the years; and some in the industry have questioned the need for a separate radio show.

Not Chris Redgrave. She's general manager of Bonneville Broadcasting's Salt Lake City cluster, which includes powerhouse KSL(AM), along with three FMs: KSL(FM), KSFI and KRSP. Redgrave thinks the fall show is more important than ever.

"Of course, the natural thing is to intuit that it is a bad time to attend. The economy is tough, budgets are down, so the simple call is not to go."

But that's wrong, she says. "When your intuition says 'Don't go,' that's exactly the time to make the effort and spend the money to attend." Redgrave is a member of the Management Subcommittee, charged with planning sessions and presentations.

Redgrave came up through radio sales but professes an interest in all aspects of station operation, from programming to operations and engineering.

The Millennials

This wide-ranging interest gives her a useful lens through which to assess the state of the industry.

Radio is "in flux," she feels, and this state of affairs will be apparent at sessions in Austin.

"It's all about the 'Millennials,' the under-30 audience. This is the group that radio has to attract in order to remain viable. They are used to instant, one-on-one access, so we are focusing on that at the show; we're all over interactivity."

Chris Redgrave: 'Sales people of the future will understand the changes coming.'

To that end, she says, there will be sessions about the ongoing research into their entertainment habits. "It's really about how to reinvent radio. How to thrive, not just survive."

Redgrave says Bonneville relies heavily on the type of data that will be presented at the show.

"The research on this [demographic] group is excellent and we use that to specifically target them," she said. As an example, she cited her decision to begin offering free, unlimited text messaging to Bonneville listeners in Salt Lake as a way to interact personally. To her, it's just another way to touch her customers.

Is this a great business? Absolutely. But it's all about listener trust.

— Chris Redgrave

"Sales people of the future will understand the changes coming. We've got to go from selling cume and points to selling personal ways to touch listeners ... the approach has to go all the way down to one-on-one marketing. Broadcasters have to look at these trends and have to remap, reform and reinvent to stay with these new listeners."

Digital optimist

Redgrave is also bullish — her word — on the multicasting potential of HD Radio but wishes the FCC had followed the TV example.

"What I wish," she says, "is that HD Radio would be a government mandate. Because [it is] going to be harder without a mandate. It is going to take more time."

Still she says, she and her managers love the potential of the technology, for instance on KRSP.

"We've had a blast with it on 'The Arrow.' Running deeper tracks and new artists. It gives us the chance to develop new formats."

But she still comes back to the "chicken and egg" problem. Since radio

See REDGRAVE page 24 ▶

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World Radio History

Links Look Beyond Part 74 to Part 101

The Evolution of Connectivity in a Consolidated Digital Radio Environment

by Tom Osenkowsky

With the advent of HD Radio and other new technologies, connectivity has become an important issue.

Many transmitter sites are isolated and do not have access to broadband land lines. The need for studio-to-transmitter, transmitter-to-studio and studio-to-studio connectivity in a consolidated, HD Radio environment has brought challenges that present-day FCC rules do not adequately address.

Broadcasters anticipate the FCC will re-examine Part 101 rules with possible favorable amendment to meet the present and future connectivity requirements.

The Thursday morning NAB Radio Show session "High-Bandwidth Capacity RF STL/TSL Connectivity" features Lawrence M. Miller, senior partner of Schwartz, Woods & Miller, and James Moody, senior consultant of James Moody and Associates. They will address the issue of connectivity from a legal and technical standpoint.

Prior to ownership consolidation and IBOC, broadcasters used telco loops or Part 74 STL to deliver programming from the studio to the transmitter. Remote control may have used a subcarrier on the STL for commands and an SCA subcarrier for telemetry return. A composite or dual mono system was used for FM or AM stereo.

With station clusters and IBOC, broadcasters' needs and requirements have increased exponentially.

FCC Part 74 rules are too restrictive and were originally written prior to ISDN, T1, fiber and other technologies. Cluster markets, HD Radio, transmitter-to-studio video security, telemetry monitoring and control and other demands have strained the number of required frequencies.

A single AES audio pair with two channels at 16 bit resolution sampled at 44.1 kHz requires 4.233 Mb per second with 3x oversampling (1.411 Mbps without oversampling) and a single 950 MHz channel does not have sufficient resolution bandwidth to accommodate this.

The demands of HD Radio require an AES stream sampled at a rate of 44.1 kHz and a 400 bps Ethernet stream. The AES stream will be transformed into time-aligned analog and digital audio to be sent to the analog audio processor and IBOC exciter, respectively. The Program Service Data (PSD) will be separately delivered on the 400 bps Ethernet stream. If a Supplementary Program (SPS) and Advanced Application Services (AAS) data are employed, separate deliveries are also required.

While it is possible to deliver these components individually using a 950 MHz STL, no bi-directional path is provided. It may be possible to use a LAN extension in the 902–928 MHz ISM band; however, this spectrum is quite crowded and no protection from interference from unlicensed devices is provided. A minimum of three times oversampling is important to delivery of HD audio which is very bursty.

Wired options are also available, albeit with significant cost. A DS3 circuit is equal to approximately 672 voice-grade telephone lines and is made up of 28 DS1 or T-1 lines each operating at a total signal rate of 1.544 Mbps. Another equivalence would be seven DS2 or T-2 lines.

A DS3 provides up to 45 Mbps of connectivity. There are two monthly fees associated with DS3: the loop charge and the port charge. The loop charge varies with distance from the network and also with providers. Typical costs range from $4,000 to $16,000 per month. An OC-3 optical circuit offers 155 Mbps, or the equivalent of 100 T-1 circuits and has costs ranging from $20,000 to $45,000 per month. Obviously the costs are not reasonable for typical broadcast use, even for multiple co-located HD stations.

Broadcasters may employ Part 101 frequencies. FCC Part 101 rules were originally written for the common carrier industry; however, broadcasters may use certain bands with restrictions.

Available bands include 17,700–18,580 MHz, and frequencies above 21,200 MHz. The restriction is given in 101.603 (a)(7), where it is stated "Licensees may transmit program material from one location to another, provided that the frequencies do not serve as the final RF link in the chain of distribution of the program material to broadcast stations ..." These restrictions are not implemented to connectivity of

See CONNECTIVITY, page 24 ▶

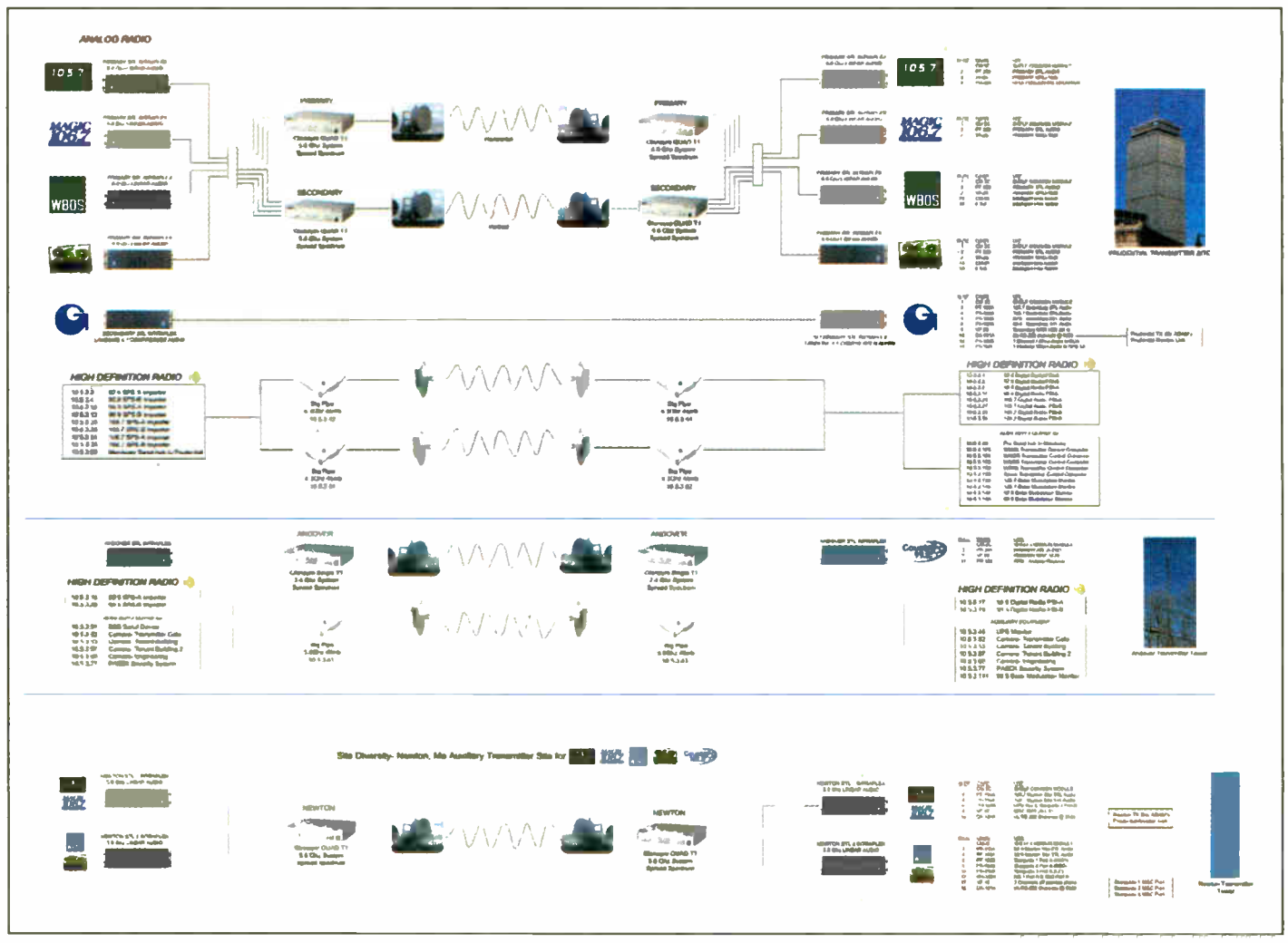

Fig. 1 shows a former multi-station installation used by Greater Media in Boston until interference from other users caused it to be unreliable. To see the detail in this large image, click on Fig. 1 in the online version at www.radioworld.com/nab_stl.

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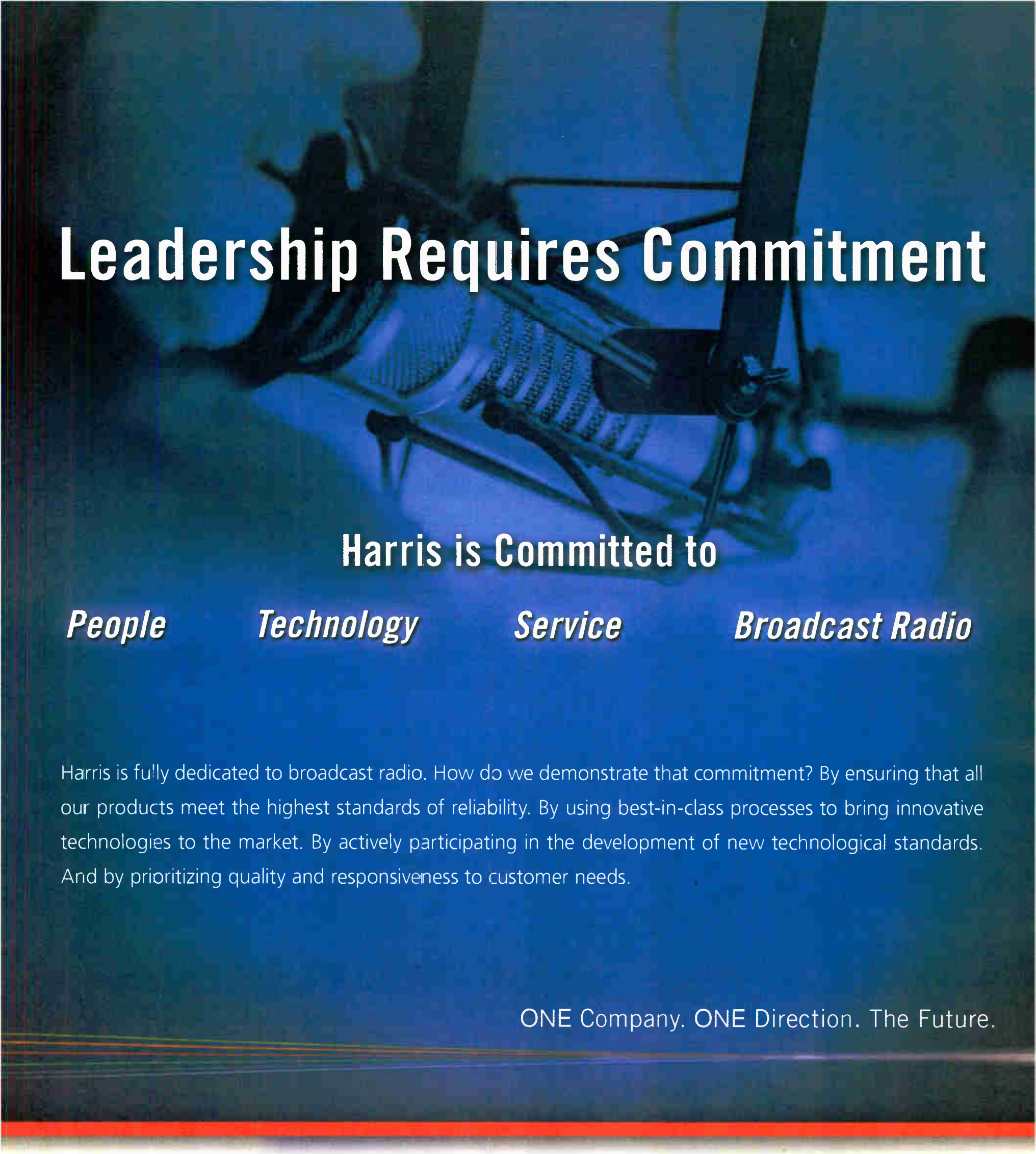

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World Radio History

Connectivity

▶ Continued from page 22

studio to studio or intercity relay circuits. They only apply to the final circuits of RF connectivity carrying program content.

Part 101 frequencies are quite high compared to the more familiar 950 MHz Part 74 frequencies. Antennas, transmission line and path considerations are more critical. The "five nines" of reliability must be considered. This means a goal of 99.999 percent reliability is desired.

Antennas for these bands usually are of parabolic construction. Weight and especially windloading of such antennas must be considered when mounting on a tower or other structure. Sufficient Fresnel Zone path clearance must be present. Path reliability calculations must consider rain fade, *k* factor, fade margins and vegetation growth.

Case in point

Fig. 1 shows a multi-station installation in Boston. This system was in use until interference from other users caused it to be unreliable. A new system, shown in Fig. 2, was designed and implemented, albeit at considerable cost.

Paul Shulins, Greater Media director of engineering in that city, says "This system worked well for a number of years, but as more and more broadcasters got the same idea (especially in larger and more crowded markets), these non-licensed entities started to take interference hits from other users and that made the service unreliable for all of us. Additional bandwidth requirements of HD Radio demanded we explore other options."

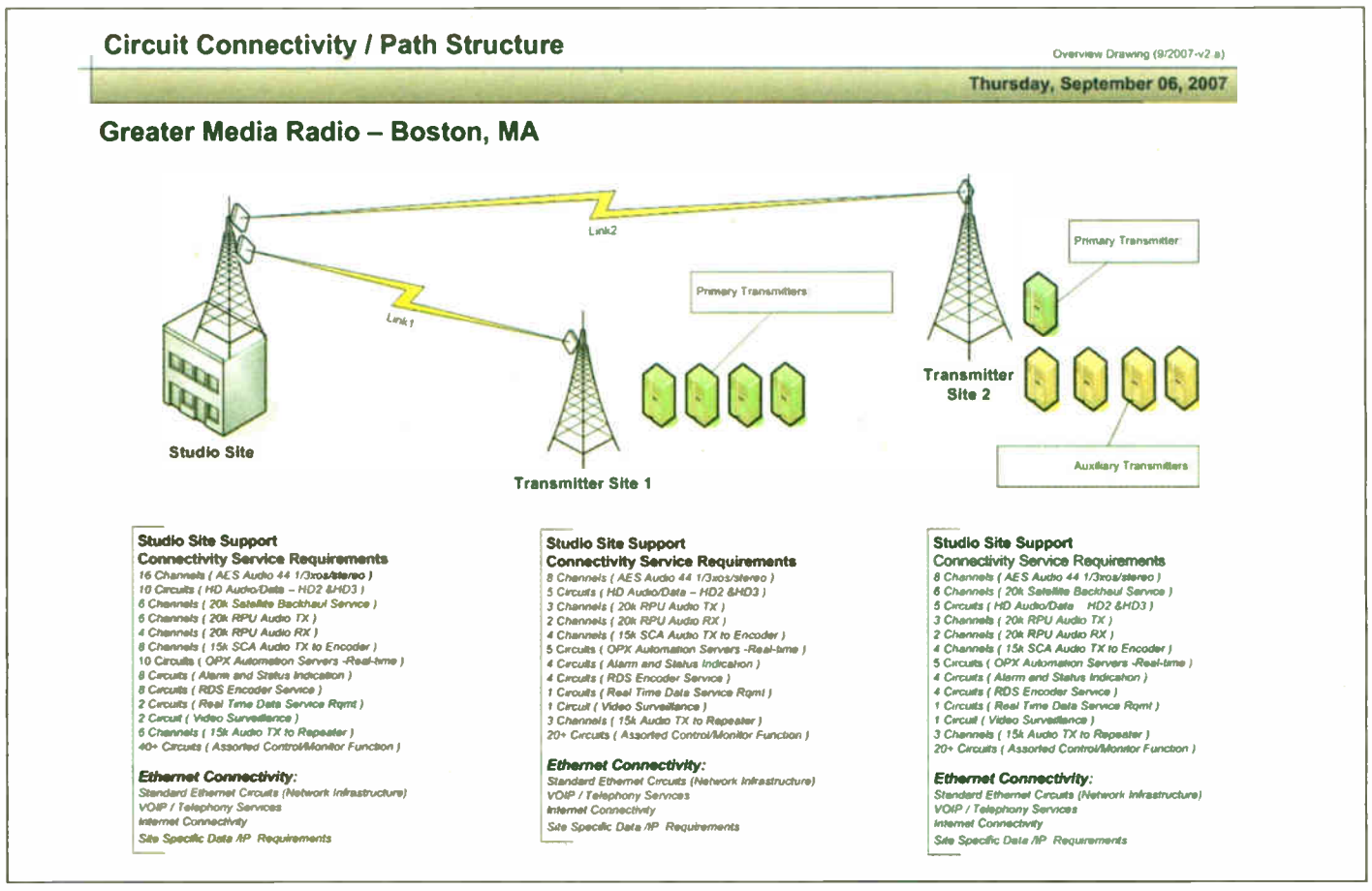


Fig. 2. The new system.

After careful consideration, a new system consisting of Part 101 bands and FCC waivers was constructed. The waivers were required for operation on frequencies where the final link of program delivery was prohibited. The cost factors included research, attorney and consultant fees.

Shulins elaborated, "Although the systems are expensive, and a bit of work to license, the benefits of having a reliable and protected wide pipe between sites can be easily appreciated in today's HD Radio environment.

"We decided that for our facility where we are running five HD2 signals at the same time and from the same place, getting the network traffic from our studio to our transmitter sites was going to require more bandwidth than our existing spread spectrum radios could offer. In 2007, after doing frequency coordination, we ordered licensed radios installed them in late 2007. I have to say that so far, we have had excellent success in terms of reliability and throughput."

Another important consideration is computer network configuration at the studio facilities.

"In some cases segregated V-LAN configurations are becoming necessary to isolate traffic requiring a higher quality of service from routine non-critical traffic," Shulins continued.

"My facility in Boston just went through the process of reorganizing the network to allow for prioritized mission-critical traffic. The process was painful, expensive and involved, because many of the switches and the network infrastructure needed to be modernized. Just about every computer on our network needed to be assigned a new IP address that made sense, and was consistent with our new V-LAN structure."

Tom Osenkowsky is a broadcast engineering consultant and long-time contributor to Radio World.

Redgrave

▶ Continued from page 20

is driven by listening in cars, she says broadcasters need to push automobile manufacturers to make HD Radio available. As that happens, it becomes incumbent on radio managers to exploit that second stream effectively.

"We just have to manage that second stream. We've got to manage it just like the main signal."

In the end, she says, stations must adapt to the environment that new technologies are creating. "We're going to have the radio station (to program), and then a Webstream, and then second and even third channels, and then texting."

People Meter

It really doesn't matter that each of those channels will attract smaller and smaller slivers of audience. To her mind, smaller can mean more dedicated, and her job is to create that dedication in the mind of what she calls the "Super P-1" listener.

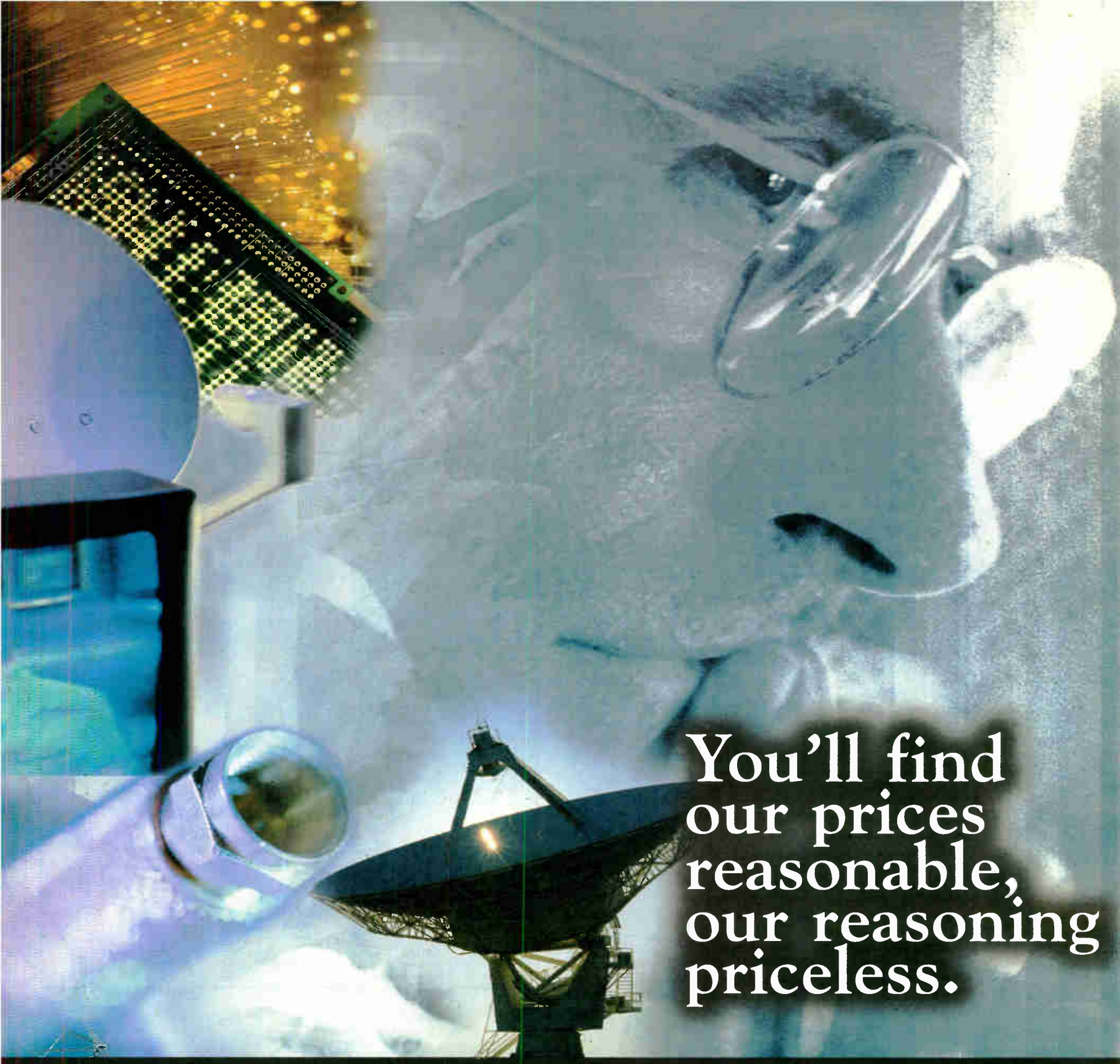
All of these new channels need new tracking methodology, and Redgrave says the Radio Show will feature sessions on Arbitron's new PPM monitoring. "We're looking forward to PPMs," she says. "Arbitron is challenged right now, since they must stay focused on their future business model, PPM, while maintaining the diary system in place."

Broadcasters have to stay proactive during the transition. "Diary markets are challenged. It's tough to keep the old model going while developing the new model, but diaries have seen their time. I'm encouraged that Arbitron is trying to re-invent ... and there are sessions at the show dealing with the issue."

Redgrave also maintains that if you can serve the needs of your targeted listener, your station will be a success, no matter what the economic climate.

"Is this a great business? Absolutely. But it's all about listener trust. The government is all about [stations] supporting communities; but even without that push, that's a huge issue for Bonneville. We constantly ask ourselves, 'What kind of impact can we have on the community?' It's what radio does best. Better than new media, better than television."

World Radio History



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World Radio History

How to Get More for Your Signal

FM Boosters Are Well Established Now, But They Still Present Challenges

by Tom Vernon

Signal expansion is on the minds of many FM broadcasters. For some, boosters are one way to achieve this goal.

FM boosters are similar to translators but rebroadcast the signal on the original frequency. They usually are used to fill in areas within the contour of a station that are blocked by terrain.

Stanley Salek, senior engineer at Hammett & Edison Inc., of San Francisco, will speak on this topic at the NAB Radio Show in Austin. He also delivered papers to NAB audiences about this topic in 1992 and 1996.

Boosters began to appear in the early 1980s but they were limited in power and had to be fed with an off-air signal.

In 1987, the FCC changed its translator rules, allowing higher power and alternative feed methods. In the early 1990s, TFT introduced the Reciter, providing synchronization and time delay adjustment using a combination of analog and digital technology.

As digital techniques evolved, GPS time synchronization was adopted to improve these functions in later booster system products.

System designers need to plan and execute a booster installation properly for it to work well.

"One of the most common problems is not having adequate terrain shielding," Salek said. "If you have line-of-sight from the transmitting tower to both the primary coverage area and the area you want to fill in, booster technology may not be the best choice."

Common errors

Another mistake, according to Salek, is use of a single-polarization antenna on the booster.

"This is usually done as an economy measure, but if your main antenna is circularly polarized, so should your booster antenna."

It is also vital to determine the proper feed and synchronization scheme and implement it in a stable way.

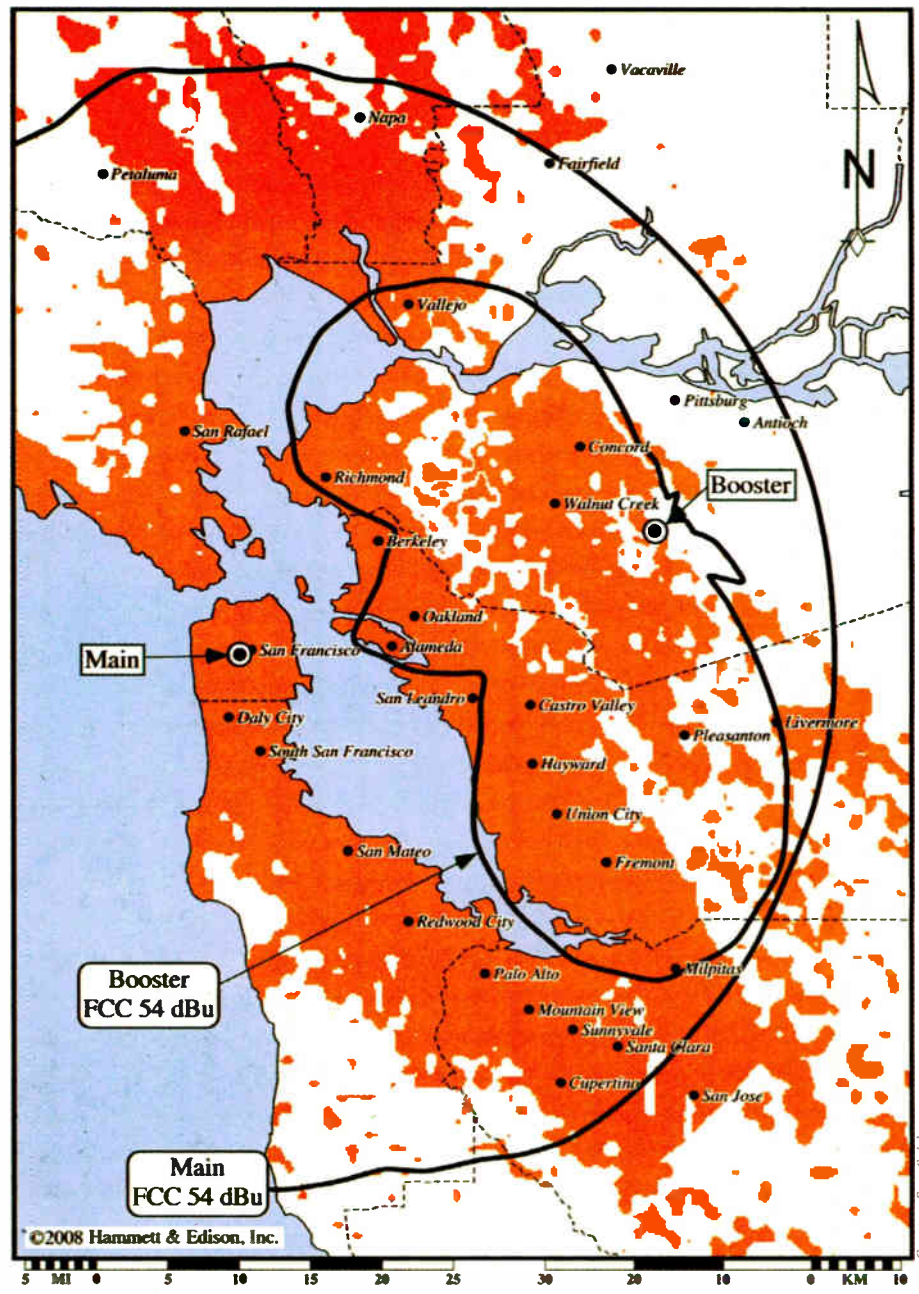
"The main and booster signals cannot be synchronized in all locations, and there will always be a zone of self-interference," adds Salek. "The trick is to place those zones away from populous areas."

In the desired coverage area, there should be a seamless transition so that the main signal trails off as the booster signal increases proportionally.

Salek said geography is key in determining whether a booster will be successful.

"In the West and in parts of New England, there are mountains that clearly shadow areas within a station's contour. In the Middle Atlantic states, there tend to be more rolling hills, and these coverage gaps are not as well defined."

Not surprisingly, there are more boosters in the western states. Although the terrain is suitable for boosters in parts of New England, the technology does not appear to be as widely adopted there.



Representative combined coverage of a San Francisco Class B FM station and booster, part of the multi-station booster system at Mt. Diablo. Shown are FCC contours and projected 54 dBu TIREM terrain-sensitive coverage for combined main and booster stations. The booster typically operates at 185 watts ERP and uses a custom multi-element transmitting antenna. Note the break in coverage over mountainous terrain separating booster communities Concord, Walnut Creek and Pleasanton from the rest of the Bay Area to the west.

Digital

The question of IBOC boosters is being raised more often these days.

Salek notes this is a developing area, with a number of opportunities for research. The concept of single-frequency networks is also being developed.

"Digital techniques offer definite advantages over analog in terms of synchronization," he said.

Salek added that many signal problems are more solvable with digital transmission techniques than analog.

"The time interval between frames of a digital signal allows for multipath before it interferes with symbols of digital signals. That might be exploited in

implementing digital signals over a wider range than analog."

A good rule of thumb is that the ratio of the main transmitter signal to the booster signal should be at least 10 dB at locations greater than 14 miles from the booster and in the direction of the main antenna.

He adds that booster coverage or multiple booster use can be tweaked by the use of directional antennas to protect the main signal.

"Booster coverage in the direction away from the main antenna can be as great as desired, provided the signal conforms to the FCC coverage allocation for the main signal."

As digital synchronization techniques are integrated into booster technology, are analog boosters a thing of the past? Not necessarily.

"System designers with relatively simple, straightforward installations can still use analog boosters, which often offer a significant cost savings over digital."

Validation

Once a booster is installed, its performance should be validated. Salek adds that the best means to do this is with a mobile spectrum measurement system. This usually consists of a spectrum ana-

See BOOSTERS, page 28 ▶

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World Radio History

Radio Moves From CPM to Cost Per Click

Has the Industry Crossed the Divide Into Profitable, Even Mandatory, Use of New Media?

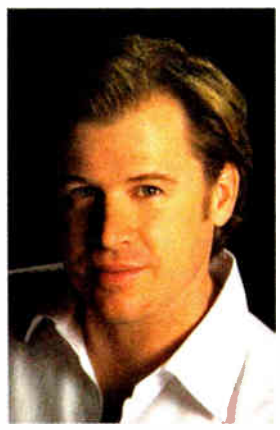
by Craig Johnston

The first-half radio revenue numbers from the Radio Advertising Bureau were not a pretty sight. Overall radio revenue fell 5 percent. In June alone, local and national revenue for all markets fell 10 percent, year over year.

One ray of sunshine was that in the first half, "off-air" or non-spot revenue was up 12 percent. RAB thinks off-air revenue will approach $2 billion annually by the end of this year.

So-called new media falls into that non-spot category. Steve Goldstein, executive vice president of Saga Communications and chairman of this year's NAB Radio Show, said, "One of the visions I had was to develop a whole separate track for new media, so every time there are sessions going on, you can count on at least one panel" devoted to it.

In years past, new media has been touted as a kind of promised land, something that might contribute to the bottom line some day but was just another base that needed to be covered at present. However, a sampling of Radio Show new media session moderators and panelists indicates that new media tools are indeed contributing to radio's revenues and profits.



Zackary Lewis

Steve Goldstein

Ruth Presslaff

Mike Agovino

"I think we've crossed that divide," said Mike Agovino, chief operating officer of Triton Media Group, who will speak at the "New Media Executives Super Session" Thursday. The industry, he said, has gone from "where digital was more opportunistic and experimental to radio, to where the majority of operators are viewing it as a necessity."

Agovino said time is of the essence for radio to ride the new media horse. He pointed to Borrell Associates research showing that in spite of radio's own gains in NTR this year, overall local digital growth is up 20 percent. "From those numbers, I guess we're losing market share on the digital side."

Jim Kerr, vice president for digital development at the Pollack Media Group, will moderate "Creating Radio's Interactive Future" on Wednesday.

"[Digital] is really where you live today. If you don't live there, you should get there soon, because that land's getting bigger while yours is getting smaller."

Complementary business

So is it now time to judge new media by the money it brings in?

"This might be going too far, but money might be the only measurement," said Jim Taszarek, president of TazMedia, who will moderate the "Local Web Sales Success Stories" panel Thursday. "Why have it if it's not going to help us make money somehow?"

None of those who spoke with RW suggested tearing down the terrestrial radio antenna and selling it for scrap. That traditional radio signal and audience are radio's advantages in the new media world.

"We still have ubiquity and the power of the pulpit, the loudspeaker, every day," said Agovino. "So it's up to us to build complementary businesses digitally or new business digitally around that power of the pulpit and our personalities, with the loyalty factors we've got with our audience locally."

One such strategy is to develop listener clubs and other means to acquire a database of listeners.

Ruth Presslaff, president of Presslaff Interactive and a panelist on "Local Web Sales Success Stories," suggested tactics for turning such a database from merely a list of names into a saleable asset.

"[What I'm talking about] is how to dive into your database and find people who are looking to do the kind of thing your client is trying to sell. Do you want to upgrade your kitchen? Do you want to buy a car? Are you looking to bet into a cellular service? Want to travel?"

An additional benefit of such listener clubs, she said, is "finding out who your listeners are so you can make appointments with them to listen to the station, to drive ratings, drive the incidence of listening, which will be huge in the CPM world."

Zackary Lewis, founder and chief executive of Liquid Compass, who will present "Monetizing Your Streaming" on Wednesday, pointed to the ability of listeners to a streamed signal to immediately answer a call to action.

"Users of ad-replacement software can schedule a banner ad to appear simultaneously with the 30-second ad playing [in the Internet audio stream], where the listener can click on the advertisement to go to the offer."

Lewis' Web streaming strategy is part of a bigger picture about the differences between traditional radio sales and new media sales. Where traditional radio has sold on a cost per listener or CPM basis, Pollack's Kerr said Web sales are based on some new acronyms.

"People are looking at things like CPA, or cost per action; CPC, or cost per click. In this kind of world, just delivering the eyeballs, or just delivering the ears, isn't enough. People have to be intrigued enough by the advertisement to click through and see what the person is selling. If they don't do that, you don't make a penny."

TazMedia's Taszarek said new sales packaging is necessary for Web sales. "It's got to be priced high enough to be worth the sales person's attention. It's got to be simple enough that the sales person instantly understands the value of it and is dying to show it to somebody, to an advertiser.

"The problem is that in many cases the seller doesn't understand what we're selling."

Thus the predominance of panels on new media.

"It seems superfluous to have lengthy sessions on how the AC format is doing when all of this other stuff is out there," said convention chair Goldstein.

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Boosters

▶ Continued from page 26

lyzer, GPS receiver, DSP module and associated antennas.

"It is important to verify the measured synchronization point with the calculated point to ensure best performance in the transition area."

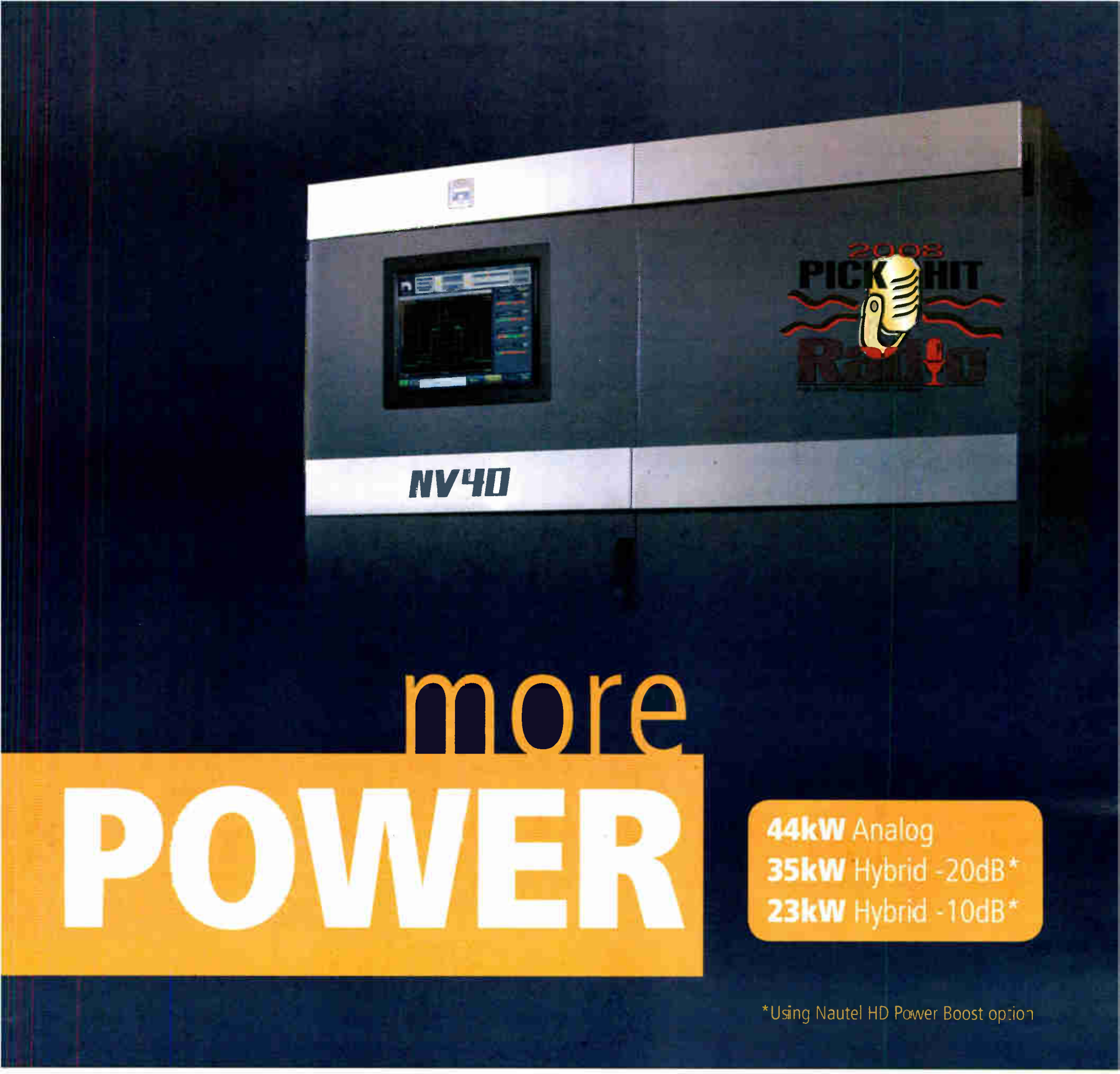
To do this, separate measurements of main and booster transmitting facilities are made, one at a time, along identical measurement routes. Calculated data is then synchronized for position so that facilities can be compared and D/U (desired-to-undesired) ratios can be determined.

An installation where the technology has been successful is Mt. Diablo in the East Bay portion of the San Francisco Bay Area.

Briones Ridge and other area terrain isolate these East Bay communities from direct reception of Bay Area stations that have their transmitter sites located close to San Francisco. Boosters on Mt. Diablo, one of which combines nine stations on a single transmitting antenna system, are able to rebroadcast signals with minimized self-interference.

Salek's session at the NAB Radio Show is "FM Boosters: Opportunities and Challenges" on Wednesday Sept. 17.

World Radio History



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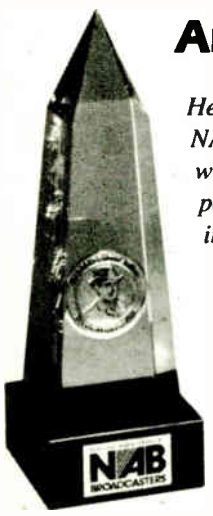

And the Nominees Are ...

Here are the finalists for the NAB Marconi Radio Awards, which honor stations and air personalities for excellence in broadcasting.

Legendary Station
KOIT(FM) San Francisco
KSTP(FM) Minneapolis
WBLS(FM) New York
WBT(AM) Charlotte, N.C.
WSM(AM) Nashville, Tenn.

Network Syndicated Personality
Glenn Beck, Premiere Radio Networks
Bob & Sheri, Greater Media Charlotte
Neal Boortz, Cox Radio/Dial Global
Steve Harvey, Premiere Radio Networks
Kidd Kraddick, Yea! Network

Major-Market Station
KBWF(FM) San Francisco
KIIS(FM) Los Angeles
KOIT(FM) San Francisco
WBLS(FM) New York
WMAL(AM) Washington

Large-Market Station
KOA(AM) Denver
KSDS(FM) San Diego
WEBN(FM) Cincinnati
WLNK(FM) Charlotte, N.C.
WSWD(FM) Cincinnati

Medium-Market Station
KKOH(AM) Reno, Nev.
KSTZ(FM) Des Moines, Iowa
WLAV(FM) Grand Rapids, Mich.
WNCT(FM) Greenville, N.C.
WTUE(FM) Dayton, Ohio

Small-Market Station
KAIR(FM) Atchison, Kan.
KBHP(FM) Bemidji, Minn.
KITX(FM) Hugo, Okla.
KOFM(FM) Enid, Okla.
WGIL(AM) Galesburg, Ill.

Major-Market Personality
Eric & Kathy, WTMX(FM) Chicago
Grandy & Andy, WMAL(AM) Washington
John & Ken, KFI(AM) Los Angeles
Glenn Ordway, WEEI(AM) Boston
Ryan Seacrest, KIIS(FM) Los Angeles

Large-Market Personality
Amos Brown, WTLC(AM) Indianapolis
Bob Conners, WTVN(FM) Columbus, Ohio
Cornbread, WIL(FM) St. Louis
Kelly, Mudflap & JoJo, KYGO(FM) Denver
Moon & Staci, KSTP(FM) Minneapolis

Medium-Market Personality
Corey & Jay, KDJE(FM) Little Rock, Ark.
Tony Gates, WLAV(FM) Grand Rapids, Mich.
Dave Kane, WCMF(FM) Rochester, N.Y.
Jim Villanucci, KKOB(AM) Albuquerque, N.M.
Don Weeks, WGY(AM) Albany, N.Y.

Small-Market Personality
Mark Clark, KRCH(FM) Rochester, Minn.
George & Katie, WAXX(FM) Eau Claire, Wis.
Kate Hayes, KOZT(FM) Fort Bragg, Calif.
JJ Thomas, KOFM(FM) Enid, Okla.
Will & Barry, KITX(FM) Hugo, Okla.

Spanish Format Personality
Diamond Boy Luis, KXOL(FM) Los Angeles
Los Hijos De La Manana, KTTA(FM) Sacramento, Calif.
Marimar, KMYX(FM) Bakersfield, Calif.
Eddie "Piolin" Sotelo, KSCA(FM) Los Angeles
Omar & Argelia, KLVE(FM) Los Angeles

AC Station
KSTZ(FM) Des Moines, Iowa
WJJR(FM) Rutland, Vt.
WLIT(FM) Chicago
WLYF(FM) Miami
WTMX(FM) Chicago

CHR Station
KHKS(FM) Dallas
WKFS(FM) Cincinnati
WKST(FM) Pittsburgh
WNCI(FM) Columbus, Ohio
WSTR(FM) Atlanta

Country Station
KMFX(FM) Rochester, Minn.
KSON(FM) San Diego
KYGO(FM) Denver
KZKX(FM) Lincoln, Neb.
WFMS(FM) Indianapolis

News/Talk Station
KFI(AM) Los Angeles
KKOB(AM) Albuquerque, N.M.
WBEN(AM) Buffalo, N.Y.
WJBC(AM) Bloomington, Ill.
WTMJ(AM) Milwaukee

Oldies Station
KQQL(FM) Minneapolis
WBHF(AM) Cartersville, Ga.
WMXJ(FM) Miami
WNCT(FM) Greenville, N.C.
WOLX(FM) Madison, Wis.

Religious Station
WFMV(FM) Columbia, S.C.
WLIB(FM) New York
WMIT(FM) Black Mountain, N.C.
WTLC(AM) Indianapolis
WVEL(AM) Peoria, Ill.

Rock Station
KBZT(FM) San Diego
KOZT(FM) Fort Bragg, Calif.
WAPL(FM) Appleton, Wis.
WMGK(FM) Philadelphia
WSWD(FM) Cincinnati

Spanish Station
KMYX(FM) Bakersfield, Calif.
KNRV(AM) Denver
KNUV(AM) Phoenix
KSCA(FM) Los Angeles
KTTA(FM) Sacramento, Calif.

Sports Station
KESN(FM) Dallas
KGME(AM) Phoenix
KXNO(AM) Des Moines, Iowa
WEEI(AM) Boston
WGR(AM) Buffalo, N.Y.

Urban Station
WBLS(FM) New York
WFXC(FM) Raleigh, N.C.
WHQT(FM) Hollywood, Fla.
WKYS(FM) Washington
WPHI(FM) Philadelphia

Winners will be announced Sept. 18. The awards were established in 1989.

World Radio History

The Engineering Program at the Show

Here's the full list of engineering sessions at the NAB Radio Show in Austin. Check on-site program information for late changes.

Wednesday Sept. 17

8 a.m. *"Renting AM Towers to Non-Broadcasters — Practical Tips for Managers and Engineers,"* Garrison Cavell of Cavell, Mertz & Associates and Erwin Krasnow of Garvey Schubert Barer. "Many broadcasters overlook the AM tower as a valuable source of additional revenue. Topics include liability issues, leasing 'gotchas,' planning for shared use, understanding each other's needs, FCC consideration and (simplified) technical issues.

9 a.m. *"Psycho Acoustics: Is Jim Loupas Crazy When He Says Branding with Sound Will Make Your Radio Station More Successful?"* with James Loupas of James Loupas Associates. "Branding with sound is a potent weapon in the radio broadcaster's arsenal. Processing is part of it, but not all of it." Five ways you can make your sound a unique brand in the market.

10 a.m. *"FM Boosters — Opportunities & Challenges,"* Stan Salek, Hammett & Edison (see page 26)

11 a.m. *"Advances in Remote Control Technology,"* Tony Peterle, Audemat. "One area that has lagged somewhat behind the technological tidal wave is remote facility control, but that is now beginning to change. This workshop presentation explores the new technology being applied to remote facility control."

1:30 p.m. National Radio Systems Committee meeting

3:30 State of the Industry & Keynote

4:30–8 p.m. Exhibit hall open; reception til 6:30

Thursday Sept. 18

8 a.m. *"Next-Generation IP-Based Audio,"* Tag Borland, Logitek Electronic Systems. "Recently available protocols allow multicasting systems, like digital mixers, to automatically find and select the many settings required for network communication to work. Now is the time to start planning for the coming change."

9 a.m.–5 p.m. Exhibit hall open

9 a.m. *"High-Bandwidth Capacity RF STL/TSL Connectivity,"* Lawrence Miller of Schwartz, Woods & Miller and James Moody of James Moody and Associates (see page 22)

10 a.m. *"HD Radio Measurements Workshop,"* David Maxson, Broadcast Signal Lab. "HD Radio technology and its implementation require an understanding of measurement techniques not familiar to most radio engineers." A look at the HD Radio signal and spectrum, mask evolution, the state of the rules, what is PSD and how do you measure it and analog signals vs. digital.

11:45 a.m. Exhibit floor luncheon

2 p.m. *"The Embedded Exporter Technical Panel,"* moderated by David Layer of NAB, with Tim Anderson of Harris Broadcast, Dan Dickey of Continental, Ted Lantz of Broadcast Electronics and Scott Martin of Nautel. The differences between the previous generation of Exporter equipment and the new Embedded Exporter are explained, with a focus on how this new technology promises enhanced reliability and a greater feature set while lowering the cost of upgrading to HD Radio.

3:30 p.m. Radio Marketplace reception

Friday Sept. 19

8 a.m. *"High-Power IBOC Technical Panel,"* moderated by Geoff Mendenhall of Harris, with Jeff Detweiler of Ibiquity Digital, Dan Dickey of Continental, Ted Lantz of Broadcast Electronics, Gary Liebisch of Nautel, Milford Smith of Greater Media and Mike Starling of NPR

10 a.m. *"The HD Radio EPG Project,"* moderated by Rick Ducey of BIA Financial Network, with Adrian Cross of Unique Interactive, Joseph D'Angelo of Ibiquity and David Maxson of Broadcast Signal Lab (see page 16)

11 a.m. *"Copper Theft at Broadcast Sites,"* moderated by Sterling Davis of Cox, with Bob Brand of Cox Enterprises, Chuck Carr of the Institute of Scrap Recycling Industries and Steve Davis of Clear Channel

The exhibit floor is open 4:30 to 8 p.m. Wednesday (shown, last year's opening reception in Charlotte) and 9 a.m. to 5 p.m. on Thursday.

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World Radio History

Convention Highlights

In addition to technical sessions and selected management presentations discussed in this special section of Radio World, the NAB Radio Show will include several other highlights and notable presentations. For the full list visit *www.nabradioshow.com*.

Tuesday Sept. 16

7–10 a.m. Digital Transition Advisory Program (CPB event for public stations)

10 a.m.–4:30 p.m. *"Mini PREC."* The Association of Public Radio Engineers and NPR Labs technology seminar, free to noncom radio attendees who pre-registered

3–6 p.m. NAB attendee on-site registration opens

4–6 p.m. Meet & Greet Reception

Wednesday Sept. 17

8–11 a.m. *"Broadcast Financing 2008: Opportunities & Challenges"* presented by Dickstein Shapiro LLP; features a discussion of operating and acquisition strategies with Ed Christian, Lew Dickey, Dan Mason, Mark Mays and Joseph Schwartz

©NAB

David Rehr announces Radio 2020 at last year's show.

9 a.m.– 1 p.m. Career Day including a "speed mentoring" event.

3:30 p.m. Keynote by David Pogue, New York Times columnist and technology correspondent for "CBS News Sunday Morning," plus State of the Industry address with NAB President/CEO David Rehr

Keynoter David Pogue

4:30 p.m. Opening reception in exhibit hall

4:30–8 p.m. Exhibits open

Thursday Sept. 18

6–10 a.m. Live from Austin! Kidd Kraddick in the Morning

Amador Bustos

7:30 a.m. *Group Executives Super Session Breakfast* with Amador Bustos, Dick Ferguson, David Field, Dan Mason, Mary Quass and Jeff Smulyan

9 a.m.–5 p.m. Exhibits open

10:30 a.m. *New Media Executives Super Session* with Mike Agovino, Deb Esayian, David Goodman, Marc Horine and Steve Goldstein

Deb Esayian

11:45 a.m. Exhibit Floor Luncheon

3:30–5 p.m. Exhibit Floor Networking Event

6–9 p.m. *NAB Marconi Radio Awards Reception, Dinner & Show.* Hosted by Billy Bush; music by John Arthur Martinez, Sarah Pierce and Seth Walker

Performer Sarah Pierce

Friday Sept 19

7:30 a.m. *FCC Breakfast*

Noon *NAB Radio Luncheon.* Bruce Reese, president/CEO of Bonneville International, is honored with the NAB National Radio Award.

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1-5 high performance mic channels (optional 48V pwr)
One Phone hybrid input channel for Live or Off-line
Cue speaker with amp & Headphone amp for 8 ohms (or Hi-Z)
Logic for source control or Talk studio / announce booth
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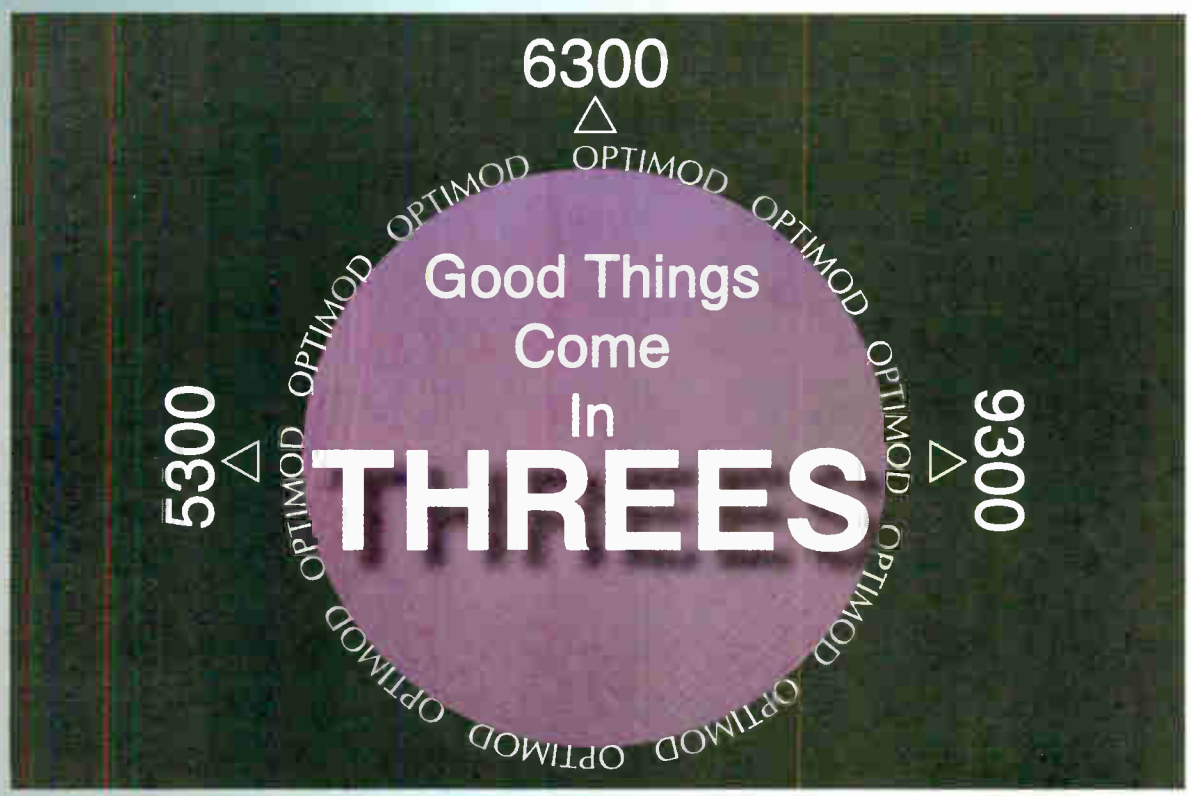
World Radio History

END2END Solutions From SCMS

GET YOUR RACKROOM SOLUTIONS FROM THE DEALER THAT KNOWS RADIO



Optimod-FM 5300 puts coveted five-band and two-band Optimod processing into a single rack unit package and brings it to you at the most affordable price ever. Quality sound is what 5300 is all about-sound that attracts audiences by providing a polished, professional presentation regardless of format and source material.

Three Processors in One. The Orban 6300 is a high-quality, multipurpose stereo audio processor for digital radio, digital television, netcasts, STL protection, satellite uplink protection, and digital mastering.

Orban's all-digital 9300 Optimod-AM audio processor can help you achieve the highest possible audio quality in monophonic AM shortwave, medium wave and long wave broadcasts. Optimod-AM delivers louder, cleaner, brighter, FM-like audio with an open, fatigue-free quality that attracts listeners and holds them.

orban crl

STL

RF Site

Studio

Rack Room

Mid-South: **1-877-391-2650** Bob Mayben
Central: **1-731-695-1714** Bernie O'Brien
West Coast: **1-866-673-9267** Doug Tharp
Mid-West: **1-513-899-3036** Mary Schnelle
South-Atlantic: **1-770-632-1295** Art White
North-East: **1-315-623-7655** Jim Peck
South-West: **1-210-775-2725** John Lackness
North Central: **1-513-376-8600** Pam Leffler
Pro Audio: **1-877-640-8205** Ric Goldstein
Latin America: **1-760- 650-1427** Lily Massari

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www.SCMSinc.com

World Radio History

***Contact* SCMS**
at any of its offices
to discuss your needs

1-800-438-6040

Bob, Ernie, Matt, Mike or Andy
HQ in Pineville, NC

Austin Convention and Visitors Bureau/Andy Schrader

Austin Plays Host To NAB Radio Show

Where to Find Cowboy Boots, Country Music And 1.5 million Mexican Free-Tailed Bats

by Ken Deutsch

This is only a rumor, but we have heard that during past conferences, a handful of NAB attendees took a break from the exhibit floor and informational sessions to get a taste of the towns they were visiting.

Unnamed sources report that in these incidences, live music was heard, local cuisine sampled and the odd shopping spree taken.

None of this has been verified by Radio World, but as a precaution, we are providing to readers planning to attend the NAB Radio Show a guide to what they might expect to find in Austin, Texas.

Getting an earful

There is more than just country music to be found in town, but PBS still broadcasts "Austin City Limits," which airs on over 800 stations. The show, which began in 1982, is recorded at KLRU(TV) on the sixth floor of the University of Texas at Austin Communications Building B.

Most of the shows are taped in spring and summer for broadcasts starting in the fall, but check the Web site, *www.pbs.org/klru/austin* for the schedule.

The newest musical venue in Austin is the Long Center for Performing Arts, which opened this spring. It has welcomed Austin Lyric Opera, Ballet Austin and touring Broadway shows. Another attraction, Austin Music Hall, recently doubled its size. It now offers several bars and restaurants along with the entertainment.

The area's musical heritage includes Stevie Ray Vaughan and Janis Joplin, but there are many new artists on the scene including Bob Schneider, Kelly Willis and Seth Walker. Austin has more than 200 places to hear live blues, country, Latino, folk, punk, indie rock and jazz.

One of the oldest of the country music strongholds is The Broken Spoke on South Lamar, a honky-tonk of the old school. The hippest spot is South Congress Avenue (SoCo), where the Continental Club is found.

Blues aficionados will want to head directly for Antone's, where the likes of Muddy Waters and Buddy Guy have played. Alternative music fans should check out Austin's Red River District, where Stubb's is one of the hot spots.

If one cannot get through the night without Goth entertainment, try the Elysium. Headhunters and Emo's are the best joints to find punk rock and hip-hop.

We're talkin' grub

Driskill Grill is not surprisingly located in the Driskill Hotel on Sixth Street, and it offers multi-course tasting menus and wine. The Four Seasons Hotel Austin features Trio, a steakhouse with a large wine list. Wink Restaurant has a smaller wine list but enjoys a good reputation as well.

One type of dining not found in other cities is mobile kitchens housed in Airstream trailers. There are dozens of these establishments in Austin where one can find a variety of comestibles including chocolate peanut butter mousse, deli food or flapjacks. A few to look for: Flip, Happy Crepes and Torchy's Tacos.

Sandra Bullock owns Bess Bistro, where the special on Mondays is meatloaf. Right across the street from the Austin Convention Center is Moonshine Patio Bar & Grill. And The Belmont on West Sixth Street is known for its roasted chicken.

Would you believe it? Austin has its share of Mexican food! Some of these restaurants include Guero's Taco Bar in the SoCo District, El Sol y La Luna on South Congress and Curra's Grill with its three locations.

No one can say for sure who has the best barbecue, so we'll let you judge. Compare The Salt Lick in Driftwood, about 30 miles from the city, with Stubb's BBQ downtown. Iron Works is right next to the Convention Center and Lambert's calls its cuisine "fancy barbecue."

And don't forget dessert! In SoCo, watch for Hey Cupcake, where the eponymous pastries sometimes sell out before closing time.

Shopping and going bats

The 2nd Street Retail District comprises six blocks around the Austin City Hall. Willie Nelson's nightclub is down there, along with wine shops, boutiques and galleries. Another spot to purchase gifts for the folks back home is The Domain and Domain Crossing, where upscale purveyors Neiman Marcus, Macy's, Tiffany's & Company and 70 other stores are found.

Want a pair of custom-designed cowboy boots? Call on Keeper's Fine Menswear and Heritage Boot, both located downtown.

If shopping is not your thing and you have a rental car, escape into Texas Hill Country or go hiking and horseback riding at McKinney Roughs State Park.

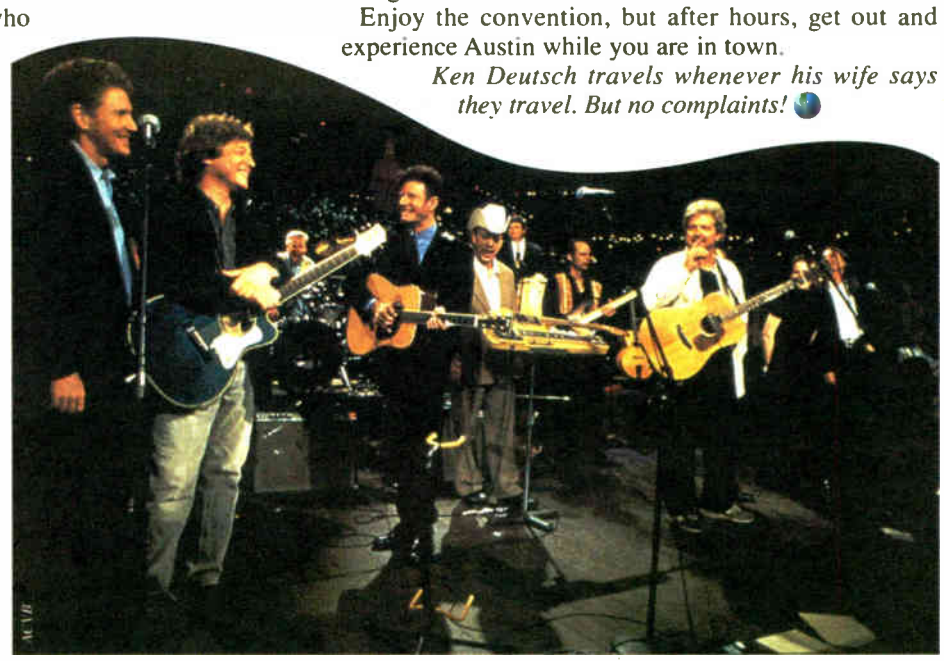
Those seeking the unusual might consider hanging out at the Ann Richards Congress Avenue Bridge downtown to watch 1.5 million Mexican free-tailed bats hit the air at dusk. That show is free every night March through November.

Enjoy the convention, but after hours, get out and experience Austin while you are in town.

Ken Deutsch travels whenever his wife says they travel. But no complaints!

Helpful Sites for Navigating Austin

Bass Concert Hall	*www.utpac.org*
Austin Museum of Art-Laguna Gloria	*www.amoa.org*
Long Center for the Performing Arts	*www.artscenterstage.org*
Second Street Retail District	*www.2ndstreetdistrict.com*
Austin Music Hall	*www.austinmusichall.com*
Domain and Domain Crossing	*www.simon.com*
Austin Convention & Visitors Bureau	*www.austintexas.org*



'Austin City Limits' is a local classic.

World Radio History

Broadcast Software

1-888-274-8721
www.bsiusa.com

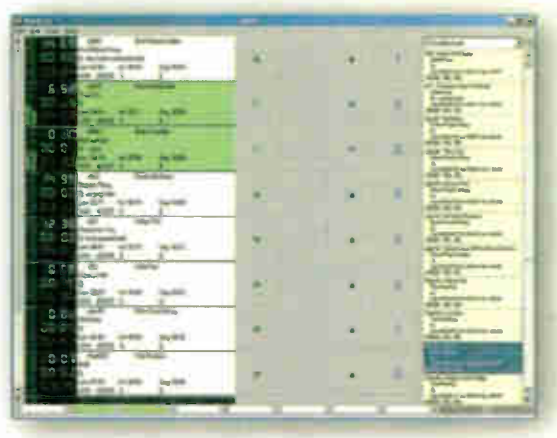
Radio Automation

Simian - radio automation and digital playout system.

Instant Audio

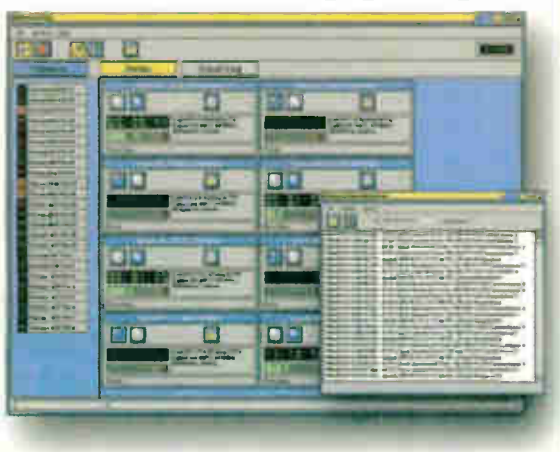
Stinger - Instant Access to 288 'rapid-fire' audio files.

Digital Cart Player



WaveCart - the original on-screen cart machine replacement.

Audio Logging

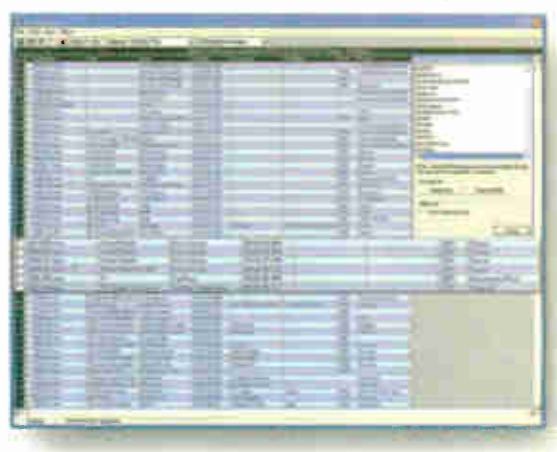


SkimmerPlus - skimming and audio logging with web playback.

Complete Systems

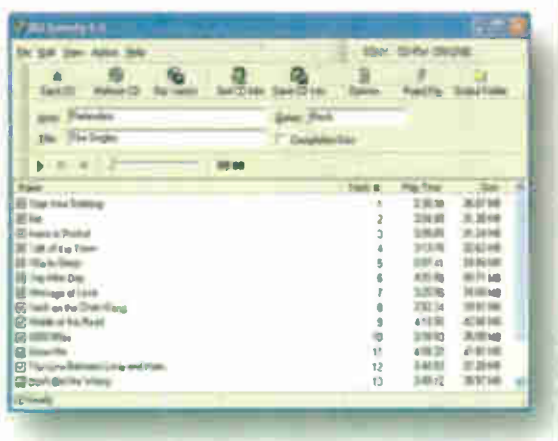
Systems - fully configured with hardware, software and music.

Music Library



MusicStore - select from over 48,000 ready-to-play songs.

CD Ripping



Speedy - fast CD ripping with automatic file tagging.

Sound Cards

AudioScience - professional sound cards built for broadcast.

Remote Control

Trigger & Relay Kits - for GPI/O and satellite operation.

Broadcast Software International
503 E. 11th Avenue
Eugene, Oregon 97401 USA
Direct: 541-338-8588
Fax: 541-338-8656
www.bsiusa.com sales@bsiusa.com

See Us at NAB Radio Show Booth #115

BSI

World Radio History

Can a radio console be over-engineered?

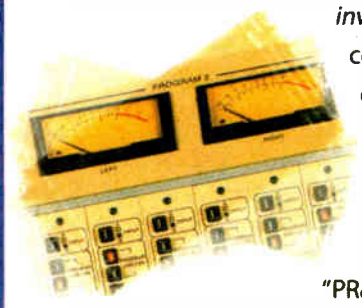
(Only if you think "good enough" really is good enough.)

"OCD" redefined

Building great consoles is more than punching holes in sheet metal and stuffing a few switches in them. Building a great console takes time, brain-power and determination. That's why we've hired brilliant engineers who are certified "OCD": **Obsessive Console Designers,** driven to create the most useful, powerful, hardest-working consoles in the world.

How It began

"20-odd years ago," says Axia President Michael "Catfish" Dosch, "I was designing custom consoles for recording studios. Somebody at **PR&E** – it was still called **Pacific Recorders** then – liked what I was doing and invited me to move there. Work with Jack Williams, the guy who practically *invented* the modern radio console? I jumped at the chance; BMX consoles were ultra-reliable, sounded great, and nearly indestructible!



"PR&E was a dream job. Jack taught me how to design consoles without compromise — how to **over-engineer** them. It's great to see, 15 or 20 years later, that many of the boards I designed are still on the air.

"By the late 1990s, computers and routing switchers were becoming an essential part of the broadcast studio, and I'd been thinking about how useful it would be to combine console, router, and computer network. I shared some of my ideas with Steve Church, who'd introduced digital phone hybrids and ISDN codecs to radio. He thought the same way I did about computers in radio studios, and we decided to work together."

A new kind of console

In 2003, Axia was launched to make digital consoles, but with a twist: Axia consoles would be integrated with the routing switcher, and **networked** to share resources and capabilities throughout the studio complex. This intelligent network of studio devices lets Axia build consoles that are **more powerful** and easier to use than ever.

Our team of engineers blended the best ideas from old-school analog consoles with innovative new technology to produce **bullet-proof boards** that can actually make shows run smoother and sound better.

There's a reason these board-ops are smiling. Axia consoles are in more than 1000 studios worldwide.

And we invented a way to network studios, consoles and audio equipment using Ethernet. It's called **Livewire™**, and it's now an industry standard. Livewire carries hundreds of channels of real-time, uncompressed audio plus synchronized control logic and program-associated data on just one skinny CAT-6 cable.

Lots of well-known broadcast software and hardware companies (over two dozen already) now make products that work directly with Livewire. Thanks to this scalable network technology, **integrated router control** is a standard feature of every Element. Any source in any studio can be loaded on any fader with no need for add-on panels.

And Livewire lets you bring computer audio into the air chain without going through multiple A/D/A conversions. Our **IP-Audio Driver** lets you connect computers directly to the network without any intermediate I/O — all that's needed is a CAT-5 cable and your computer's Ethernet port.

Feature packed

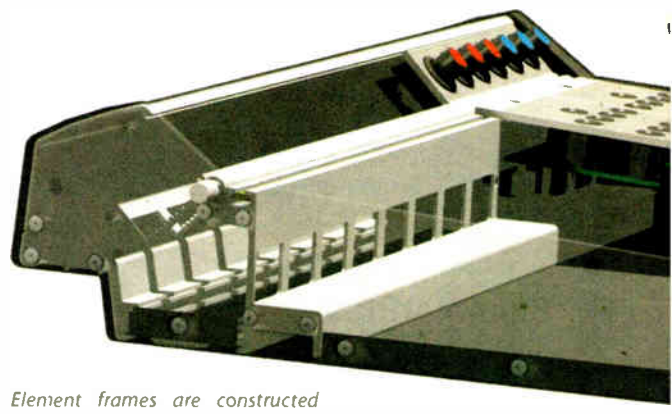
Board-ops told us they wanted a console that's **powerful, yet easy to use.** So we designed Element to be user-friendly, yet still have all the power of a full-on production board.

For example, Element Show Profiles can **recall each operator's favorite settings** with the push of a button — audio sources, fader assignments, monitor settings and more. And each jock's Show Profile contains personalized **Mic Processing** and **Voice EQ** settings that load every time they're on the air (so the midday guy will stop badgering you for "just a little more low end"). There's even a "panic button": one key-press returns a Show Profile to its default state instantly. (No more 3 A.M. "Help!" calls.)

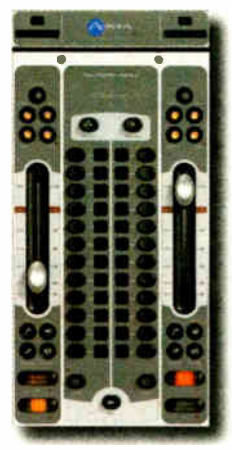
First Axia console prototype. Nice test stand, Catfish.

Did we say "mic processing"? You bet. Every voice channel gets **studio-grade compression, de-essing and expansion** from the processing experts at Omnia, plus three-band parametric EQ to sweeten the deal. There's even built-in **headphone processing** so you don't have to waste money building a separate side-chain just for the studio cans.

Jocks have complained for years that making a mix-minus is too hard — so Element **constructs mix-minuses automatically.** Plus, mix-minus settings are saved for each audio source, so that sources, backfeed and machine logic all load at once. And every fader has a "Talkback" key to **communicate with phone callers,** remote talent or other studios using the console mic.



Element frames are constructed from custom aluminum extrusions for maximum rigidity. Module face plates and console side panels are machined from thick plate aluminum. Even the hand rest is a beefy extrusion. With all thi heavy metal, even that ham-handed overnight jock won't be able to dent it



Speaking of phones, board-ops have enough distractions without having to reach for an outboard phone control panel. Element has **hybrid controls with dedicated faders** for Telos talkshow systems; there's even a **dial pad** so jocks can dial, pick up, screen and drop calls without ever diverting their attention from the console.

Nearly every air talent has accidentally changed a fader's audio source while it was on-the-air. To prevent that error, **Element "queues" source changes**: the operator must turn the fader off before the next assigned source "takes".

World Radio History

The radio console, redefined.

Element was designed to fulfill either a **production or on-air** role, with amazingly powerful features waiting just beneath the intuitive surface. For instance, Element can mix in 5.1 Surround as well as stereo. That's standard; **nothing extra to buy** (except more speakers). There are four stereo Aux Sends and two Aux Returns, so production guys can use their favorite outboard FX boxes. Great for **custom IFB feeds**, too.

Clear the junk out of your studio. Element has 8 submixers built in.

Got a PA mixer tucked away in a studio corner to mix mics for live performers, talk shows and such? Element has **8 Virtual Mixers** — no outboard gear needed. And the Virtual Mixers emulate ACU-1s, allowing tight integration with automation and satellite systems.

You can **administer Element remotely**, from home, the airport — wherever there's network access. A password-protected web server lets you examine the state of the console, see what's on the air and even fix operator mistakes, without ever leaving the comfort of that new Aeron™ desk chair you (ahem) "requisitioned" from the Sales department.

Small VU meters mounted at desk level are hard to read, so we re-invented the traditional meter bridge. Element's **big meters** are presented on an easy-to-read computer monitor along with large analog and digital clocks, event and countdown timers, and tallies that light when mics are open, delay is active, or during phone calls. You can even customize the display by adding your station's logo.

Beneath the surface

There's more to building a great board than just features. **Consoles have to be rugged,** to perform flawlessly 24/7, 365 days-a-year, for years at a time. So when it came time to choose the components that would go into Element, we literally scoured the globe for the absolute best parts — parts that would take the torture that jocks dish out on a daily basis.

First, Element is fabricated from thick, **machined aluminum extrusions** for rigidity and RF immunity. The result: a board that will stand up to nearly anything.

With so many devices in the studio these days, the last thing anyone needs is gear with a noisy cooling fan. That's why Element's **power-supply is fanless**, for perfectly silent in-studio operation.

Element modules are **hot-swappable**, of course, and quickly removable. They connect to the frame via CAT-5, so pulling one is as simple as removing two screws and unplugging an RJ — no motherboard or edge connectors here.

Faders take massive abuse. The ones used in other consoles have a big slot on top that sucks in dirt, crumbs and liquid like the government sucks in taxes. By contrast, our silky-smooth conductive-plastic faders actuate from the side, so **grunge can't get in**. And our rotary controls are high-end optical encoders, rated for more than **five million rotations**. No wipers to clean or wear out — they'll last so long, they'll outlive your mother-in-law (and that's saying something).

Element's **avionics-grade switches** are cut from the same cloth. Our design team was so obsessed with finding the perfect long-life components that they actually built a mechanical "finger" to test switches! Some supposedly "long life" switches failed after just 100,000 activations; when they found the switches used in Element, they shut off the machine after **2 million operations** and declared a winner. (The losers got all-expense-paid vacations to the landfill.)

Individual components are **easy to service**, too. Faders come out after removing just two screws. Switches and rotary volume controls are likewise easy to access. And all lamps are LEDs, so you'll likely never need to replace them.

Engineers have said for years that console finishes don't stand up to day-to-day use. Silk-screened graphics wear off; plastic overlays last longer, but they crack and chip — especially around switches and fader slots, where fingers can easily get cut on the sharp, splintered edges. We decided that we could do better. Element uses high-impact Lexan overlays with color and printing on the back, where it **can't rub off.** And instead of just sticking the Lexan to the top of the module like some folks do, our overlays are **inlaid on the milled aluminum module faces** to keep the edges from cracking and peeling — expensive to make, but worth it. For extra protection, there are **custom bezels** around faders, switches and buttons to guard those edges, too. Element modules will **look great for years.**

By the way, those on/off keys, fader knobs and bezels are our own design, custom-molded to give **positive tactile feedback**. The switch is flush with the bezel, so it's easy to find by touch. But if something gets dropped on it, the bezel keeps the switch from being accidentally activated.

More than just products

Catfish learned something else important from his time at PR&E: "Even the best products are nothing without **great support.**" So Axia employs an amazing network of people to provide the best support possible: Application Engineers with years of experience mapping out radio studios... the most **knowledgeable, friendly** sales people in the biz... Support Engineers who were formerly broadcast engineers. Plus a genius design team, software authors who dream code... one of the **largest R&D teams** in broadcast.

And now Axia has become radio's **first console company to offer 24/7 support**, 365 days a year. Chances are you'll never need that assistance, but if you do, we'll be ready for you. Our 'round-the-clock help line is +1-216-622-0247.

Proudly Over-Engineered

Are Axia consoles over-engineered? **You bet.** If you're looking for a cheap, disposable console, there are plenty out there — but this ain't it. Not everyone appreciates this kind of attention to detail, but if you're one who seeks out and appreciates excellence wherever you may find it... Axia consoles are built **just for you.**

AXIA
A TELOS COMPANY

www.AxiaAudio.com

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World Radio History

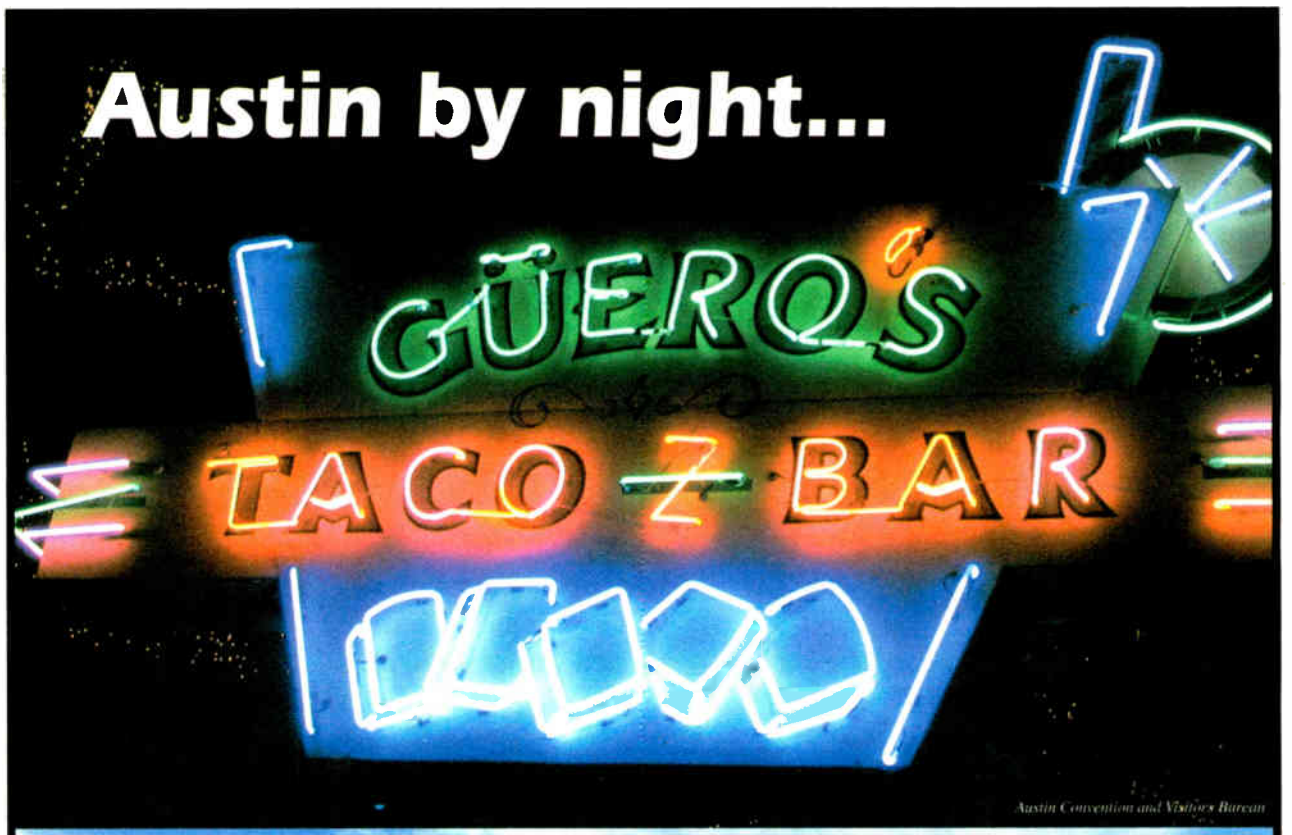
NAB Radio Show Exhibits

The following are exhibitors at the NAB Radio Show in Austin; the list is from show organizers. Late registrants may not be shown; see on-site program information.

Company	Booth
25-Seven Systems	716
Abacast Inc.	710
AEQ	521
Aon Association Services	621
APT	618
Arbitron Inc.	401
Armstrong Transmitter	409
Army National Guard	523
ATI-Audio Technologies Inc.	101
Audemat	525
AudioScience	708
Barix Technology Inc.	327
Belar Electronics Lab Inc.	123
BIAfn Financial Network Inc.	508
BMI	519
Broadcast Electronics Inc.	301
Broadcast Software International	115
Broadcasters General Store	311
Broadview Software Inc.	721
Bruce Williams Show	705
Burk Technology	613
Burli Software Inc.	619
Business TalkRadio Network	707
C. Crane Company	223
CGS Automation	420
Clear Channel Satellite	227
Coaxial Dynamics	414
Comic Wonder	202
Communication Graphics Inc.	505
Comrex	407
Continental Electronics Corp.	501
Davicom, a div of Comlab	713
Dielectric Communications	305
Digigram	624
Double Radius Inc.	622
ENCO Systems Inc.	412
Enticent, Inc.	630
ERI-Electronics Research	609
Federal Communications Commission	330
FirstCom Music	410
Google	419
Harris Corp.	509
HD Radio	725
Inovonics Inc.	616
Interactive Mediums	107
Intertech Media	102
iZotope Inc.	226
Jampro Antennas Inc.	517
Jetcast Inc.	106
Kayou Communications	132
KLZ Innovations Ltd.	105
Larcan USA	200
Liquid Compass Streaming Media	215
Logitek Electronic Systems	617
Mackay Communications	121
Magic Egg Software	110
Marketron Broadcast Solutions	717
Mayo Clinic	530
Media Monitors LLC	204
MediaSpan Group Inc.	711
Moseley Associates Inc.	604
Myat Inc.	108
MySimBook.com	205
Nautel	211
NDS	100
Netia	131
NPR Satellite Services	103
OMT Technologies	512
Orban/CRL	600

Company	Booth
Power-Link/ProofOfPlay.com	116
Propagation Systems Inc. (PSI)	715
Radian Communication Services	531
Radio Advertising Bureau	225
Radio Systems	317
Radio Traffic.com	709
Radio World/NewBay Media	323
RCS	201
Reliable Broadcast Inc.	224
Richardson Electronics	322
Roll a Sign, Div. of Reef Industries	720
S.W.R. Inc.	320
Sabre Towers & Poles	527
Sage Alerting Systems	430
Shively Labs	506
Sierra Automated Systems & Eng. Corp.	411
Sierra Multimedia Inc.	626
Sovereign City Communications	625
Specialty Data Systems Inc.	231

Company	Booth
Staco Energy Products Co.	127
Stainless LLC	426
Stream On!	206
StreamtheWorld	114
Sun & Fun Media	221
Superior Electric	220
Telos Systems	311
Thales Components Corp.	431
The Media Audit	601
Tieline	311
Tinbu LLC	326
Trilithic	130
US Air Force Recruiting	422
Valcom Manufacturing Group Inc.	321
Viero	111
V-Soft Communications	416
Wegener	331
Wheatstone Corp.	413
WideOrbit	425



Austin Convention and Visitors Bureau

ACVB/Dan Herron

World Radio History

Scrap your remote van and report about it. Live!

Portable Reporter Codec

Extremely small & light, the Sporty Portable Reporter Codec can transmit from anywhere, to anywhere, while simultaneously recording to USB sticks or SD cards. Sporty is a robust, portable 4 channel studio with the most modern MPEG-4 HE AACv2 and AAC ELD audio formats: providing "High Quality" & "Low Latency" at the touch of one button with high capacity battery life.

Thanks to MAYAH's unique FlashCast™ technology and full support of the EBU Audio-over-IP standard, Sporty is able to automatically connect to almost any audio codec. Ideal for situations where the destination codec is unknown.

While offering both, traditional POTS and ISDN, Sporty also opens the way to a whole new world of network connectivity by adding WLAN, UMTS/3G and Ethernet. Now you really can transmit your reports home from almost anywhere in the world!
Say Hello to Sporty and Good-bye to your remote Van!

MAYAH Communications
Daniel Loeffler
North American Business Development
Bellingham, WA 98225
dloeffler@mayah.com
DIRECT: (360) 618 1474
CELL: (408) 429 5177
FAX: (408) 907 2020
www.mayah.com

MAYAH COMMUNICATIONS

See US at the NAB Radio Show Booth #718

World Radio History

C'mon Baby Light My Arc Detector

by John Bisset

No, Rick Levy of Boston's Broadcast Signal Lab is no fire bug — but it sure looked that way to restaurant patrons as he lit the flame of a butane lighter to test out Burk Technology's AFD-1 Arc and Flame Detector.

Rick's company (visit *www.broadcastsignallab.com*) coordinates a regular luncheon meeting of Boston broadcast engineers. For the demo, we placed Rick and the flame about 20 feet away from the device, shown on a table in Fig. 2. The blue LED lights when an arc or flame is detected. A Fluke DVM was set up connected to the output of the device, sounding an "aural" alarm when it sensed the flame.

Sure enough, the blue LED lit and the DVM sounded almost immediately when Rick lit the lighter. As he walked around the dining area, the AFD-1 sounded each time the flame appeared.

Setup of the device is simple, using a five-pin Phoenix connector. A selector switch adjusts sensitivity, to cancel interfering background levels. The device comes with an industrial-strength Velcro-brand hook and fastener square for easy mounting to most clean surfaces, without needing to drill mounting holes.

Although this sensor doesn't take the place of smoke and fire detectors, it can provide helpful feedback via remote control, when used to monitor spark gaps, RF contactors, AC contactors and even dummy loads.

You can get more information by heading to Burk's Web site *www.burk.com*. The product won a "Cool Stuff" Award last year; you can watch a Coolcast video demo at *radioworld.com/coolcasts/archive/2007/*.

★ ★ ★

Fig. 1: Rick Levy 'flicks his Bic' to test Burk's Arc and Flame Detector.

Fig. 2: The AFD-1 senses the flame from across the room to trigger an alarm.

I received a number of comments about Harry Bingaman's find of an LED cap courtesy of L.L. Bean.

Edd Monskie, vice president of engineering for Hall Communications, uses one during hunting season, walking in the woods before sunup. So they're not just good for entering a transmitter building during a power failure.

Edd offers another suggestion. If you happen to have a favorite hat, you can use a clip-on light assembly that fits any hat brim. This assembly works the same as the built-in system, but the assembly clips on and off as needed. You can find them at any hunting or fishing supply store, even the outdoor recreation department at Wal-Mart.

Edd Monskie can be reached at *emonskie@hallradio.com*.

★ ★ ★

Since Harry Bingaman scored such a home run with the LED cap, I thought I'd include one of his favorite Web sites; and it is intriguing.

Harry's always been fascinated by advancements made in robotics; the video shown at the Boston Dynamics site will blow you away.

Visit this site for an introduction to The Big Dog: *http://tiny.cc/ExtZL*.

Isn't electronics great? Even on ice, the Big Dog slipped a little, but never fell down. Can you imagine that computer running overtime to keep the Big Dog upright? And we think *we* have challenges with computers. Also browse that site for other videos.

Thanks, Harry, for sharing such a neat site. Harry is chief engineer for the Sunbury Broadcasting Corp. in Pennsylvania. He's at *kc3qhhmb@aol.com*.

★ ★ ★

See WORKBENCH, page 45 ▶

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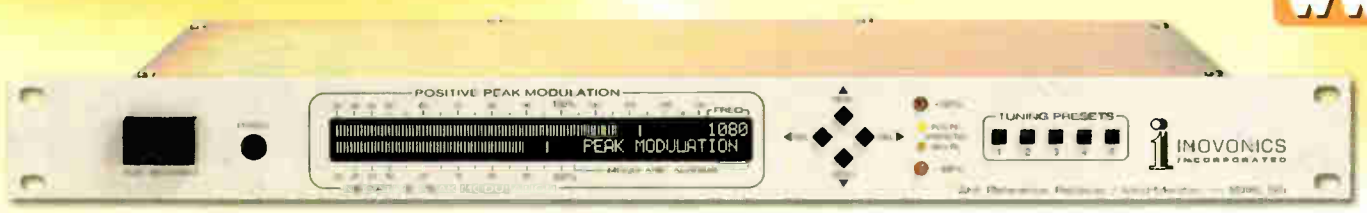

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World Radio History

Get Ready for the New Marketplace

Soon Two Major Changes to the Digital Broadcasting Environment Will Take Effect

by Skip Pizzi

There are always plenty of unknowns in the ongoing digital transition faced by U.S. broadcasters, but we can count on at least two upcoming elements happening with some certainty.

One is the completion of the DTV transition with the analog TV shutoff in February 2009. The other is the satellite radio merger, the real effects of which will also begin to be felt sometime next year.

Both of these events have some impact on the terrestrial radio marketplace, so let's examine them closely. We'll start with the latter, since it's a bit closer to home for radio broadcasters.

Single-bullet theory

How will the world be different with only one satellite radio operator instead of two?

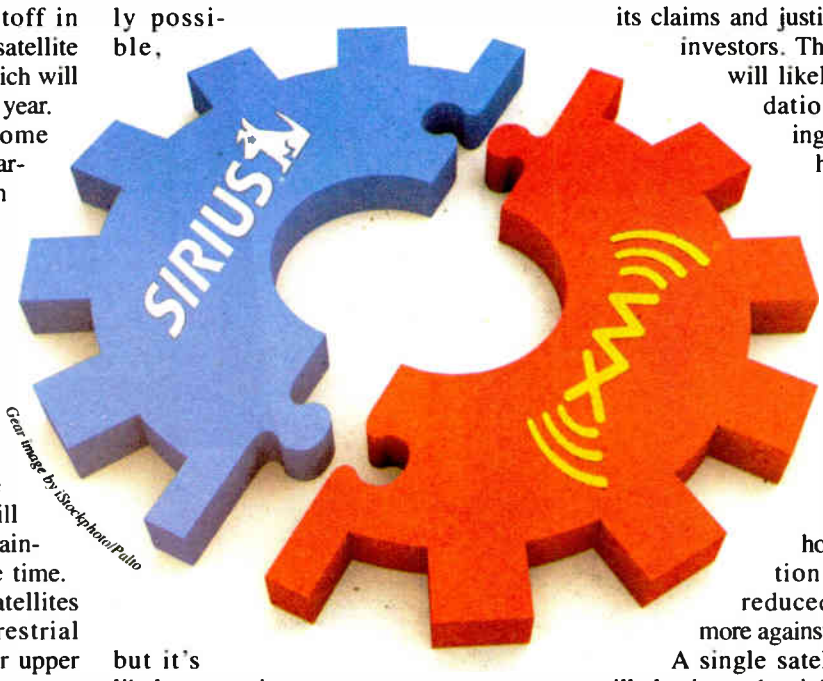
Well, first remember that the merger is really just a corporate one to start. Technically, there will still be two separate systems remaining in parallel operation for some time. The former XM geostationary satellites and their large network of terrestrial repeaters will still operate in their upper half of the satellite radio spectrum (2332.5 to 2345 MHz), as will the former Sirius highly elliptical-orbit (HEO) satellites and their (smaller) network of repeaters in the lower half (2320 to 2332.5 MHz).

It is also likely that XM's channels will continue to use the AAC codec, while Sirius maintains its use of (Ibiquity's) PAC algorithm.

Although consumers will be able to subscribe to channels from both services on a single account, the full value of this service (and thus its real competitive market impact) will not be felt until a common receiver becomes available — this is the part referred to above that will probably happen next year.

Note that this radio will require a front end that can demodulate both systems' RF (meaning it will need to handle both satellite and terrestrial signals from each), and decode two audio coding algorithms, plus two versions of metadata. Such receivers also will have to physically authenticate to both formats, as well (assuming the user wants services from both, which was touted as one of the primary consumer benefits of the merger).

All this is certainly possible,



Gear image by iStockphoto/Palto

but it's likely to require a much more expensive receiver — at least in the early going. Since satellite radio receivers have always been subsidized by the providers, this is likely to be no exception. It is therefore going to cost Sirius XM more per unit, since consumers will probably not be willing to pay much of a premium for such a device.

It's also likely that regulators would not look favorably on a wide pricing differential between single- and dual-system receivers going forward, and in fact, they may expect that the converged receiver becomes the norm, not a high-end exception.

So Sirius XM's CPA — Cost Per Acquisition — could rise substantially for new satellite subscribers. Add this to the ongoing expense of managing both delivery systems (including the replacement satellites that will soon be required for each), paying off the cost of 1.5 years of lobbying for the merger, and the nearly $20 million levied against the company in its Consent Decree settling the FCC complaints against its terrestrial-repeater and Part 15 receiver violations.

What will competing against this new company be like, then? It's quite likely that the merged satellite radio entity will be a tighter ship, running leaner and meaner than ever, as it attempts to prove its claims and justify the merger to its investors. This means that there will likely be some consolidation in service offerings, and therefore perhaps somewhat less choice for listeners.

Promotional expenses are also expected to be sharply curtailed — another point made in defense of the merger. Since now terrestrial radio will be its primary competitor, however, those promotion budgets, while reduced, may be targeted more against local broadcasters.

A single satellite radio operator will also be under tighter scrutiny by regulators, particularly in the event of an upcoming administration change next year. (Had Democrats been in the majority at the FCC now, the merger would likely not have been approved.) Thus Sirius XM will suffer from somewhat reduced agility in the marketplace.

Consider also that the story is far from over. The merged entity will still have plenty of red ink on its balance sheet, and expectations are now raised for a quicker path to profitability.

Certainly Wall Street has not been impressed with the prospects of the merger so far. Perhaps this is a factor of dilution of impact over time, with the multiple steps and lengthy process involved in the merger's approval. Yet some bump-up might have been expected with the final approval's announcement, and this did not occur. Further, this implies that now only a *single* company has to fail for satellite radio to give up the ghost (at least in its current guise).

So overall, these developments can be seen on balance as potentially beneficial for terrestrial radio. This could lead one to question why NAB fought so hard against the merger.

But rather than focus on hindsight, a more important forward-looking concern here is what impact the NAB's failure to prevail on the issue will have on terrestrial broadcasters' legendary lobbying clout.

The Big Picture

Photo: Gary Hayes, BBC

by Skip Pizzi

Does this signal that NAB's star is fading, or that its retro-protectionist strategy is becoming outdated? Is it an indication of the relative effectiveness of the current leadership there? Or is it simply another case of the "you-win-some, you-lose-some" environment that has always existed in D.C.?

Certainly there is still plenty on NAB's plate for continuing advocacy on behalf of the broadcast industry, but after so much expenditure from its war chest on a losing cause, some strategic rethinking may be underway there.

Multicast momentum

Another more tangential element on the road ahead involves a component of the DTV transition. As U.S. analog TV is shut down and DTV becomes the sole form of terrestrial TV broadcasting, multicast DTV channels will become nearly as available as standard channels.

Although cable and satellite TV systems are not required to carry them, many are doing so voluntarily. Moreover, the many government-subsidized DTV converter boxes that consumers are now installing on their over-the-air TVs provide these "instant new channels" to users — often a surprise bonus to consumers, which may more than double the channels formerly available to those receivers.

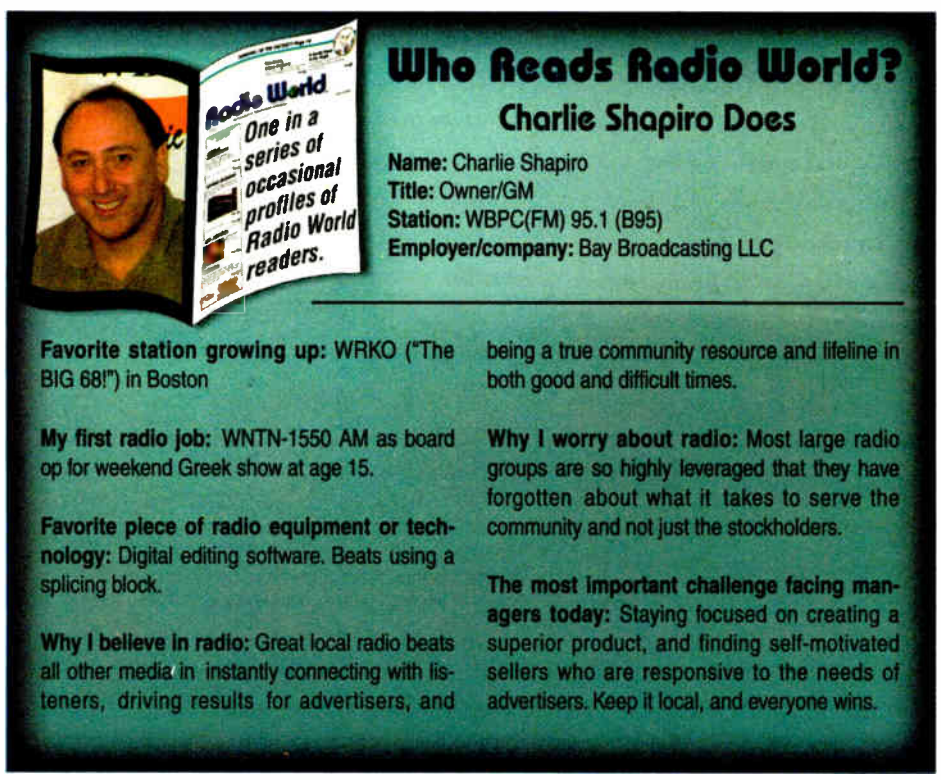
Thus in relatively short order, multicast DTV channels will be almost as accessible to U.S. viewers as broadcasters' primary TV channels are. Compare this to the still fairly rare availability of multicast channels to U.S. radio listeners. Such is the downside of radio's *voluntary* conversion.

While multicast DTV channels are not directly competitive with radio services, they do provide that many more new services to local audiences to occupy their media consumption time. (A number of these new TV channels provide full-time local weather information, however, which could be considered directly competitive to local radio service.)

It's just another way to slice the pie into even smaller pieces, providing more food for thought as the digital transition rumbles along.

Skip Pizzi is contributing editor of Radio World.

While multicast DTV channels are not directly competitive with radio services, they do provide that many more new services to local audiences to occupy their media consumption time.



World Radio History

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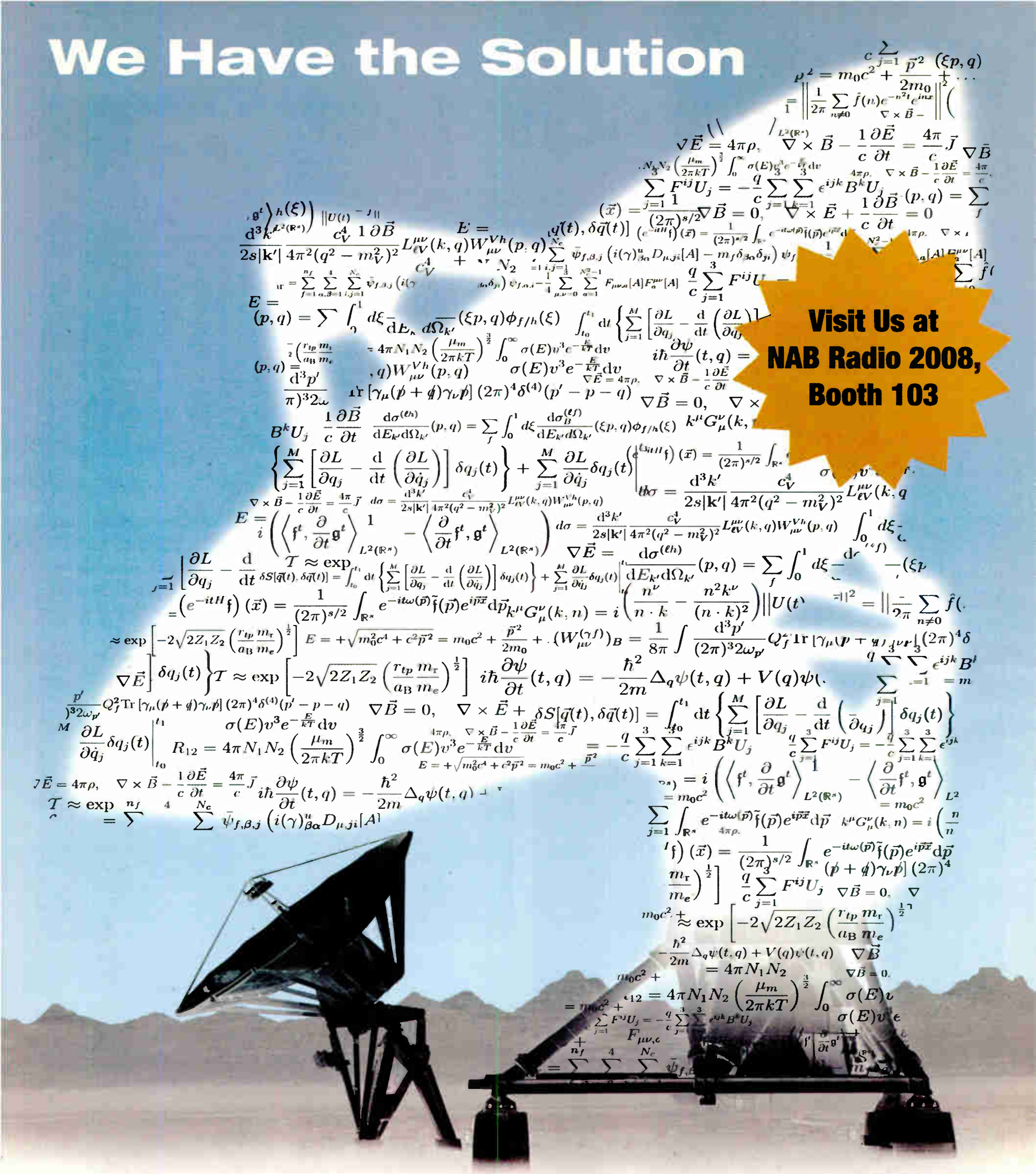

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World Radio History

FIRST PERSON

LPFM: Like It or Not, They're Here

Engineers, It's Worth Our Time & Effort To Get to Know These Folks

by Tom Adams

A lot of broadcasters including the National Association of Broadcasters objected when the FCC proposed a low-power FM broadcast service.

Dire predictions of unbridled interference and irresponsible operation have been around ever since the NPRM was released.

Now that LPFM is a reality, some folks are still pretty upset.

I'm an engineer. I deal with the *real* world of broadcasting. I leave issues like this to the folks who scurry off to their offices in a suit and tie every day.

While I have some concerns about technical standards and potential interference issues, most of the rhetoric strikes me as at least a little bit disingenuous, sometimes to the point that I'm looking around to see where I stashed my hip waders.

The Mr. Carlson clones who inhabit the front office need something to worry about and this is as good as anything else; but the fact is that, unless the new low-power licensees do some really stupid things, LPFM is here, and it's here to stay; just deal with it.

Opportunity

I had an interesting experience with LPFM and came away seeing it as a real opportunity for broadcast engineering professionals that can pay off big.

I'm in Madison, Wis.; Mad City is a place where all sorts of activism and enthusiasm are the order of the day. Combine that with a diverse, talented population and the raw, youthful energy of a large number of university students, and things are gonna happen.

I wasn't too surprised to receive a call from a friend at the local community station, where I'm a consulting engineer.

He needed help. It seems that a local group he'd adopted had been granted an LPFM license and they were setting up their transmitter site. It wasn't going well. Could I look things over?

"Interesting," I said, raising my best Mr. Spock eyebrow. Sure, I'd be glad to drop by.

I've seen a lot of transmitter sites in my time. My philosophy has always been that old chestnut KISS, because the more stuff you've got at a site, the more there is to fail and put you off the air. Minimalist design is its own virtue.

What I saw at the newest wannabe FM in town caused me to smile with both pleasure and amusement.

More than the sum

Remember the old Mickey Rooney and Judy Garland movies? About halfway though, Mickey would say "Hey kids ... Let's put on a show out in the barn!" Imagination, improvisation, talent and enthusiasm always pulled it off.

That's what I saw here. These LPFM folks have the Fire in the Belly but they don't have a whole lot of money to throw at problems.

In a corner of a garage I saw a discarded four-foot relay rack that housed an old stereo FM exciter, an older (like 20 years' worth) Orban decibel squasher, a nondescript personal computer and a small UPS.

I was told this isn't the *whole* transmitter; they're waiting for the FedEx man to deliver a 100 watt RF power amplifier. Other upgrades, in the antenna system, are planned.

Photos by Norm Stockwell

Norm Stockwell installs the antenna.

Volunteers confer during station set-up.

A 5/8-wave ground plane is stuck on a section of TV mast on the garage roof, fed with RG-214. Soon it's going to be raised to the authorized maximum height — all the way up to 36 feet HAAT.

I like it. This station takes minimalism to the extreme. There's almost nothing here *to* fail. It's simple and easy to maintain; it can be made pretty bulletproof without a lot of work or expense.

The PC provides the transmitter operator with remote control via dialup modem. Interestingly, it also provides the programming.

Around town there are a number of folks who want to be on radio. They don't have access to a station or the knowledge and skills to set one up. What they need is just a place to put their point of view on the air.

What they do have is the means to assemble a small production studio: a couple of mics, a mixer and a PC tucked away in a basement or a corner in some student apartment.

These folks will be putting together their programs as sound files and uploading them to the transmitter site PC via the Internet. The PC's scheduling software will retrieve and play the files back at the appropriate times.

I'm impressed.

Cooperation

A quick pass at the transmitter and antenna system with a TDR and Bird, some minor tweaks and setting a few DIP switches made things right. The PC pulled up a test file of Broadway show tunes and ID announcements, and a happy bunch of newbie broadcasters took to the air with an earthshaking 30 watt signal.

It's worth our time and effort as engineering professionals to get to know these folks.

Suppose an interference problem cropped up that involved these guys? Who do you think will get the most coop-

See LPFM, page 45 ▶

See Us at the NAB Radio Show Booth #527

World Radio History

Workbench

▶ Continued from page 40

David Matthews, president of Bradley Broadcast Sales (*www.bradleybroadcast.com*), offers thoughts on the Aug. 1 *Workbench* column mentioning a solution for excessive B+ and filament voltages in a prototype tube-type processing amplifier.

To reduce the B+ voltage significantly, change the power supply design from capacitor input to choke input. A supply with a capacitor-input filter will give you a B+ of about 1.4 times the RMS voltage on the secondary winding. A choke-input filter will give you about 0.9 times RMS voltage.

So in this case, (0.9/1.414) = 0.637 of the original 550 volts DC, which brings it down to 350 volts. By doing this, you also gain very tight dynamic regulation of the B+ supply — enough so, that in many tube audio amplifiers you can hear an obvious improvement.

You can also take the capacitor previously being used in front of the choke (or resistor), and parallel it with the one behind the choke, giving you better peak current capability.

Many people forget that the only reason capacitor input filters gained widespread use was simply for cost/size/weight reasons, David says. It meant that you could get higher DC voltage without a bigger transformer, and you could substitute a cheap power resistor for the series choke. This expedient was economical, but not at all the best design choice from an audio quality standpoint.

On the filament supply, you may notice that once the secondaries (both HV and LV) are under actual operating load conditions, the filament voltage may drop quite a bit on its own.

Also, remember that the filament voltage rating is in RMS volts. If your AC voltmeter reads in peak volts, your 6 Volt RMS winding would be expected to measure as (6 x 1.414 = 8.48 volts), so you might already be in the right neighborhood.

If it turns out that you need to drop the filament voltage a bit, you could get two silicon rectifier diodes, wiring the cathode of one to the anode of the other and vice versa, then place that combination in series with the filament line. For each pair of diodes like this, the voltage drops around 0.6V.

Remember to size the diodes for several times the expected filament current (to account for the high current inrush at cold start), and/or make part of your voltage dropping solution a series power resistor.

David wraps up with an important safety note. If you are using the 24V buck/boost solution suggested in the original *Workbench* article, be aware that the insulation on the 24V winding may not be adequate to safely make this winding part of the primary circuit connected to the AC mains.

One good spike on the AC input, the insulation fails, and you could end up with an unwanted surprise — perhaps line voltage on the frame of the transformer and thus on the cabinet of your amplifier. Not a happy ending.

Thanks, David, for the suggestions and tutorial. David Matthews can be reached at *dmatthews@bradleybroadcast.com.*

John Bisset has worked as a chief engineer and contract engineer for 39 years. He is the northeast regional sales manager for Broadcast Electronics and in 2007 received the SBE's Educator of the Year Award. Reach him at (571) 217-9386 or jbisset@bdcast.com. *Faxed submissions can be sent to (603) 472-4944.*

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

LPFM

▶ Continued from page 44

eration in resolving it: a strange (and more than likely a little bit irked) chief engineer who suddenly shows up at their door? Or the friendly, helpful guy who gave them a hand getting on the air in the first place?

If you help these people get set up, or to get back on the air when they have problems, you've got a foot in the door. You'll *know* their RF systems intimately, and you'll be able to use that knowledge to clear up any future problems.

The LPFM operators will gain from it too; your skills and experience will make their operation more likely to conform to the both the spirit and the letter of the regulatory law.

Don't ever sell short the value of your mentoring.

We all know that people interested in working with RF systems are getting to be few and far between these days.

How about that high school kid who looks over your shoulder every time you tweak the LPFM transmitter? Does he have the smarts and ambition needed to help *you* out part-time? Is he a likely candidate for the next generation of transmitter men?

Some folks will see the arrival of an LPFM to your neighborhood as the End of Civilization as We Know It; but it can be a win/win situation if you let it.

As for me, right now I'm going through my stuff for a coax surge suppressor and a scrap of copper grounding strap to add to the LPFM's transmission line. Maybe I'll even drag out three or four sections of used Rohn 25 that I have lying around.

Adding that to their antenna system might make it a bit more lightning-proof, and maybe even get a decent signal out to 3 or 4 miles ...

Tom Adams is a longtime ham and SWL, occasional consulting engineer and staff engineer with Wisconsin Public Radio & TV Networks. Write him at tadams@ecb.state.wi.us.

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

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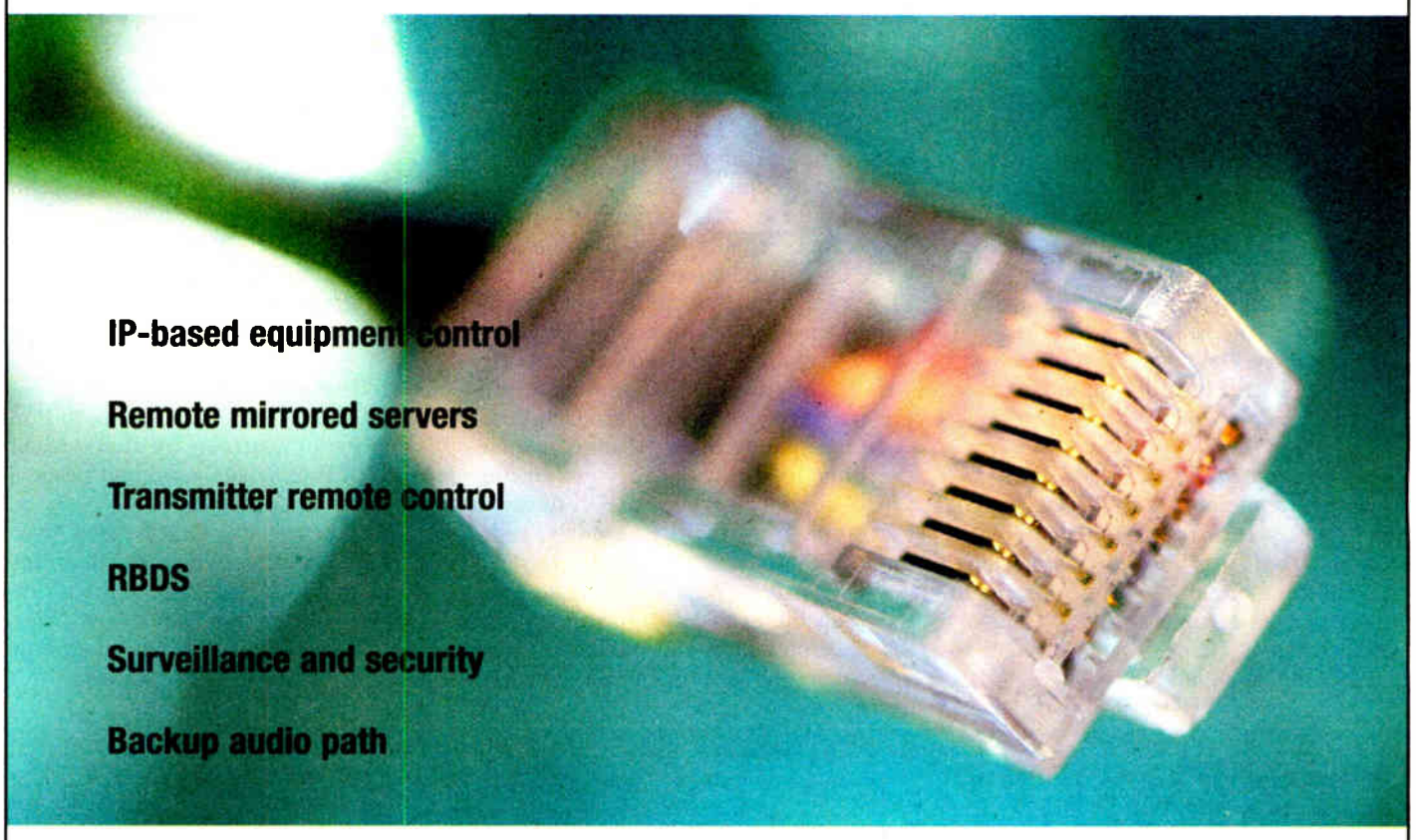

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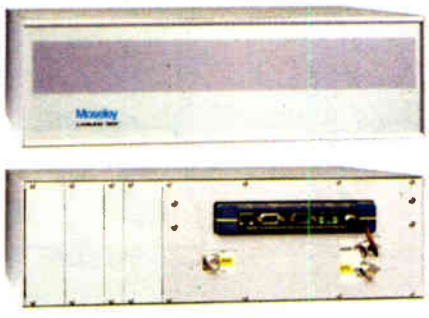

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World Radio History

A Chance to Find Yourself in Media

Youth Radio: Teaching Professional Skills for Today's Media World

by James Careless

In 1991, Youth Radio was launched in Berkeley, Calif. Its goal was to give economically disadvantaged kids the chance to find a future in radio by giving them a free after-school education in broadcasting.

Seventeen years later, Youth Radio is thriving. Though branching into video and the Web, the goal remains the same. Working out of its new broadcast facility in downtown Oakland, Youth Radio gives young people the chance to get their hands dirty in media, with an eye to building marketable skills.

"Oakland is a high-crime city that is among the top 10 murder cities in the United States," said Jacinda Abcarian, a Youth Radio grad (class of '93) who has since become the organization's executive director.

She has worked as a reporter for WRFG(FM) in Atlanta and as an intern at NPR and won awards including a Golden Reel from the National Federation of Community Broadcasters and the Alfred I. DuPont-Columbia Silver Baton Award.

"Eighty-five percent of our kids come from low-income neighborhoods and the rest are from more affluent neighborhoods throughout the Bay Area. Our goal is to give all of them the chance to find themselves in media; whether as a career or a form of self-expression."

The station will hold a grand opening on Sept. 21 at its new home at 1701 Broadway in Oakland. It purchased the building in January 2006 and moved from Berkeley in June of 2007 after renovations.

Reporter/Producer Denise Tejada joined Youth Radio at age 17. Now 22, she leads its Spanish-language programming.

The program

Every year, about 1,300 youth age 14 to 18 take part in Youth Radio's free programs. Most do so at the Oakland production center. Youth Radio also conducts classes in some area high schools and teaches at Camp Sweeney detention facility in San Leandro.

To qualify, students fill out a two-page questionnaire and are interviewed by Youth Radio staff.

The courses offered give a sense of Youth Radio's curriculum. The introductory "Core" media training program runs 11 weeks, during which time students are taught basic journalism and broadcast skills, including news and commentary writing, on-air announcing, music programming, Web and video production.

In the intermediate "Bridge" course, the kids spend 11 more weeks afterschool specializing in an aspect of media that appeals to them like news, radio broadcasting, music, Web or video.

Once students pass intermediate level, they can intern at Youth Radio as peer teachers, producers and production staff. They can "job shadow" professionals in media, communications technology or social justice organizations.

Those 18 to 24 who want to go further can take a six-month advanced course, "Emerging Media Professionals," which covers public speaking, group facilitation, community networking, journalism and media production/distribution.

Distribution

The content produced by Youth Radio is very much driven by the students. Much of it is music-based, but news and current affairs play a big role.

"We just won two Gracie Allen Awards in New York for two of our features," Abcarian says. "One looked at Hurricane Katrina and how it affected New Orleans youth. The other was about military deserters who have fled to Canada."

Money for Youth

These are some of the organizations that support non-profit Youth Radio, according to its Web site:

Alameda County Health Care Services Agency
Blue Shield of California Foundation
California Endowment
California Wellness Foundation
Corporation for Public Broadcasting
Ethics and Excellence in Journalism Foundation
Evelyn & Walter Haas Jr. Fund
Gap Foundation
The Hearst Foundations
James Irvine Foundation
Jessie V. and W. Clement Stone Foundation
Jenesis Group
Kaiser Permanente
Levi Strauss Foundation
National Endowment for the Arts
National Science Foundation
City of Oakland Cultural Arts & Marketing Division
City of Oakland Department of Human Services
Stuart Foundation
Surdna Foundation
Thomas J. Long Foundation
Wallace Alexander Gerbode Foundation
WK Kellogg Foundation
Zero Divide

Beyond being made available at *www.youthradio.org*, Youth Radio programs can be heard on National Public Radio. More than 300 Youth Radio reports and commentaries are broadcast each year on NPR's "All Things Considered" and "Morning Edition" plus local public radio stations such as KQED(FM) in San Francisco and WABE(FM) in Atlanta. Youth Radio content can also be found on CNN.com, MTV Interactive and CBS.com.

"Anyone can produce a report and post it on YouTube," says Abcarian. "But to produce quality content that fits on NPR — that's what we help our students achieve." Youth Radio content is also available on iTunes.

Challenges

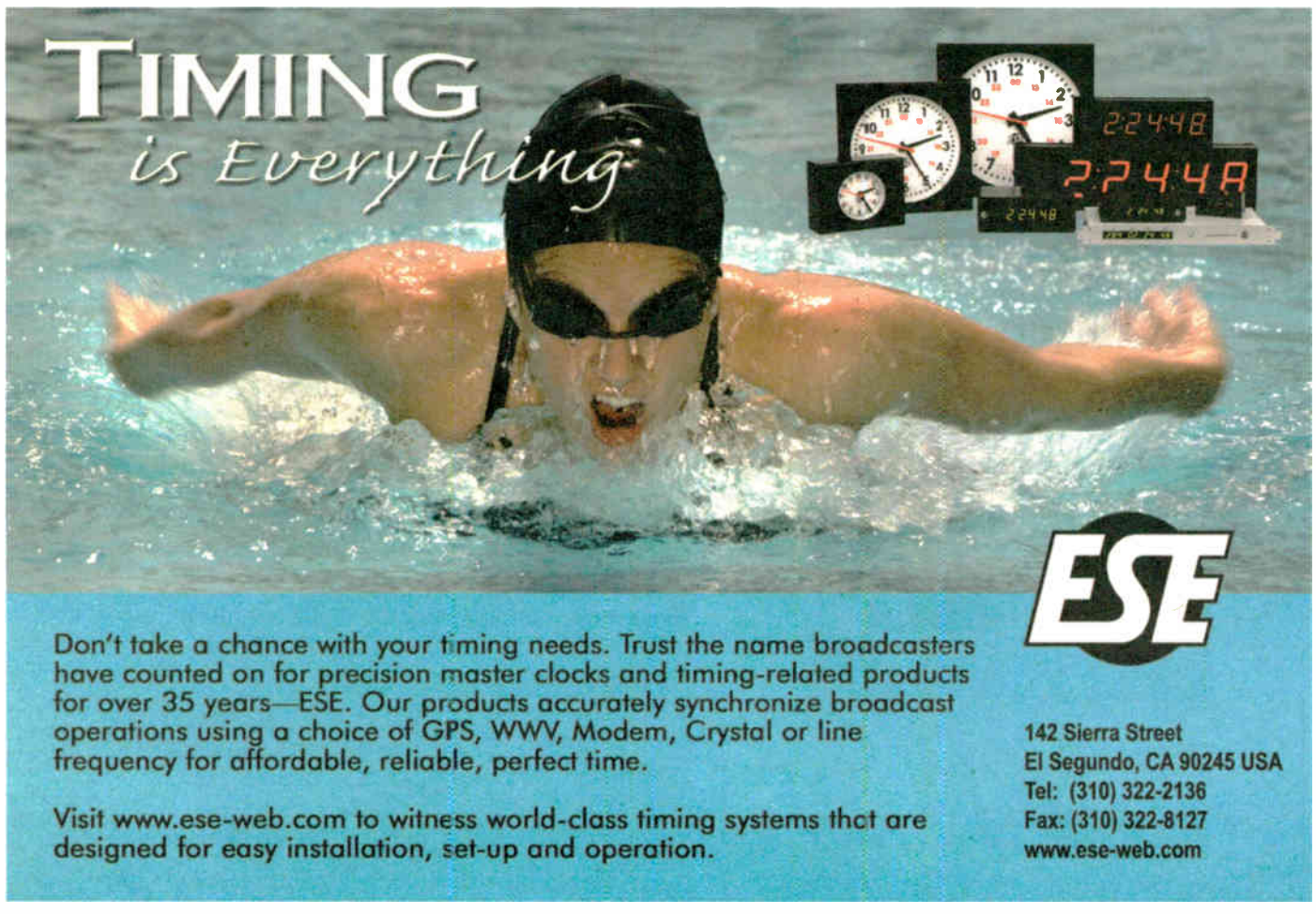
Thanks to the design and installation guidance of Technical Director Tim McGovern, who has experience at Lucasfilm and Skywalker Ranch, Youth Radio's Oakland facility is a modern radio facility.

"We have eight digital edit suites and three studios in our facility, and the ability to connect to any other station in the world using ISDN, Skype and broadband," Abcarian says. "We also have three news bureaus; one in L.A., one in Atlanta and one in Washington, D.C. In addition, we have freelance reporters all over the world."

Of course, nothing comes for free. To pay for its facilities and staff, Youth Radio relies on organizations such as the National Science Foundation and the Corporation for Public Broadcasting. With an annual budget that now hits $3.2 million, Abcarian is hoping to attract corporate sponsors as well. It is trying to raise $1 million to repay loans.

Is it money well spent? Many Youth Radio graduates have found jobs in the

See YOUTH, page 48 ▶



World Radio History

MARKET PLACE

Harris Talks IP Security

Harris is emphasizing video surveillance capabilities of the Harris Intraplex NetXpress audio over IP platform, as an aid to transmission facility managers.

A new Intraplex video module can be added to new or existing NetXpress systems at studio or transmitter sites.

This approach allows engineers and studio personnel to monitor the transmitter site from the studio with the same NetXpress platform used to transport AES and analog audio, data and voice from studio to transmitter, the company said. Both live surveillance and alarm-based monitoring are possible using the NetXpress platform.

"The integration of sophisticated video analytics capabilities at these remote sites has made it possible to reliably detect unauthorized entry while only transmitting video on alarm or on demand," said the company's Director of Intraplex Products Chuck Alexander.

The video surveillance application uses low bit-rate MPEG-4/H.264 video compression to send multicast or unicast video, which can be viewed on one or more PCs anywhere on the IP network.

Video analytics software in the video encoding module for the Intraplex NetXpress chassis detects people entering designated areas, or objects taken or left behind, and sends alerts complete with still images or full-motion video over the IP network to alert personnel at the studio or security office.

Alarm logs maintain records of these events along with associated images.

The company said NetXpress NX-AVC-1 video encoding modules operate as edge devices within the NetXpress audio over IP platform.

The NX-AVC-1 module receives analog video from a camera, encodes the video to MPEG-4/H.264, MPEG4 Simple Profile or MJPEG, and simultaneously runs the ObjectVideo Analytics Engine to generate alerts based on user-defined situations created and stored using Harris-provided software.

Engineers can connect the camera to NetXpress and encode video into IP, manage the video modules over the network and write ObjectVideo rules for alerting of suspicious activity including theft, loitering and trespassing.

Info: *www.harris.com.*

SafeOne Offers Personal RF Monitor

LBA Technology introduced a personal RF monitor that it says is approximately half the price of its competition.

The SafeOne is offered under a distribution agreement with German instrument maker Schomandl, part of the Kathrein Group.

SafeOne, retailing for $695 (but offered with a $20 discount and free shipping in the continental United States for a limited time) is described as an effective and economical means to monitor the strength of electromagnetic fields from mobile phone towers, radio and television installations, high-frequency welders and other common workplace RF sources between 10 and 10,000 MHz.

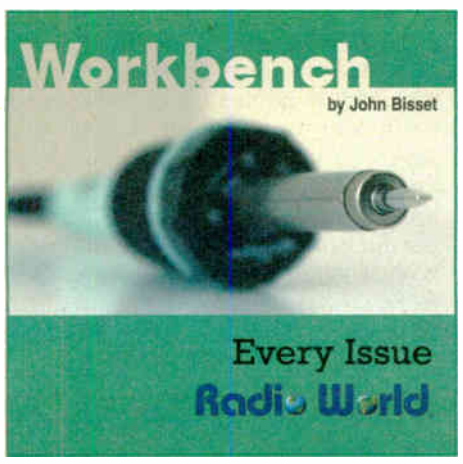
The company said it's also suitable for non-radio workers such as roofers and window washers because it is easy to use.

The monitor provides an audio and visual warning when the OSHA and ICNIRP limit is exceeded on the wearer's body. It immediately alerts them to high-frequency radiation fields that could be a health hazard.

The SafeOne gives an approximate value of RF strength to help determine how long the worker can stay in the radiation field. It is the size of a cell phone and weighs less than three ounces; the unit comes with a ballistic nylon work harness carry pouch and lithium batteries.

The batteries last more than 500 days and it incorporates a self-test function to be used whenever the monitor is turned on.

Info: *www.lbagroup.com.*



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World Radio History

TECH TIPS

How to Protect Against Lightning

Ben Franklin Was Looking for a Strike, But At Our Stations It's the Last Thing We Want

by W.C. Alexander

The first in a three-part series.

In 1752, Benjamin Franklin performed his famous experiment, flying a kite during a thunderstorm and thus proving that lightning and electricity were somehow related. It's interesting how the very phenomenon that started it all has ever since been the bane of all things electrical and electronic.

Communications installations, including broadcast facilities, most often utilize height as a critical variable in the all-important propagation equation, and as such, produce an analog to the conditions under which old Ben coaxed a lightning strike out of a thunderstorm. The difference is, Ben was looking for a strike while in the case of communications installations, a lightning strike is the last thing we want.

Discharge

We have learned a great deal about lightning since 1752, but perhaps the most important thing we have heard is that lightning is unpredictable.

In reality, everything about lightning actually is very predictable, with every aspect conforming to the unalterable laws of physics. What makes it unpredictable from our perspective is that there are an impossibly large number of variables; we simply cannot know all the factors that enter the equation in a particular situation.

The type of lightning that does damage to broadcast installations is the discharge of energy from an electrically charged cloud to the ground. Cloud-to-cloud discharges seldom cause damage on the ground. Here's what we know about the anatomy of a "typical" cloud-to-ground lightning strike.

When lightning strikes the earth or an object on the earth, a more-or-less usual sequence of events occurs. First, downward "leaders" from a highly-charged thunderstorm cloud pulse toward the earth, seeking out electrical ground targets. Objects on the ground, such as buildings, trees, power lines and radio towers, emit differing amounts of electrical activity during this event. Streamers are launched upward from some of these objects. Some of the downward-going leaders connect with some of the upward-reaching streamers. It is at this point that the circuit is completed and current flows. The arc is then visible, and the superheated air displaced by it creates the thunderclap.

It's not unusual for a lightning strike to have a peak amplitude of 20,000 amps and last 40 microseconds to half amplitude. Some lightning pulses can reach 400,000 amps and reach temperatures of 50,000 degrees Fahrenheit. The rise time of a typical strike is about 5 microseconds to peak amplitude.

A direct hit to the antenna produced 'collateral damage' down the transmission line.

The current path in a lightning strike is from the cloud to what we call "ground." A perfect ground connection, however, does not really exist, and any real ground connection will have both a finite DC resistance and AC impedance of from several ohms to several hundred ohms.

Applying Ohm's Law, you can see that a large potential can be developed from a ground connection to "real" ground. Several million peak volts or more can easily be developed in such a situation.

Harm

Broadcast facilities are damaged by lightning in several different ways.

First, a direct hit on an FM antenna or transmission line often does physical damage. At the point of contact, the metal is often melted, creating a hole in the antenna or line. It's often at this point where the failure occurs.

Lightning energy actually penetrates the outer metal casing and produces an internal arc that is sustained by the RF energy long after lightning current itself has ceased to flow. In many cases, it's this secondary RF arc that actually does the most damage.

When lightning hits an AM tower, at least part of the discharge current flows into the antenna tuning unit. If the potential is high enough at that point, it can cause capacitors in the tuning network to fail by exceeding their maximum operating voltage. The dielectric is compromised and a short circuit is produced. Mica transmitting capacitors are produced by combining series and parallel capacitor elements and potting them into a single package. Sometimes, lightning can short just one of the series elements, causing the overall value of the capacitor to change significantly. If the lightning potential is high enough at the input of the ATU network, it can cause the transmission line to arc over. As with FM antennas and transmission lines, it's often a secondary RF arc, sustained by RF from the transmitter, that does the real damage.

We can all understand that a direct hit on a tower or antenna can be devastating. It's a little harder to understand how lightning can cause damage indirectly.

I've heard some folks comment that the lightning hit the tower and must have "jumped over" to some other structure or cable to do secondary damage. While that can and does happen, more often the secondary damage comes from the very high localized magnetic field the high current from the strike produces.

Consider the case where lightning hits the STL tower behind the studio building. The STL transmitter is fine after the strike, but network cards have failed in computers all over the building. Why? The very high current flowing in the steel STL tower during the strike event produced a very high magnetic field. Those lines of flux were cut by the wires in the Ethernet cabling running through the ceiling and a significant voltage was induced. Those NICs were never intended to handle several hundred volts of potential on their Ethernet ports, and something has to give. Lightning current never touched the cables or NICs, but they were destroyed anyway.

A number of years ago, lightning struck the amateur radio tower behind my house. I was there at the time and observed that the flash and impossibly loud thunderclap were simultaneous.

The top 2-meter vertical antenna was literally blown in half (I later found the top part stuck in the ground like a javelin), and the radio to which it was connected and its power supply were completely destroyed.

As my wife and I began assessing what other damage had occurred in the house, we turned on the television in the living room. It worked — we had a picture and sound — but the screen was a rainbow of colors that didn't belong. It took degaussing with a big degaussing ring to restore proper color. The magnetic field from the strike had magnetized the steel in the set.

Making things worse

In many cases, bad engineering leads directly to damage from lightning. The very measures that were intended to protect the transmitter and other equipment from lightning damage actually contribute to that damage.

Some lightning pulses can reach 400,000 amps and reach temperatures of 50,000 degrees Fahrenheit.

In a typical broadcast transmitter or tower site, there is a ground at the tower base and a number of other ground points. The current from a lightning strike will see several parallel paths to ground.

For example, the ground rod(s) at the tower base will be one path, the outer jacket of the transmission lines through the equipment cabinets to the transmitter building ground will be another, and the AC safety ground wiring to the distribution panel ground on the tower light wiring still another path.

If you can imagine an equivalent circuit of these several resistive paths in parallel, you will be able to grasp the idea that even with a solid ground at the base of the tower, large and damaging potentials can be developed across the other paths. Keep in mind that the fast-rise-time currents will flow in all these paths, producing damaging magnetic fields just as the main strike current produces

Eliminating all the parallel ground paths and providing a single, low-impedance path to ground for lightning energy is the key to mitigating damage from strikes. A key component in this low-Z ground path is the ground electrode or ground rod. That's where we'll resume our discussion next time.

Cris Alexander is director of engineering for Crawford Broadcasting Company. The Society of Broadcast Engineers has named him recipient of its Broadcast Engineer of the Year Award, to be presented this fall at the national meeting.

Youth

▶ Continued from page 46

media. Moreover, others have found their ways into other promising careers, aided by the experience and maturity gained through the program. Youth Radio also is a place where Oakland young people can find an alternative to the tough life of the street, and hope that they can break the cycle of poverty and do something with their lives.

"For us, the challenge is to provide youth with opportunities in media, and to do it in ways that keeps pace with the changing distribution channels," Abcarian said.

"That is why we are considering changing our name to Youth Media International, to better reflect what we do today. But whatever our name, our mission remains the same: We want to nurture young people's intellectual, creative and professional growth through media training, and produce the highest quality original media for local and national outlets that we can."

Asked later about the name change as this issue of Radio World was prepared, she said the organization will not officially change its name this year but will now include the tagline Youth Media International as well.

World Radio History

Seek and Ye Shall Receive

DSC-32/64 Dual Satellite Remote Control

The DSC-32/64 allows the remote control of any combination of TWO X-Digital Systems XDS, IDC "MAX", StarGuide II / III, Wegener Unity 4000 or ComStream receivers. A front panel encoder control with a 16 x 2 backlit LCD display provides local control and program descriptions, while external control may be in the form of RS-232 (Optional USB or ETHERNET) serial and/or contact closures. TWO (ABC/CC) X-Digital Systems XDS Pro, (WW1) IDC "MAX", StarGuide II / III, Wegener Unity 4000, ComStream receivers, or most devices with a RS-232 port.

WS-2 Web enabled event Scheduler 2

The WS-2 is a web-enabled event scheduler that can store and control up to 100 unique events using any available NTP timeserver as a time base. Events may be programmed with Hour/Minutes/Seconds and Day/Month/Year or Day of Week. Each event can store up to 32 ASCII or HEX value strings, along with control characters. Events may also be executed manually. Configuration and events are programmed using a standard web browser. The WS-2 is equipped with two independent serial ports. Applications include; remote control of any combination of TWO X-Digital Systems XDS Pro, WW1 IDC "MAX", StarGuide II / III, Wegener Unity 4000, ComStream receivers, or most devices with a RS-232 port.

Available Oct. 2008 or sooner

COA-37 XDS Connect 'O Adapter

Here's another problem solver from Broadcast Tools for the (ABC/CC) X-Digital Systems XDS Pro and StarGuide II / III satellite receivers! The Connect O' Adapter 37 XDS provides an effective way to convert the DB-37 connector to the euroblock removable screw terminals.

COA-9 XDS/MAX

The Connect O'Adapter-9 allows you to convert the DB-9 connector on your ABC/CC) X-Digital Systems XDS Pro, (WW1) IDC "MAX" and StarGuide II / III receivers to the euroblock removable screw terminals.

COA-15 MAX

Need to convert the DB-15 connector to the euroblock removable screw terminals? The Connect O'Adapter 15 MAX will do the job. The COA-15 MAX is designed to plug into the male 15-pin D-Sub connector on the (WW1) IDC "MAX" and StarGuide II / III receivers.

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FIRST PERSON

ITA FM-250B Is Alive at 45

They Said It Would Never Operate Again. I Asked to See for Myself, Then Got Working

by Tom Vernon

I'm always on the lookout for interesting electronics restoration projects. Fire and flood damage is not a problem, and the older the equipment, the better.

When the faculty advisor for WDCV at Dickinson College mentioned that their 1960s-vintage ITA 250-watt transmitter probably would never operate again, I asked to see for myself.

I remembered this transmitter when it was at the local commercial station where I hung out in my high school days. The ITA went into service when the station signed on in 1963. It had been used by WDCV for a few years, but had not operated since the early 1980s.

The 250B had definitely seen its share of abuse since I'd visited it last. Dirt, cold solder joints, bogus modifications and missing hardware seemed to be the order of the day.

It would be a challenge, but I could definitely see it working again. Two hallmarks of ITA transmitters are massively-overrated components and simple circuitry. Any parts I would need are readily available from shops like Fair Radio Sales or Surplus Sales.com.

Despite a discouraging first impression, I decided there was hope for this ITA FM-250B.

The first step was to document everything with a digital camera. This is not just for impressive before and after photos, but as an aid in disassembly. It is a lot quicker than making detailed sketches before taking everything apart.

After searching the transmitter room, I was able to find all the pages of the instruction manual, including readings taken at the time of installation in July of 1963. Unfortunately, the large overall schematic was missing. Following an appeal on the Net, I received a scanned copy via e-mail.

A sign of life

The only way to begin a project like this is from the top down, working with a paint brush and shop vac. Using dentist's tweezers and needle nose pliers, I carefully extracted all the hardware from the crevices in the bottom of the transmitter before giving it a thorough vacuuming. I cleaned the outside with warm water and a liberal amount of Spray Nine. Soon I was able to discern the original color and was able to work on the transmitter without having my hands turn black.

All of the transmitter's silver-plated N connectors had turned dark with tarnish and grime years ago, and sections of RG-8 coax had the consistency of a coat hanger. As I progressed through the 250B, all were removed, cleaned and lubricated with DeoxIt. I replaced old coax with new and confirmed continuity with an ohmmeter.

A mysterious 'flying wing' was removed from the low-pass filter of the ITA.

The Serrasoid exciter that was part of the 250B was a project unto itself. After removing it from the transmitter, cleaning and testing tubes, I disassembled it fully and checked all resistors and capacitors individually. About a third had to be replaced.

Now the inside of the exciter looked great, but it would not tune up properly. Some mystery components and unresolved issues remained.

Sleuthing around yielded some good contacts for help. Arno Mayer, president of Belar Electronics Lab and designer of the ITA exciter, had vivid recall of some of its quirks. Steve Hemphill of Belar had already restored an ITA; he provided many useful suggestions.

Soon the exciter came back to life with the expected 10 watts output.

Tedious job

I placed a 50-ohm, 3 dB pad between

After replacing broken meter glass and a thorough cleaning, it is starting to look respectable.

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World Radio History

the exciter output and PA input. One of the undocumented quirks of these FM transmitters was that most of the lower power units did not require the full 10 watts drive. In the case of the 4CX250B, 3 watts is about all that is needed.

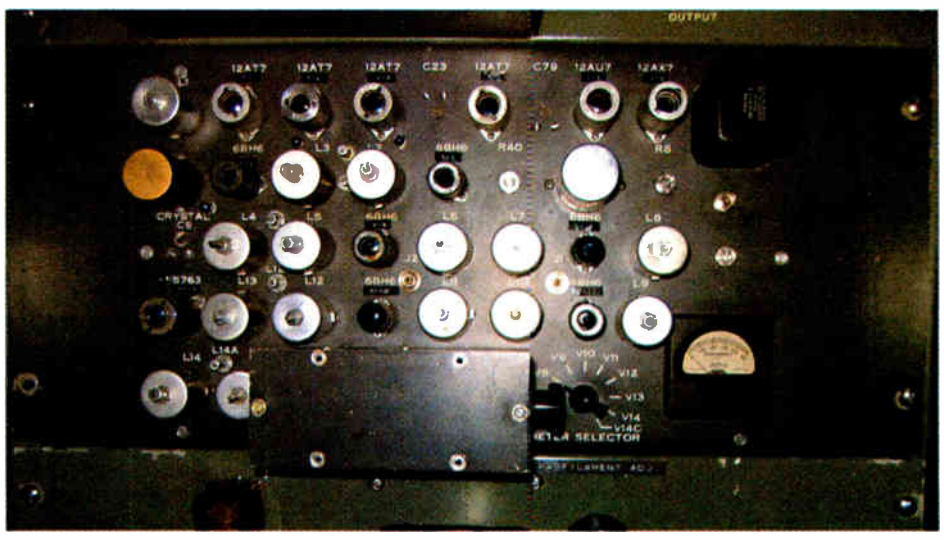
Since there is no way to reduce the power of the exciter, a home-brew pad is necessary. This not only delivers optimal drive to the PA tube, but provides better matching for the exciter output.

Tarnish and grime ruled the inside of the PA enclosure too. At some point the threaded rods for the sliding connectors had been lubricated with 3-in-1 oil, which had coagulated with heat until the controls would barely turn. The screw that secured the plate cap on the 4CX250B had been cross-threaded, overtightened and broken off, leaving a tedious job with vice grips and a tap to remove the stub and re-establish the threads.

Cold solder joints and solder blobs were all that secured wires to the PA tube socket. Brass hardware, which is always used for RF components because it does not radiate, had over the years been randomly replaced with zinc and stainless steel.

I removed everything from the PA cabinet and gave it a bath in the kitchen sink. Silver-plated parts were cleaned with Tarn-X before reassembly. The PA tube socket was gently scrubbed with a toothbrush, and excess solder was removed from the pins.

See ITA, page 52 ▶



About one-third of the resistors and capacitors had to be replaced in the exciter.

Serrasoid Modulation

One of the earliest techniques for developing an FM signal was Serrasoid frequency modulation. The circuitry was a form of indirect FM, and was used by virtually all transmitter manufacturers except RCA and Western Electric, who pioneered direct FM.

This CCA FM-10DT served as the original WDCV(FM) transmitter and is now a backup. It is fully operational.

Designed by James R. Day of REL (Radio Engineering Laboratories), Serrasoid modulation was first described by Day in the October 1948 issue of Electronics magazine. His article included an endorsement by Major Edwin Armstrong, who stated, "I have always felt that phase-shift FM would be the surviving method."

Serrasoid's popularity began to wane in the mid to late 1960s, as stations began to convert to FM stereo. Stereo generators were available for Serrasoid exciters, but separation averaged around 40 dB, not too impressive. Newer solid-state designs utilizing direct FM were introduced which provided better stereo specs, including separation approaching, and ultimately exceeding 60 dB.

Serrasoid FM enjoyed a resurgence of popularity in the 1970s, as many equipment manufacturers repackaged their older tube-type exciters as 10-watt transmitters for the burgeoning Class D FM market.

One of the hallmarks of the circuit is outstanding sonics. The ITA FM-10 for example, boasted distortion below 0.25 percent from 100 – 15,000 Hz. In stereo mode, the response was down less than 0.2 dB at 15 kHz, and less than 3 dB down at 25 kHz. Not bad for 1950s vacuum tube technology.

— Tom Vernon

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*Announcement from FEMA 7/30/2008: FEMA announced today its intention to adopt during the first quarter of calendar year 2009, an alerting protocol in line with Common Alerting Protocol (CAP) 1.1... Participants in the EAS, including broadcasters and state and local emergency managers, will be required to be in compliance with CAP 1.1 standard within 180 days of its formal adoption by FEMA

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ITA

▶ Continued from page 51

The squirrel-cage blower for the PA was disassembled and bathed as well. I used a wire brush to get dirt out of the concave surfaces of the fan blades. The blower never had an air flow interlock to shut the transmitter down when the motor seized up, which is a bit scary.

Undiluted Spray Nine was used to clean the now-empty PA cabinet. Holes were plugged with masking tape, as this cleaner will dissolve paint very quickly. Several wash and rinse cycles, and detail work with Q-tips yielded miraculous results.

Flying wing

Using the "before" photo as a guide, I reassembled the tuning controls and PA socket. Brass hardware was used for all RF components. The threaded tuning control was lubricated with graphite.

Opening up the enclosure for the low-pass filter revealed not just loose connections, but what can only be described as a "flying wing," which had been added between two of the capacitors. It was obviously not original, and I removed it quickly.

All of the ITA's meters had a tendency to stick, and just looked grubby. Someone had replaced the glass in the power output meter with a sheet of plastic. Careful rebalancing of the front and rear bearings with a jeweler's screwdriver cured the sticking. Meter glass was cleaned both inside and out. I took the cover for the power output meter to the local frame shop, and had a thin piece of glass cut.

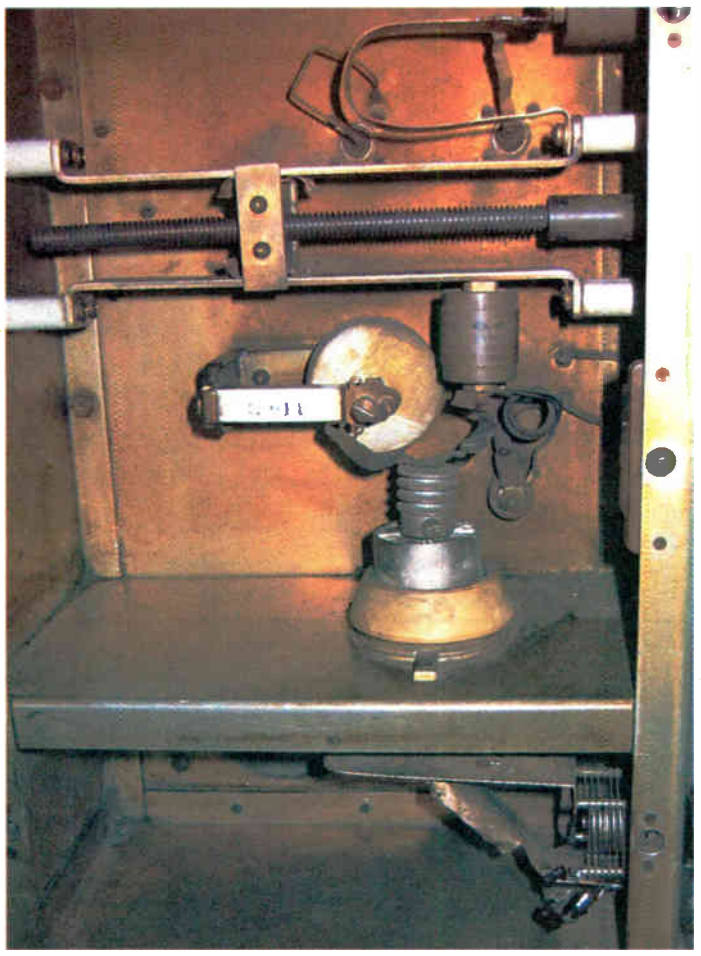
After all the work and anticipation, the initial turn-on was anticlimactic. It just ran. Voltages were close to the original readings.

Although the ITA is now in operating condition, more work remains to be done. ITA tech manuals were notoriously sparse, and pages of documentation and digital photos have yet to be added. Transmitter tuning needs to be tweaked for minimum AM noise.

I need to design and build a remote control interface, and a proof-of-performance has yet to be done. An air-flow switch or thermal cutout needs to be installed on the PA blower.

This summer, the 250B turned 45 years old. With the spare parts on hand, it should easily run another half-century.

Tom Vernon is a regular contributor to RW and a card-carrying broadcast equipment packrat.



All the components on the PA cabinet were removed and cleaned. Silver-plated parts were polished with Tarn-X.

After the parts were cleaned, the 'before' photo was used as a guide to get everything back together correctly.

AEQ finished the installation of a digital Arena mixer in the facilities of **National Radio of Russia** in Moscow. That is the fifth AEQ unit installed, completing the first phase of a digitalization project. The unit will be operated on BECTN 97.6FM. The project was coordinated by AEQ's Russian distributor **Qualitron**. ...

AEQ at National Radio of Russia

When John McCain and Barack Obama appeared at the **Saddleback Civic Forum** in August, the event was available on the AMR-100 Receiver from **Amb-OS**, an operating partnership headed by Ambassador Advertising Agency. ...

WERS(FM) at Emerson College in Boston expanded its Bridge Routing System to outfit two new studios with **Wheatstone** control surfaces. The station already has 11 Bridge Router frames in place. ...

WBEZ Chicago Public Radio upgraded a performance and recording studio space with a **Solid State Logic** AWS 900+ analog console and a **Digidesign** HD3 Pro Tools system, both acquired through **Guitar Center Professional**. WBEZ's audio supervisor is Mary Gaffney. ...

SSL at WBEZ

Paramount Broadcasting in Floydada, Texas, which airs the "West Texas Friday Night Scoreboard Show" on KFLP(FM), is using **StreamGuys** low-latency (BRTP) Internet distribution service with **Barix** audio over IP hardware devices, to send the program to 35 affiliates. Prior to last season it had been using a satellite system.

The weekly show reports highlights and scores of up to 150 Friday night high school football games, and is a popular program in the state. Content begins at KFLP; a live feed is sent from a Barix Instreamer-100 audio encoder over the Internet, where an aggregated server infrastructure from StreamGuys receives the feeds and transports them over a streaming network to affiliates. ...

CNC, a Chinese telecom companies, used **APT** WorldNet Oslo and WorldNet Rio units to broadcast from the Beijing Olympics.

The China Netcom Group was the fixed-line telecommunications partner of the 2008 Olympic Games. APT said CNC required new equipment to deliver multiple audio services from the Olympics to numerous locations over terrestrial and satellite links. CNC used the units primarily for low-bandwidth voice commentaries distributed worldwide over fibre and satellite links. The interface throughout the network was G.703 E1. ...

The Radio Broadcast Facility of the **South African Broadcasting Company** took delivery of 15 **Axia** Element broadcast consoles and associated IP-Audio routing equipment.

SABC will use the equipment for remote broadcasts, according to **Tru-Fi Electronics**, Axia's distributor in South Africa. The system includes 15 Element Consoles, 15 Axia Analog Line Nodes, four Axia AES/EBU Nodes, 15 Zephyr Xstreams, eight Telos Nx-12 Talkshow Systems, and four Telos Zephyr iPort MPEG Gateways to interface to SABC's main broadcast facility.

Tony St. James, left, and Steven Orr of 'West Texas Friday Night Scoreboard Show.' A Barix Instreamer audio over IP encoder encodes audio transported over a StreamGuys Internet distribution service to 35 locations.

Dalet workstations using 15 Axia IP-Audio Drivers for Windows will provide audio content and recording services. The system is tied together using Axia's PathfinderPC routing control software.

Users and suppliers may e-mail news of recent product acquisitions to radioworld@nbmedia.com, *with "Who's Buying What" in the subject line.*

World Radio History

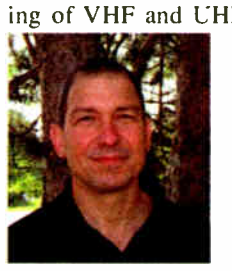
Send news of your recent job change, notable hire, promotion or retirement. E-mail radioworld@nbmedia.com.

Howard Mullinack joined **Wheatstone Corp.** in the newly created position of director of marketing, reporting to President Gary Snow. His immediate tasks will include the marketing and development of the new E² (E Square) Audio-over-IP routing and mixing system and Vorsis on-air and studio audio processing equipment.

Howard Mullinack

He is a former director of marketing and development for Sierra Automated Systems, CEO of Graham-Patten and vice president of sales and product development for Orban. He is also a former broadcast and chief engineer. Mullinack will share time between Wheatstone headquarters in New Bern, N.C., and New York.

Shively Labs appointed **Manuel Sone** as RF engineering manager with overall responsibility for Shively's design and development team. At Dielectric Communications he was senior electrical engineer, overseeing design, manufacturing and testing of VHF and UHF high-power digital broadcast antennas and components. He was also responsible for the planning, evaluation, documentation and development of radio frequency hybrids and power dividers. Earlier in his career he worked for Electronic Research Inc.


Manuel Sone

Shively promoted **Adam Jones**, P.E., a mechanical engineering manager, to director of manufacturing for both Shively and parent Howell Laboratories.

Adam Jones

And joining the company in a production management capacity is Ginna Jones, formerly of Myat Inc.'s Filter Division, where she was responsible for production planning and purchasing.

Ginna Jones

Beasley Broadcast Group appointed **John Brown** director of IT. A Microsoft Certified Systems engineer, Brown came to corporate from BBGI Las Vegas, where he was IT manager. Prior to joining Beasley, Brown was director of IT for MICE North America. He began his career as part of the Professional Services Team for FB&B Consulting in Phoenix after graduating from the University of Arizona with a BS in Industrial Engineering.

Mark Todd was named operations manager for **Journal Broadcast Group** in Omaha, Neb. Todd joined Journal Broadcast Group in February as program director of KQCH(FM). He is former director of operations for NRG group and the Waitt Radio Networks.

Loud Technologies named **James Stewart** as its COO. He will be responsible for core operations of the company including information technologies, technical support, service and logistics as well as management of Loud's manufacturing partners. He is former VP/GM at Hewlett-Packard's Specialty Printing unit.

James Stewart

Radio Frequency Systems appointed **Eric Mariette** president of global marketing and strategy. He comes to RFS with 20 years' experience in sales, marketing and business operations in the telecommunications and IT sector, primarily with communications solutions group Alcatel-Lucent.

Native Public Media hired **Sarah Shelley** as its director of development. She comes to the company with a background in performing arts management and public radio, and was most recently executive director of KBPS(FM) in Portland, Ore.

Bosch Communication Systems appointed **Daniel Nix** vice president of sales, Americas, for the Pro Audio Group. He was principal for The Nix Agency, and a rep for Bosch Communications Systems pro audio brands for the five years preceding his hire as VP.

Daniel Nix

Premiere Radio Networks named **Carol Terakawa** executive vice president of sales. She had formerly been regional vice president of sales/southwest region at Yahoo!

Sennheiser added **Aaron Berg** to its professional products sales team. He serves as the sales rep for the Rocky Mountain territory. Berg comes to Sennheiser from 3M, where he had a career as a pro audio specialist, and later in graphics and film coatings.

The **National Federation of Community Broadcasters** gave its Volunteer of the Year Award to **Sue Gerber** from KRCL(FM) in Salt Lake City during its annual Community Radio Conference

Newswatch

▶ Continued from page 2

August 2006. Sirius is offering a free "Optimizer Kit" with several options that subscribers can take to prevent interfering with other devices. The companies, now in the process of merging, ask subscribers to contact them to discuss no-cost options.

PENETRATION: Growth in demand for high-tech features in vehicles has led to a significant increase in market penetration for satellite radio and navigation systems, according to a study by J.D. Power and Associates. The study finds that 55 percent of new-vehicle owners report having satellite radio capability in their audio system, up considerably from 39 percent in 2007. Researchers asked questions about 28 combinations of radios; HD-R was not included.

KFI TOWER: Los Angeles engineer Paul Sakrison posted photos of the now complete KFI(AM), La Mirada, Calif. tower on his Web site (*sakrison.com/radio/KFITower3.html*). The need for a replacement dates to collapse of the original 750-foot tower, struck by a small plane in 2004 in a crash that killed two people. Work on a replacement for the 50,000 watt station started earlier this year but the partially built tower then fell. KFI is a Clear Channel station on 640 kHz; Sakrison is with CBS.

AUTO HD RADIOS: "We're at an inflection point. HD Radio automotive offerings abound and are widely available for vehicles at all levels." That's according to Ibiquity Digital President/CEO Robert Struble, noting increased HD Radio product offerings among automakers, auto dealers and aftermarket retailers. The gains come amid HD-R radios breaking the $100 price point this summer. Mercedes-Benz recently announced factory installs of HD Radio receivers on several 2009 model vehicles and Hyundai Motor America is offering HD-R equipment standard with its navigation-equipped 2009 Genesis models. At the dealer level, Ford/Lincoln/Mercury has made it easier to upgrade to HD Radio with AAMP of America's Peripheral product, which enables a user to control the HD Radio tuner and an iPod from the factory radio. Also, Peripheral said its Gateway and HD Radio tuners are available for install on various models of Acura, Buick, Cadillac, Chevy, GMC, Honda, Hummer, Isuzu, Lexus, Oldsmobile, Pontiac, Saturn, Scion, Toyota and VW vehicles.

SATELLITE DISTRIBUTION: Intelsat and National Public Radio renewed their contract for satellite capacity to support public radio program distribution. NPR operates the Public Radio Satellite System on behalf of public radio stations and program distributors. Intelsat described the contract as a "multi-transponder, multi-year" deal, without disclosing specifics.

FM BOOSTERS: Broadcast Electronics said approximately 100 broadcasters participated in a Webinar on FM boosters and related single-frequency networks. The webinar, available for playback at (*www.bdcast.com*), presented developments in synchronous technology for continuous program coverage into new population corridors, or to fill-in areas underserved by a main FM signal. Separately, FM boosters also will be the topic of a session at the NAB Radio Show.

DIELECTRIC: The third FM Engineering Executive Conference, hosted by antenna manufacturer Dielectric at a resort in Maine, offered an opportunity for broadcasters to examine new technologies and concepts. Sessions, conducted by Dielectric engineers and guest speakers, included looks at digital broadcast antenna design, monitoring and control, digital radio broadcast problems and solutions. Those interested in attending next year's event can e-mail *sally.dixon@spx.com*.

World Radio History

PRODUCT EVALUATION

MicPort Pro: 24/96 Audio on a Stick

There's a Lot Going on Inside That Little Tube

by Ty Ford

In my never-ending search for neat audio toys to talk about, CEntrance's diminutive MicPort Pro caused an instant smile: 24-bit/96 kHz audio from any mic-level source you can put in your pocket; all for $150.

I'd been waiting for something like this after looking at USB mics for clients who wanted to bypass the mic-mic preamp-input card topology for something simpler.

Røde's Podcaster mic gets points for solving the USB latency issue by putting a headphone jack on the mic. But what about all the other non-USB mics out there? So many mics, so little time.

Enter the MicPort

The CEntrance MicPort Pro is a simple, 4.5-inch barrel with a female XLR on one end and a USB port, headphone jack and phantom power switch on the other end.

The phantom power supply current runs at a healthy 48V DC, 20 mA, more than enough for the hungriest condenser mic. There are rotary mic gain and headphone gain knobs on the barrel itself. The headphone amp gain is also ample.

When the USB cable is plugged in, a halo-like, translucent white ring around the unit lights up to let you know you are connected.

Rear View

You do need to know a little about the sound control panels in your computer and the preferences panels of your applications. They need to be visited to make sure MicPort Pro is recognized.

Everything worked fine with my OS X 10.4 Macs, but I did run in to a few small problems with the newer 10.5 Macs. The audio sounded garbled when I tried to record into Quicktime Pro 7.4.5. After I changed the Mac sound control panel to record and playback at 24-bit, 48 kHz Quicktime recorded and played back properly.

Curiously, when I recorded into Apple Soundtrack Pro at 24/96 and exported the file, Quicktime Pro recognized the file as 24/96 and played it with no problems.

Quicktime's record level metering can be overly conservative: peaking at anything over half scale resulted in clipped peaks. If you have apps that are not 24/96 compliant, scaling the system control panel back should work.

Soundtrack Pro 2.0.2 on my 10.5 Mac had an unusual but solvable latency issue. While monitoring with headphones from MicPort Pro, I selected MicPort Pro from monitoring on the Soundtrack Pro panel. That resulted in delay. Switching monitoring to "none" in Soundtrack Pro got rid of the delay and I could still hear

See MICPORT, page 56 ▶

Product Capsule:
CEntrance MicPort Pro Mic Level 24/96 USB Converter

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- ✓ No latency
- ✓ No power required

Thumbs Down
- ✓ I really can't think of anything

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World Radio History

Small Digital Recorders Lighten Load

We Look at Four Models That Might Find A Home in Your Pocket, Pouch or Purse

by Paul Kaminski

The new generation of small-format digital audio recorders continues a sea change in the way reporters work in the field.

Units are small enough that there is now (this is my news director gene kicking in) no excuse for a radio reporter to be without a professional-quality recorder to record actuality or voice tracks. Some of those small-format digital audio recorders have built-in microphones that will provide pro-quality results for news voice work and music recording. The recorders will fit in a pocket, pouch or purse.

I'll take a look at four of them and some of their capabilities in this column. Yes, there are more on the market, and keeping up with what's new is just one of many good reasons to read the new products coverage in Radio World. Tell us about your favorites too.

Familiar name

The Marantz PMD620 (*www.d-mpro.com*, MSRP — $399) is D-M Pro's SD version of a news recorder. It has onboard stereo microphones, records on SD cards, has a USB 2.0 interface and does not need the AC adapter to function in USB mode, like the Marantz PMD660 (CompactFlash audio recorder).

It runs on two "AA" batteries and records mono and stereo 16- and 24-bit WAV and MP3 files. The 620 has 1/8-inch/3.5 mm TRS line and mic inputs, and can be programmed to recognize which of those are active, and default to the onboard mic if no input is present (useful if a reporter is in a news situation and forgets an external microphone — which happens).

The 620's onboard software has many of the same features of the 660 menus, such as virtual track selection. My upgrade did not have the 660's manual recording with limiter control software option. The 620 can be flash upgraded or upgraded online through the USB connection.

The 660 has an onboard speaker for quick monitoring of playback. It uses a thermoplastic holster (which in my evaluation broke after a drop on the ground). The holster has a fitting for a photo tripod. The holster is a good idea; future versions could easily be made from stronger plastic.

Loaded with batteries and an SD card, the 620 weighs around 5 ounces. I used it to record a Danica Patrick news conference for CBS News coverage. If you hear radio reports from Alex Stone of ABC News Radio, you will likely hear some audio recorded on a Marantz PMD620. He uses the 620 for recording voice tracks and actuality.

Alex mentioned that battery life on the 620 when using alkalines was much longer that what is encountered with a Marantz 660 (the 660 uses four "AA" batteries, the 620, two).

Rollin'

The Edirol R-09 (*www.rolandus.com*, MSRP — $450) is used as the digital recorder of choice by reporters who cover NASCAR regularly.

The R-09 has onboard mic, records on SD cards, has a USB 2.0 interface, runs on "AA" batteries and records 16- and 24-bit stereo WAV and MP3 files. It has 1/8-inch/3.5 mm mic and line inputs, and a combination headphone/digital output jack. It weighs all of 6 ounces loaded.

Steve Richards of the Performance Racing Network has been using an Edirol R-09 since the start of the 2007 Sprint Cup Season. He uses the R-09 to record sound in the NASCAR garage area (as in the picture of him and Sprint Cup driver David Reutimann at New Hampshire Motor Speedway).

"Because I deal in large volumes of audio, said Steve, "the ability to download (audio) directly into my laptop (using the Edirol's USB 2.0 interface) and then into Cool Edit Pro was fantastic."

Before 2007, Steve used a MiniDisc recorder, and had to dub audio from the MiniDisc in real time into Cool Edit Pro. He likes the battery life, especially when using "AA" lithium batteries.

"In most cases, even under heavy use, the battery life will last up to three race weekends."

Steve uses a 2 GB SD card for recording. "I was concerned about the design of the download/battery replacement door; especially for other reporters who tend to be rougher on equipment." By being careful, he's had no problems.

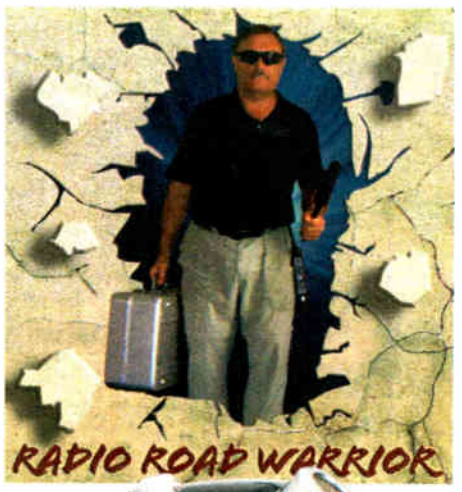
In future designs, Steve would like to have the ability to erase individual tracks, and perhaps an external speaker.

Little stuff

The MicroTrack II Compact Flash Audio Recorder (*www.m-audio.com* MSRP — $499) was reviewed in Radio World earlier this year by John Gatski (*http://tinyurl.com/6rv7fw*).

It has an onboard limiter, balanced 1/4-inch/6.3 mm TRS jacks which can be configured for mic and line inputs, 48 volt phantom power and a USB 2.0 interface, which not only transfers data, it also powers the unit, and recharges the internal battery.

See RECORDERS, page 56 ▶



Handheld Heaven: Edirol R-09, Marantz PMD620, M-Audio MicroTrack II and Olympus LS-10

World Radio History

Recorders

▶ Continued from page 55

It can be powered from any USB power unit. The unit weighs around 5.5 ounces. The internal battery is not user replaceable, and costs $75 to replace when sent back to M-Audio for the replacement. Battery management with the MicroTrack is crucial.

It records mono or stereo files in 16-bit or 24-bit WAV or MP3 audio files. The MicroTrack II has RCA line and S/PDIF digital outputs. I've been using this unit as the mult-box recorder to record news conferences in one location so I can record news makers in another. The option to record in mono helps me to work more quickly. Except that it lacks an onboard speaker, it's a fully functioning and versatile digital audio recorder.

Olympian aspirations

The Olympus LS-10 (*www.olympusamerica.com*, MSRP — $399) records 16- and 24-bit stereo WAV, MP3 and WMA (Windows Media Audio) files. It has 1/8-inch/3.5 mm TRS microphone and line inputs, and has a built-in mic whose sensitivity can be tweaked with internal menus.

These models come with real windscreens that lock on the mic and won't come off, even if one stuffs the LS-10 in a pocket. The LS-10 has 2 GB of onboard memory, and uses SD cards. It has onboard speakers and a USB 2.0 interface. It runs on two "AA" batteries.

I used the LS-10 to record natural sound and voice tracks at Indianapolis during this year's Indianapolis 500, recording with both the unit's internal mics and external mics. The LS-10 has an adapter for a photo tripod and weighs around 5.8 ounces (165 grams). It's small enough to fit in a hand, so if you're in a situation where discretion is necessary to get the story, the recording can be made unobtrusively.

With the LS-10 a reporter can use a field expedient to get rid of echoes if you are doing voice tracks in a room with a bed. This involves sitting on the floor, setting the LS-10 down on the bed with the microphones pointing toward the reporter at the proper distance, and speaking toward the microphones. The mattress and blankets will absorb much of the reflected sound.

Steve Richards of the Performance Racing Network, right, uses the Edirol R-09 to record Sprint Cup driver David Reutimann at New Hampshire Motor Speedway.

Units are small enough that there is now no excuse for a radio reporter to be without a professional-quality recorder to record an actuality or voice tracks.

It may not be elegant but it worked with the LS-10 when I had to do a voice track in a bedroom.

The MicroTrack II, LS-10 and Edirol are best used as source machines for a laptop or digital audio workstation, but can be used for "wraps" by selecting the beginning of a cut, placing the machine in pause, taking the machine off pause when you want the actuality to come in and stopping the machine when the actuality finishes.

Further thoughts

The PMD620 has the Marantz virtual track feature, which means users can select both the in and out points and have the machine play the track on cue, with no effect on the original audio. Most times, the laptop option is much faster. However, if a laptop crashes, this capability means reporters are not stymied and can feed audio through the headphone or line outputs to other devices (land lines, cell phones, loops, standalone codecs, etc.) for editing back at the studio location.

My next column will look at microphones for news work. If you have a favorite microphone, drop me a note to *motorsportsradio@msrpk.com* and tell me why that microphone works for you as a working radio news reporter.

Paul Kaminski is the news director for the Motor Sports Radio Network, a contributor for CBS News Radio and a Radio World contributor since 1997. Radio Road Warrior columns are archived at radioworld.com.

MicPort

▶ Continued from page 54

my voice and playback.

Garage Band '08 was very obliging, allowing me to record a Sennheiser MD421 dynamic mic as a stereo or mono track. Skype and Apple's iChat required that I switch to 48 kHz.

With the Sennheiser MD421, I had to turn the MicPort Pro mic gain control up all the way while I was talking at a subdued conversation level with the mic about two inches from my mouth. Even with the gain full up, there was not a lot of circuit noise.

Aglow in Ty's studio

Using iChat and Skype, I talked with friends in faraway places with better-than-average quality. In fact, using the 421, I got comments that the audio I was sending over Skype was better than most cell phones.

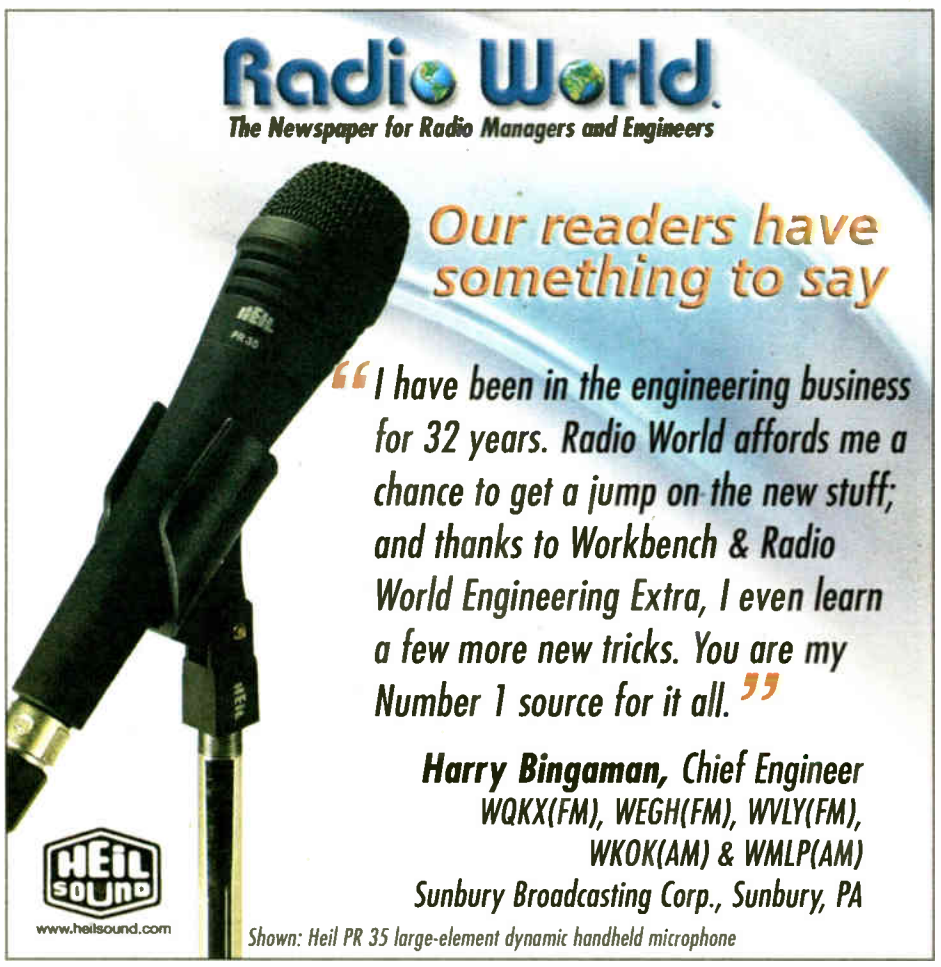
More sensitive condenser mics required less gain and could be used at further distances. My Schoeps CMC641 condenser sounded good, but, unsurprisingly, not as good as it sounds when recorded through my studio's pricey preamps and A/D converters.

Laptop users will appreciate that MicPort only uses 70 mA during startup and under 200 mA if no phantom powered mic is used. Different condenser mics require different amounts of phantom power and will draw additional current. Headphones with lower impedance pull more current than higher impedance headphones and higher headphone volume also pulls more current.

There's a lot going on inside that little tube. Powering MicPort Pro with USB-available voltages requires two switching power supplies; one for the circuitry and light and one for the phantom power.

Being able to quickly convert any mic-level source, including phantom-powered mics, to a 24/96 digital signal with input adjustment and headphone monitoring makes MicPort Pro a handy tool.

Ty Ford is a longtime contributor to Radio World. Comment on this or any article write to radioworld@nbmedia.com *with Letter to the Editor in the subject line.*



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And Now, Ladies and Gentlemen: WWII

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School Stations Work to Stay Relevant

Michigan Student Broadcasters Explore What It Means to Be in Radio These Days

by Ken Deutsch

If commercial broadcasters think about campus radio stations at all, they probably see them as farm clubs for the major leagues.

For a different perspective, we spoke to some people who actually help run two such stations.

Each year the Michigan Association of Broadcasters Foundation names high school and college radio stations of the year. Radio World contacted the 2008 recipients.

What we heard is that students tend to see themselves as innovators, but ones who are not particularly interested in entering traditional radio jobs.

WDBM(FM) is the MABF's College Radio Station of the Year. Gary Reid is the general manager of the station on the campus of Michigan State University in East Lansing.

"We are constantly trying to remain relevant, after 19 years," he said. "We've gotten aggressive about video ever since we added cameras in the studio six or seven years ago. We originally just wanted to show the DJs, but that wasn't too interesting. So with all the bands coming through the area, we determined that since we were recording audio, we should also record video. Now those performances are on our Web site." That's *www.impact89fm.org*.

But the evolution of the station is more fundamental than just adding music videos, according to Reid.

"It was obvious that college students were consuming radio in different ways than they used to," he said. "This is a new generation of iPod users and instead of trying to buck the trend, our idea was to find out what people's playlists were, and then add what an iPod can't do: We put these people on the air to play and talk about their favorite music."

The station receives between 20 and 30 submitted playlists from listeners each week via e-mail. Most of the songs are already in the station library; those that are not are brought to the station by the listeners. The station has two producers who help assemble the shows; it's all packaged into a one-hour live broadcast each Friday night. These listener-hosted hours are also archived and made available as podcasts via the station Web site.

"We took the concept of personalized music and put it on the air, so we can let the passion that these listeners have invigorate our station," said Reid.

WDBM is not connected to a specific academic degree program at the university, but Reid does teach audio and radio classes in addition to handling his job of overseeing the student station.

"The university wanted a professional manager they could fire, if you read between the lines," he said. "I wrote the mission statement, which calls for 'diversity in programming, professionalism in presentation and education.' Everything we do is related to that."

It's Biffstock! Staff member Kevin Furlong and Program Director Ridwan Alam work a remote from Andover High's main hallway during WBFH's annual fundraising marathon.

> **We're interested in getting people to listen, but realistically there is a lack of radio jobs out there.**
>
> — Andrew Blumberg

The station has about 100 volunteers, ranging from freshman to Ph.D. candidates; about 47 are on the air. WDBM operates 24/7/365 and the facility comprises about 4,000 square feet, with acoustics designed by Russ Berger Design Group. There are two on-air studios, a talk/performance room, a production control room and a news/sports production room. The station also has a music library.

But what is the goal of the station? Not to give birth to the next Casey Kasem or Rick Dees.

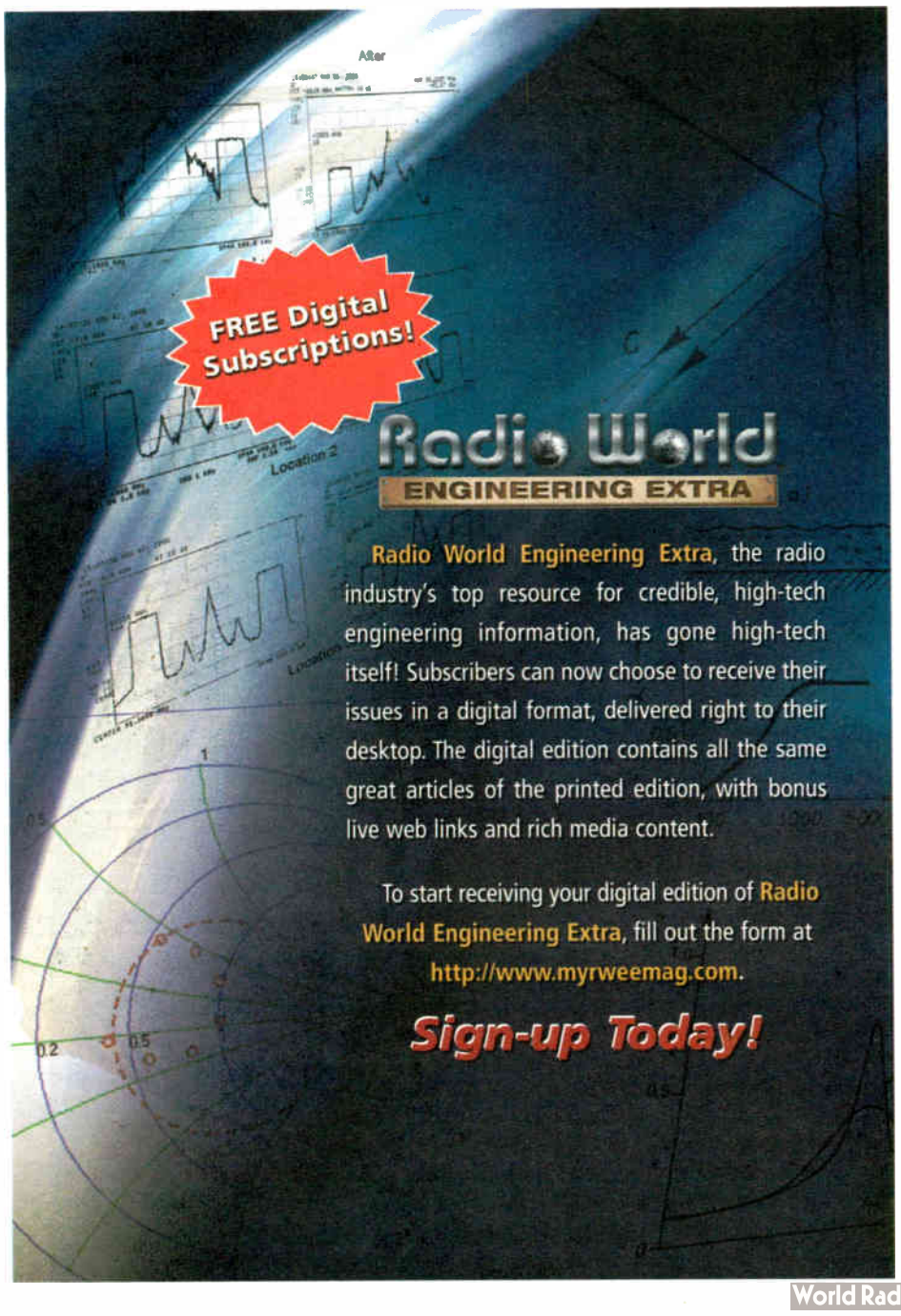
"Most of the people who join us here are interested in music," said Reid. "Very few are interested in radio. One of our recent grads moved to New York and was embarrassed to tell me that she took a job in the coroner's office as a DNA technician. She thought I would be disappointed because she had been one of our best jocks. But I wasn't disappointed because she took the self-confidence and ability to work with others that she got here and moved into a satisfying job."

But regardless of the lack of programming jobs out there, Reid still sees a future for radio.

"We believe in the viability of the medium," he said. "We're just trying to find new ways of making it important to our listeners' lives."

WDBM has captured "best college station" honors from the MABF eight out of the last nine years.

See CAMPUS, page 60 ▶



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World Radio History

GUEST COMMENTARY

Financing Stretches the Budget

Why 'Leveraging Outside Capital' May Be in Your Best Interest

by Russell Munson

The author is vice president of National City Media Finance.

Spread the cost of technology to match the timing of revenues and cash flow.

This concept sounds simple enough, yet many broadcasters, large and small, struggle with the idea that expensive equipment and technology must be paid out of the capital budget.

In turn the typical capital budgeting process often is an annual quagmire that delays needed equipment and technology or that forces engineers and general managers to "make do" with something less than optimal operating technology for the rest of the year.

One reason many broadcasters — independents and large groups — leverage outside capital (financing) is that it spreads costs over the life of the equipment and allows the technology to "pay for itself" over time, through use.

In this way a transmitter and antenna are "revenue-generating" and possibly cost-saving (energy). On a $50,000 transmitter the monthly payment is about $980 a month (at 7.5 percent interest), which works out to about $33 a day. A broadcaster may look at spot ad revenue and daily energy savings from a modern, more efficient transmitter and cost-justify the expense of the monthly payment.

Often radio clients find financing to be a creative business solution to their budget and cash flow needs. They value how it helps stretch their budget and align equipment costs to the timing of revenues.

It is a fact that most large companies invest their own capital in *appreciating* assets (land, buildings, people, acquisitions, growth) yet finance *depreciating* assets to match costs to revenues. By working with a creative lender or qualified financing source a broadcaster may find a unique and creative way to meet budget objectives.

This doesn't necessarily mean long-term financing. Sometimes the best solution is no payments for six months then pay it off ... without interest. Now that's creative.

Cash flow solution

Often broadcasters are not aware of the many benefits and options available through financing.

Jane Elizabeth Pigg, owner of Pee Dee Broadcasting and WCRE(AM) in Cheraw, S.C., recently acquired a new transmitter and antenna through broadcast supplier SCMS. Bob Cauthen, president of SCMS, introduced her to the idea of financing her equipment needs at the 2007 NAB Radio Show in Charlotte.

By working with a creative lender or qualified financing source a broadcaster may find a unique and creative way to meet budget objectives.

"I hadn't thought of financing as a business solution," she says, "but when I looked at how attractive the financing option was and realized it would allow me to use my own capital to invest in our growth and other business operations including our newspaper, I just found it was a natural budget and cash flow solution for our station."

Another prominent broadcaster who found specialized finance to be a creative solution is Beth Warren, general manager of KSUT Public Radio in Ignacio, Colo., and two flagship stations under KUTE Inc. Although their stations were awaiting CPB grants to cover the costs of four

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new transmitters, Warren found that Harris Finance offered a special "bridge" type financing for up to two years.

Under the Harris Finance plan KUTE has 2.9 percent financing for up to two years, which the organization can pay off at any time.

"We found that the specialized financing gave us a budget solution during the period awaiting the CPB to come through," she said. "It allowed us to get the transmitters ordered and delivered before the winter weather. This was important to us, and the special financing was a creative timing tool to help us meet our budget. It also allowed us to 'build it and they will come' — after hearing the new stronger signal, donations came in on behalf of the private match needed for the projects.

"In Northwest New Mexico, KSUT replaced an 80 watt repeater with a 4,100 watt Harris-financed transmitter. The listener response has been fantastic," she continued. "Additionally we had FCC-issued construction permits quickly expiring." The creative financing option, she said, made the difference in continued public service on behalf of the listeners in the rural Four Corners Region.

Some of the reasons broadcasters leverage financing include:

- Financing helps the broadcaster retain and preserve cash and capital;
- Financing helps preserve bank credit lines for operations, working capital and acquisitions;
- Financing acts as a "hedge against inflation" in that the broadcaster only pays for today's use (of the technology) with today's dollars and pays for future use with future (revenue) dollars;
- Fixed rate financing allows broadcasters to spread costs over multiple budget periods while creating a predictable monthly payment as much as five or seven years into the future;
- Financing lets the technology "pay for itself" over time.

Questions to ask

Independent, small and mid-market broadcasters may borrow infrequently and may not know what questions to ask a lender or financing source.

Determine your financial, budget and cash flow objectives, then seek a financing solution that accommodates your goals.

Ask your financing source how experienced they are with lending to radio stations and groups. Ask for three recent broadcaster references. Ask what criteria are used to determine credit approval and the interest rate.

Ask about fees. Ask if there is a prepayment penalty for early payoff. Ask how long the process takes. Get a commitment to a step-by-step process so you know, in advance, what the procedure is. In most cases you should not have to submit an application fee or monies up front to get approved.

A good consultant can help you explore your options or compare a cash purchase to financing.

National City Media Finance is a division of National City Commercial Capital Company LLC, a subsidiary of National City Bank, Cleveland. The author has 30+ years' experience of equipment financing, lending and technology leasing to the commercial broadcast, entertainment and media industries.

E-mail him at russ.munson@nc-4.com, visit www.russmunson.tv *or read his blog at* www.mediafinancestrategies.blogspot.com.

Campus

▶ Continued from page 58

"We are only as good as our worst jock," said Reid. "And you don't want to be our worst jock."

Social networks rule!

Andrew Blumberg, a student at Andover High School, has worked his way up from promotions director to operations manager at WBFH(FM) — The Biff 88.1 — which is the MABF High School Station of the Year.

While there is a broadcasting class associated with the station, it is not centered around preparing students to be DJs.

"Our course will be changing to include more media besides terrestrial radio," he said of the class taught by professional station manager Pete Bowers. "We know that WBFH is a radio station and we're interested in getting people to listen, but realistically there is a lack of radio jobs out there."

But high school radio offers the chance to experiment with different ways of reaching an audience. To young people, radio is part of a world that includes social network sites on the Internet such as MySpace and FaceBook.

"Those have been a great way to let listeners know of events that are happening at WBFH," he said.

WDBM has captured best college station honors from the MABF eight out of the last nine years. Gary Reid is at far left, Mason Hunter of BMI is on the right.

"April 11, 2008 was the 32nd annual Biffstock 24-hour marathon in which we raise money for the station. In order to let people know about the concert that happened that night, a FaceBook group inviting staff members' friends to the event was created. Other groups on the site have been started to publicize weekly shows and their hosts. The advent of social networking sites has been beneficial for stations as a majority of teens and young adults utilize them."

Anyone who knows teenagers knows that they spend approximately 100 percent of their free time on a cell phone.

"In the past week we added the opportunity for listeners to text-message us their requests and comments via cell phone," said Blumberg. "Commercial stations might take note of how we cater to our listeners. It seems as though in recent years, (commercial) stations have been more focused on the advertising dollar as opposed to what the people who listen really want."

Even though radio is only a small part of a teenager's world, Blumberg believes the medium has a future.

"I think that programs in both college and high school give students hands-on experience that will allow them to explore many different positions in broadcasting that wouldn't be available otherwise," he said.

"On-air positions have been reduced recently but there is still a great need in engineering, sales and production. I'm not sure about my plans but I know that I'll have a lot of knowledge from this experience that I'll be able to take wherever I go."

Listen live to "The Biff" at *www.wbfh.fm.*

Ken Deutsch broadcast over WCBN (then carrier current AM) at the University of Michigan 1969–1971. If one learns from mistakes, he says, he must have learned a ton.

World Radio History

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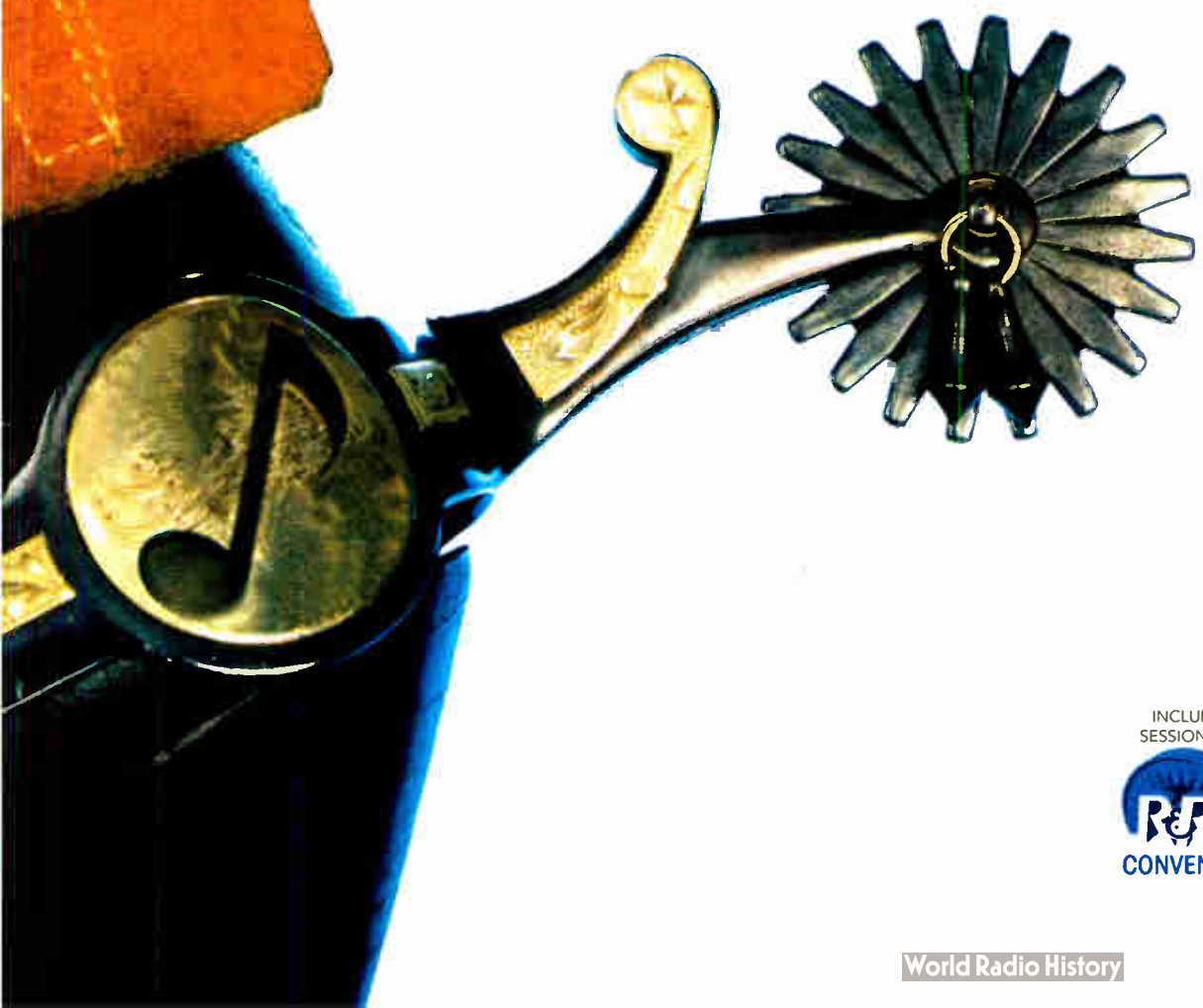

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ROOTS OF RADIO

And Now, Ladies and Gentlemen: WWII

Web Sites, Actors and Archivists Keep Memories of Radio's War Role Alive

by Ken Deutsch

Come back with us to a time before iPods or cell phones. There were no satellite channels, Internet stations or even FM as we know it. Broadcasts during this era were heard on AM and shortwave. This was radio as it existed just before and during World War II.

There was news of our battles with Germany and Japan. One could tune in to hear advice on what to do on the home front, such as buying bonds and planting Victory Gardens. And there was escapist musical entertainment courtesy of the big bands of Glenn Miller and Tommy Dorsey.

Networks carried weekly comedy shows like "Burns & Allen" on CBS and "The Great Gildersleeve" on NBC. During these years, broadcasting played an important part in the lives of Americans, and there has been a push lately to preserve this history.

While World War II-era radio waves continue to bounce out to the far reaches of the universe, it is still possible here at home to listen to the sounds of those days of ration books, the Andrews sisters and war bonds, thanks to the efforts of individuals and small groups who keep those memories alive.

WWII Nerd

"Back then, the flow of information was more controlled, and much slower," said Jeffrey Lunger, owner of a Web site dedicated to archiving this type of programming.

"Reporters in these theaters of war would file a story, then someone had to type it out, send it via V-mail or call it in on a phone, if they even had a phone. Then it would make its way to the bureau office where someone would edit it and finally, it would go out to the public."

Marshall Azrael, Marge Wardrop and Ken Haas of the Spirit of the Air Players.

Today's audiences have to be re-taught to listen to radio.

— Marge Wardrop

Heather Baver as Lois Lane lets loose with a scream in recreating an episode of 'Superman' from 1940 called 'Threat to the Daily Planet.'

Lunger's site WWII Nerd — *www.wwiinerd.com* — contains links to fireside chats from President Franklin D. Roosevelt, diatribes from Adolph Hitler and some stirring speeches by Great Britain's Prime Minister Sir Winston Churchill.

As recording tape didn't come into wide use until the end of the 1940s, most of this audio was captured on disk or wire recorder as it went out over the air. Listening to these clips is like climbing into a time machine, setting the dial for 65 years ago and experiencing first-hand the chilling sounds of a world fighting for its freedom.

"Right now this site is just a hobby with me," said Lunger, a computer professional.

"I share the cost of the Web server with some friends. Eventually when I can build up my traffic, ad revenue will come in. While I don't expect to get rich, it would be nice to be able to pay the cost of the server."

Gather 'round the radio

A staple of mid-20th century radio was the live dramatic or mystery show such as "The Lone Ranger," "Defense Attorney" and "Flash Gordon." These performances often included an organist, a sound effects man and, on the bigger shows, a vocal group to sing jingles for the sponsor.

With a little help from an enterprising group in eastern Pennsylvania, fresh recreations of these half-hour wonders can still be heard, if not over the air, at least by a live audience.

The Spirit of the Airwaves Players — S.O.A.P. — was founded by Jim and Marge Wardrop. She also is the artistic director of this traveling performance group.

"My husband Jim was a disk jockey on a commercial station before he retired," said Marge Wardrop, "and he always had a fondness for old-time radio. I sang with a big band specializing in the hits of World War II, and he was the emcee for 25 years. We have about 13 people in our group on average, which covers most of our scripts. Some of the shows we re-create come from the American Library of Broadcasting at the University of Maryland, and from Temple University."

She noted that times have changed since these shows were broadcast.

"Today's audiences have to be re-taught to listen to radio," she said. "They have a very short attention span.

"We have our best success with children who like the stories, and older people who have memories of the old serials. But it takes a little work to get them to use their imagination. We try to find scripts that either have a lot of action or a lot of color. A lot of patter just doesn't work."

These seasoned performers work their magic at retirement communities, nursing homes and historical society meetings. They travel as a self-contained unit with sound effects equipment, a PA and whatever microphones they need. The group uses reproductions of vintage 1940s mics, the 55SH Series II by Shure, that feature the outer casings of the real deal with contemporary electronics.

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"None of us gets paid," said Wardrop. "We charge a small fee that goes into equipment, scripts and whatever else we need. Everyone does it out of love for old-time radio."

Jeffrey Lunger's site is *www.wwiinerd.com.*

As was the case in the old days, a live show is always an opportunity for an unscripted moment.

"We were doing a 'Superman' program and it called for the explosion of a safe," she said. "We were working in a big aircraft hanger for a World War II convention and it was all metal walls in there. The audience was entranced, but at the moment we were supposed to hear the effect, our sound system blew up. It made an incredible noise! That was fun to explain."

Frequently sharing the bill with S.O.A.P. are Joe Ziegler and Bill Riley, who look like, and more importantly sound like, comedy legends Abbott and Costello.

"We can include newscasts, game shows, action serials and comedy in our show," she said. "We dress in authentic clothes and even present musical jingles using scores written especially for us. It's tough taking our big show on the road but fortunately we have people who are enthusiastic. No one ever says, 'When do I get paid?'"

Find out more about S.O.A.P. at *www.soapradioactors.org.*

Repository

Bill Schurk, professor and sound recording archivist at Bowling Green State University in Ohio, is in a unique position to discuss the preservation of bygone eras.

His Music Library and Sound Recording Archives is a repository for all sorts of music and spoken-word recordings going back 100 years.

"These World War II radio shows have been saved in a number of formats," he said. "Worst of all, on cassette, but on open tape reels, original acetates, LP reissues and in digital format."

Schurk mentioned V-Discs, an army project conceived by Robert Vincent that produced material for servicemen and women overseas. While the recording industry was on strike during part of that time, the company was allowed to record by special permission from industry and labor groups. V-Discs were supposed to be destroyed after the war, but recordings survived.

A number of these reside in the archives at BGSU. For information on this era, visit *http://community.mcckc.edu/CROSBY/v-discs.htm.*

Schurk suggested another online resource for World War II era recordings, *www.chirotoons.com/1homefront.html.*

Ken Deutsch is a former disk jockey and talk host who has found other endeavors to which he is better suited. Reach him at ken@kendeutsch.com.

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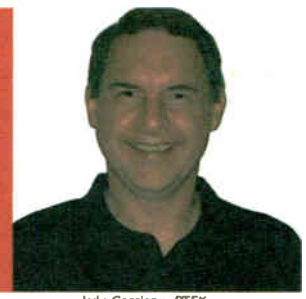

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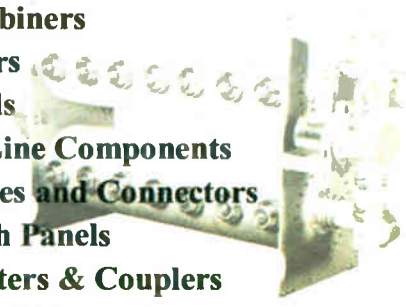

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World Radio History

Watch Out for These Legal Landmines

We Should Be Relieved, as an Industry, That the FCC Is Understaffed

iStockphoto/Charlie Bishop

PROMO POWER
BY MARK LAPIDUS

by Mark Lapidus

There was a time when I had the pleasure of reading over the contest rules for a group of stations. No, I'm not a lawyer, but I played one in radio for awhile.

This thankless aspect of the job brought me grief, eye fatigue and, on that odd occasion, outright laughter. The thread I picked up is that most program and marketing directors believe that if they word contest rules or releases properly, they can get away with nearly anything, whether or not it's permissible, morally acceptable or even legal.

We should be relieved as an industry that the FCC is understaffed and that, for the most part, our listeners believe what we tell them. If this weren't the case, you'd be seeing a lot more fines for improper contesting and a variety of lawsuits from individuals.

Allow me to present a small overview to help you keep your ears and eyes open for issues at your stations.

First of all, forget everything you've heard about release forms — especially forms written allegedly to protect your station against claims. There is no such thing as an air-tight release form.

Just because one of your listeners signs a release acknowledging risk of injury in one of your stunt contests, don't imagine for a minute that you're protected. Fortunately for you, listeners signing the release may really believe that they've signed their rights away, never even thinking to call a lawyer to come after you if they've been injured.

A release doesn't prevent anyone from suing you, nor does it protect you when you knowingly place a listener in a dangerous situation.

Rules that do not properly disclose material terms of a contest are problematic. You must inform contestants regarding the following:

- The prize and its value;
- How and when listeners may enter to win and if there are alternate means of entry;
- What happens in case of tie, or whether you must select another winner if the original winning candidate fails to meet qualifications;
- Odds of winning;
- Restrictions and limitations — such as age restrictions or residency requirements (very important with many stations streaming on the Web);
- How a winner obtains the prize and during what period he must make the claim; and
- What happens to the prize if the winner doesn't make a claim.

How many of these material terms you actually broadcast is your company's decision, as the FCC is clear neither about the required level of detail nor how often the terms must be broadcast.

Many companies will broadcast 30-second rules once a daypart for one week, then once a day in rotating dayparts for the remainder of the contest.

Very funny, ha ha

Flippant remarks about contests on-air can be trouble.

Remember the story in 2005 about the evening DJ who told his listeners he was giving away "a hundred grand" and it turned out to be a Nestle's 100 Grand candy bar? The winner didn't find it amusing. Nor did the contestant in 2002 who won a "Toy Yoda" instead of Toyota. Legal action ensued in this case.

Contesting on station Web sites can also be tricky.

Most program and marketing directors seem to believe that if they word contest rules or releases properly, they can get away with nearly anything, whether or not it's permissible, morally acceptable or even legal.

Make sure you disclose how you're using collected data. No, you can't just take the entries and give them to a third party, like the client sponsoring the contest. Your site should have a privacy policy that is visible to the public and followed closely by your staff.

Is your head in the sand about rights issues for your site? You're not alone. A quick glance at radio station Web sites in several major markets shows frequent copyright violation.

You may not "borrow" pictures and post them in your toolset. Ascribing attribution — informing the public of the origin of the pictures — will not protect you.

For example, I just finished viewing a gallery of photos from Sports Illustrated on a radio station Web site. The station informed us all of the photos' origin, but I seriously doubt that a license was obtained. Why? Because there were more photo galleries from other magazines and Web sites — some with attribution, some with none.

An actual license for use of photos can be expensive; few stations are allocating thousands of dollars per month for licensed photos.

Although I've played a lawyer on radio, I am no substitute for real legal counsel. Play it safe and call those men and women in the suits. Whether it's a copyright issue or a bungee-jumping listener, you want a legal eagle on your side.

Contact Mark Lapidus at mark-lapidus@verizon.net.

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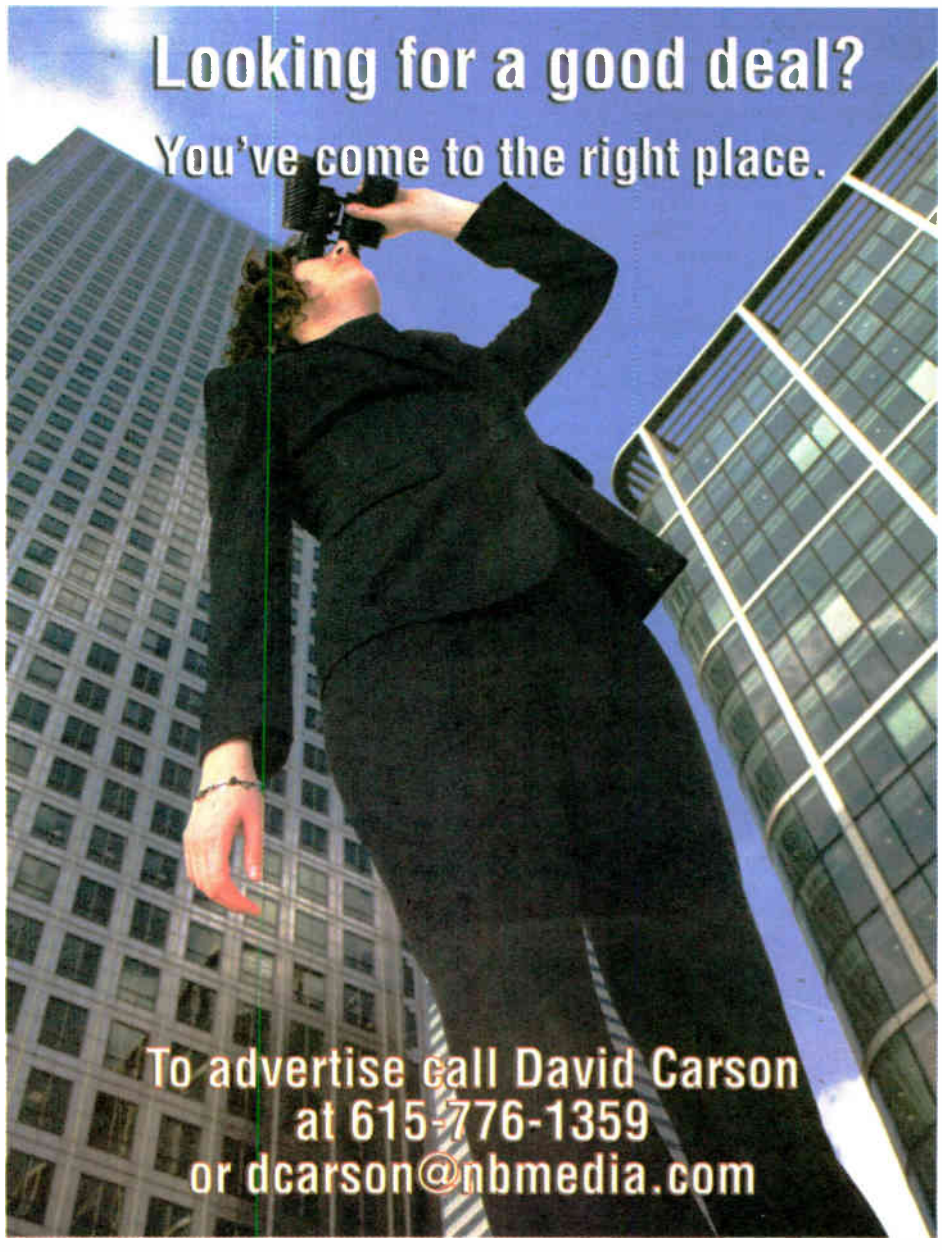

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EMERGENCY ALERTING

D Block: Part of an EAS

SBE Sees 'Once-In-a-Lifetime Opportunity' for the FCC To Support Data Capabilities of CAP-Enhanced EAS

The Society of Broadcast Engineers in June filed comments with the Federal Communications Commission relating to its proceeding regarding the re-auction and licensing of the 700 MHz D Block spectrum and creation of a nationwide, broadband, interoperable public safety network. The comments were submitted by SBE President Barry Thomas and General Counsel Christopher D. Imlay of Booth, Freret, Imlay & Tepper, P.C.

EAS: The Nation's Mass Public Warning System

In 1996, the commission established and tested the Emergency Alert System as a replacement for the outdated Emergency Broadcast System, which had been operational since the 1960s. In 1996, the commission ordered that all radio, TV and cable television facilities must carry emergency messages from the president of the United States over their radio, TV and cable facilities.

SBE notes that the original FCC Notice of Inquiry on that subject asked if additional support spectrum would be needed for EAS distribution from warning centers to broadcasters. SBE also notes that while several commenters responded in the affirmative, the commission neither discussed nor acted on this issue in subsequent EAS Reports and Orders.

The commission also established a new and improved Emergency Alert System taking advantage of the recently developed Common Alert Protocol as a method of providing better emergency information quickly and reliably through all warning systems.

The commission's rules on the implementation of CAP into the EAS system are dependent on work by the Federal Emergency Management Agency. FEMA was tasked to define and adapt CAP 1.1 and CAP Protocols and how they will be used to improve the president's ability to reach all American citizens. The goal as SBE perceives it is to enhance EAS, so that it can be an effective public warning system to complement and integrate with a growing number of other warning systems.

DTV Transition, Auctions and the D Block

On an independent track, the commission set into motion plans to move all TV broadcasters from their current analog mode into a digital mode that would allow closer mileage spacing for adjacent channel stations.

The net result of this move, which will be completed in February of 2009, is to free up a considerable amount of spectrum in the 700–800 MHz range, above Channel 51, which will be subject to auction for commercial use.

The 'daisy chain' LP1/LP2 relay of station-to-station, which has been the case with EAS, will not work for CAP.

voluntary system within the EAS whereby broadcasters and cable operators could provide emergency alerts and notifications for severe weather, civil unrest, toxic and hazardous spills, and other emergency or disaster conditions at the state and local level. Based on this system, state and local warning centers were to originate EAS warnings.

The commission did not specify the means by which these warnings should be relayed to broadcasters and cable systems. State and local EAS committees (SECCs and LECCs) were left to figure that out for themselves.

In some cases, state and local communications narrowband radio channels were used. Many of these frequencies were in the low-band VHF or high-band VHF spectrum known for both interference and propagation problems. Other SECCs and LECCs decided to volunteer the use of Part 74 Broadcast Auxiliary Service frequencies.

Second Report and Order Will Greatly Enhance the EAS

While the EAS system has served us well over the last 12 years, the commission, in its Second Report and Order and Further Notice of Proposed Rule Making, 22 FCC Rcd. 13275 (2007) in EB Docket No. 04-296, established the basis for a

The 700 MHz auctions were largely completed in March 2008 but one block, the D Block, did not meet the commission's minimum bid requirement. As a result, this 10 MHz of spectrum, in two segments, will be re-auctioned near the end of this year, or the beginning of 2009.

The D Block Spectrum was specifically carved out for shared use by commercial and public safety interests. It has been envisioned that the commercial entity winner of the D Block auction would build out a nationwide wireless network and offer shared use of this network to the public safety community.

'LP' Relay Model Will Not Work for Enhanced EAS

SBE has a longstanding record at the commission as an impartial engineering professional society. SBE provides coordination of broadcast auxiliary (BAS) frequencies in the Part 74 Broadcast Auxiliary Service at no cost to licensees or the public, and has been active before the commission in Emergency Alert System matters from the beginning.

As SBE studied the 2007 Second Report and Order requiring CAP implementation, it became increasingly clear that:

- *The existing LP1/LP2 architecture that*

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Solution

relays warnings to radio, TV and cable is not an efficient or viable way of taking advantage of CAP's data-rich environment.

- *LP1/LP2 relay architecture is in truth a remnant of the old EBS "daisy chain" architecture.*
- *Several State and Local EAS Committees have successfully replaced the LP1/LP2 model with wireless multipoint distribution from warning centers to broadcast and cable entry points*

In the original EAS system, short data codes for events, locations and times of emergency, etc. had to be compressed in the 512-baud FSK protocol and transmitted in seconds as a relay from station to station. While that relay system has performed well, it will not support the data throughput required for CAP-Enhanced EAS.

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For example, an EAS message for an AMBER alert (event code CAE) indicates that an AMBER alert has been issued in a particular area for a particular time. The current EAS data burst does not contain any information about the description (or photo) of the abducted child, possible routes of travel, vehicles of interest, etc. Under current EAS technology, information must be transmitted as an EAS audio message and as such, the text crawl on television stations and cable channels will not contain all the detailed information that is available.

With a CAP-Enhanced EAS, it will be possible to transmit messages with much more detail and specificity, not only for AMBER alerts, but also for severe weather situations and local emergencies where people at risk need timely details so they can take proper protective action.

A CAP message may contain hundreds or thousands of characters of information. At the 512 baud FSK data rate, transmitting such messages over the main channel of radio TV and cable facilities will take minutes, and will necessitate the airing of highly annoying data bursts.

These transmissions can and do drive away listeners and disrupt the station's ability to quickly send audio alerts regarding the emergency at the exact time these services are most needed. It is therefore imperative that CAP messages from the emergency activation centers, be they federal, state or local, get to the broadcasters via a back channel multipoint distribution system instead of being relayed station-to-station as is now the case.

The challenge for an Enhanced EAS is to distribute these CAP messages from the emergency activation points at the federal, state or local level to the broadcasters and cable operators and finally to the public. As stated, the "daisy chain" LP1/LP2 relay of station-to-station, which has been the case with EAS, will not work for CAP.

SBE Proposal for EAS Relay Channel Spectrum

The Society of Broadcast Engineers respectfully requests that the commission set aside a total of just 100 kHz in the D Block spectrum; i.e. 50 kHz from the D Block spectrum in the lower band, and 50 kHz from the D Block spectrum in the upper band, exclusively for the Emergency Alert System nationwide.

This spectrum could be split into channels and reused across the country providing exclusive interference-free communications pathways between the emergency operating centers at the federal, state and local level and the broadcasters and cable operators.

SBE believes that allocating this spectrum is consistent with the congressional mandate that set up the D Block spectrum as a partnership between the emergency management community and commercial network operators. Interference will predictably be nil, and in the unlikely event that any is experienced, it can be easily mitigated on a case-by-case basis by volunteer SBE coordinators in each market, since this will be an exclusive allocation.

Further, SBE suggests that setting aside this limited amount of EAS support spectrum is quite obviously in the public interest, as it will enable the rapid and proficient deployment of CAP on a nationwide basis and improve the efficiency and performance of the EAS.

This is a once-in-a-lifetime opportunity for the commission to show leadership in support of the data capabilities of a CAP-enhanced Emergency Alert System.

To our knowledge, there is *no* other nationwide spectrum, other than the above-referenced 700 MHz allocation, that can serve this critical purpose. Without this spectrum, enhanced EAS will be badly crippled. Remote pickup and other BAS channels used by broadcasters in most markets are badly overcrowded and are in any case narrowband channels. These channels need to be kept clear during emergencies to coordinate remote broadcasts from emergency scenes, the means by which most people in local areas receive their ongoing emergency information. Further, these RPU and BAS frequencies are licensed to broadcasters and not the emergency management community.

The Society of Broadcast Engineers respectfully requests that the commission set aside a total of just 100 kHz in the D Block spectrum; i.e. 50 kHz from the D Block spectrum in the lower band, and 50 kHz from the D Block spectrum in the upper band, exclusively for the Emergency Alert System nationwide.

This proposal will have little or no impact on auction results, or the utility of the spectrum by potential bidders or public safety entities.

While SBE does not profess expertise in economics, it is apparent that allocating 100 kHz of the "D" Block, *which amounts to exactly 1 percent of the 10 MHz D Block* spectrum, will not significantly impact the results of the re-auction of the D Block spectrum.

The benefit to the public afforded by a vastly improved and more reliable Emergency Alert System, on the other hand, could well save countless lives and countless dollars in property damage by making the EAS a more data-rich, robust and reliable system. The balance favors the enhancement of the EAS system.

Specific Spectrum Plan

SBE proposes that the bands 758.0 MHz to 758.05 MHz and 792.95 MHz to 793.0 MHz be set aside for specific and exclusive use by the Emergency Alert System nationwide.

This spectrum should be licensed to state and local emergency management agencies, which makes any reallocation of the spectrum completely unnecessary. Coordination of the use of this allocation should be a cooperative effort between local broadcasters and the emergency management community, and SBE is willing to participate in the database maintenance and administration, together with state and local agencies, to insure efficiency and maximum spectrum re-use.

Depending on whether these channels are to be used for data, text, still pictures or even slow-motion video, the actual channelization can be determined by building channels in 6.25 kHz blocks, to achieve the required channel bandwidth. State-to-state coordination can be handled by the SECCs in question, the National Emergency Management Association and FEMA.

SBE hopes that the commission will support this proposal and expedite its consideration, as it is crucial to implementing the 2007 Second Report and Order specifying CAP enablement across the country.

Summary

The Emergency Alert System is a vital part of America's public warning mechanism, potentially affecting the life and safety of every citizen and resident. The EAS is the nation's mass public warning system. Current relay methods using the LP model to get warnings to broadcast and cable entry points are inadequate for a CAP-enhanced EAS. Anything that can be done now to improve the Emergency Alert System must be considered to be clearly in the public interest.

SBE's proposal should be given timely and serious consideration from the commission as it moves forward with D-Block re-auctions and licensing. The D-Block plan should include the use of dedicated spectrum for purposes that are at the heart of public warning improvement. Making this allocation will have little impact on the re-auction process since it amounts to 1 percent of the spectrum in the D-Block.

A number of agencies and organizations, including the Society of Broadcast Engineers, could manage these channels in partnership with state and local government warning centers, thereby creating no additional financial or management burden to the commission. Since these channels will be completely vacant as of February 2009 (except in Canadian and Mexican border areas), they could be dedicated quickly, so that their actual use could commence when the requested spectrum is available in any given area, but in any case, no later than February 2009.

Comment on this or any story. E-mail radioworld@nbmedia.com *with "Letter to the Editor" in the subject field.*

Write to RW

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NewBay Media

Care and Study: More on the Power Increase

Legacy Stations Deserve Protection From Interference

We wrote here in the July 2 issue in support of an FM digital power hike. But we also said that such a process must be done with care and study.

As multicasts began to roll out in various markets, it didn't take long for broadcasters and listeners to realize that there were certain shortcomings.

Given the "all or nothing" nature of digital signals, these shortcomings were obvious and, in some cases, debilitating. Many stations whose analog signals could otherwise be received without issue in homes and offices could not produce digital reception in those same locales. It didn't take a rocket scientist to tell us that more power was needed to bring these digital signals to par with the analog.

We began to hear about a 10 dB digital power increase for FM HD Radio stations the better part of a year ago. Then at the NAB spring show, there was talk about the power boost and products on the exhibit floor to accommodate it. But what about interference? No problem, proponents said. Presumably because emissions would remain within the 73.317 mask specified in the FCC rules, no "interference" would occur.

Perhaps in the strictest interpretation of the FCC rules that might be true, but out in the real world where signals, both desired and undesired, meet the antenna, it's a different story in many cases.

Since the first FM IBOC stations signed on their digital carriers five or more years ago, adjacencies have been complaining of interference and lost coverage. Such complaints were perhaps more widespread in the East, home to many grandfathered short-spacings; but they also occurred in the Midwest and West, where "rim shot" stations often reach into a market with subpar but otherwise listenable signals. In some cases, the in-town IBOC adjacencies pushed these stations right out of the market.

With such empirical knowledge in hand, we didn't really need the NPR study to tell us that additional interference would be produced by an across-the-board 10 dB digital power increase.

While we feel some level of digital power increase is needed to make multicast signals viable for many stations, we also know that an across-the-board increase would be a mistake. As such, we encourage the proponents of the measure, the FCC and eventually digital stations to take a more measured approach, employing more power only where such would not harm neighboring stations.

HD Radio certainly adds value to terrestrial radio, and that will over the long term help it remain viable and competitive with the many alternatives that are out there. But we cannot blindly move forward with an across-the-board digital power increase that robs Peter to pay Paul. Legacy signals deserve protection from interference.

— Radio World

◆READER'S FORUM◆

Listeners at Arm's Length

Is it just me, or is the dilemma of "fixing" radio so obvious that nobody can see it?

Turn on your satellite/cable TV and most of the time you find yourself wandering from channel to channel to find something that you are truly interested in watching. You can go to the Web and have the same experience.

In radio, as in all other media, the problem is not too few channels; the problem is the content of the channels that are available. You can come up with a bazillion channels, digital or analog, but if it all comes out of the same prerecorded, canned, MP3-quality, low-creativity cookie cutter, the audience is not going to be there.

Radio has two unique characteristics to exploit. It can be live and it can be local. When people can hear those unique characteristics between the songs everybody else plays, and people can have shared experiences in that city we live in, then radio has a relationship to the listeners that cannot be matched by MP3s, satellite radio or multi-city automated radio formats.

When advertisers experience hands-on involvement in marketing their product and not just buying time through an impersonal ad agency, they know the power of live and local. It is not the easiest or cheapest way to run a radio station or group, but over the long haul, it is the most profitable.

The rest of the discussion on digital-this or surround-that shows that the industry would like to find any way it can to gain audience but to keep listeners at arm's length.

Success lies in the ability to find ways to embrace your audience. If you aren't willing to be at every possible public event, hang up station banners, give out bumper stickers, do contests and giveaways and become part of the life of your listeners and advertisers, you aren't in the right business.

Michael Baldauf
Broadcast Consultant
Pueblo, Colo.

Power Hike

I hope we don't end up with an FM band that is mostly fuzz.

I suppose we could increase IBOC power on a case-by-case basis, with the criteria being digital interference of analog. This is a litigious solution and would probably bog down as stations are asked to give up some part of an analog coverage that pays the bills. Left unexplored is the extent of digital to digital interference both in the hybrid and all-digital mode at these higher levels.

I suspect considerable problems because I know that IBOC duplicates upper and lower sideband and I suppose this is because HD-R is sensitive to analog or other digital interference and therefore needs a spectrum diversity backup.

Meanwhile we see HD Radio stalled. With less than 1 percent of our listening audience capable of HD listening, it's hard to argue that our management should put resources into multichannel programming.

All of this should give us pause about the inherent limitations of HD Radio as it stands. Mixing digital and analog transmission modes in the same bandwidth creates technical tradeoffs that can only go so far. It makes the option of a mandated digital transition of TV look good by comparison.

The NAB may hate it for the short term pain but the longer view of a healthy radio service will demand the design of an all-digital service in a new band. Open a new all-digital radio band in the lower VHF spectrum freed by the DTV transition and mandate a change to this spectrum. It's been suggested on your pages before.

I can add only this thought: that the mandated transition could be staged in parts. As with TV there could be duplication of services for a period as the receiver base grows for the digital band.

Or there could be a staged move of stations. Let the digital band open up first to those who want to enter broadcasting with smaller specialized audiences: community broadcasters, then public radio, then larger stations could be moved over by a certain deadline.

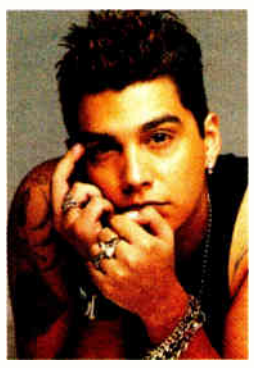
Do we have to wait for wireless Internet radio to blow us out of the water before we move to an all-digital mode? Will it be too late then? I fear that I already know the answer.

Tom Ammons
Broadcast Technician
WQED(FM)
Pittsburgh

Explicit

The picture of Cary Edwards on page 40 could not be much more sexually explicit. I am disappointed you chose to run it.

Dave Freelan
Producer
"Sounds of Joy"
Greentown, Ind.



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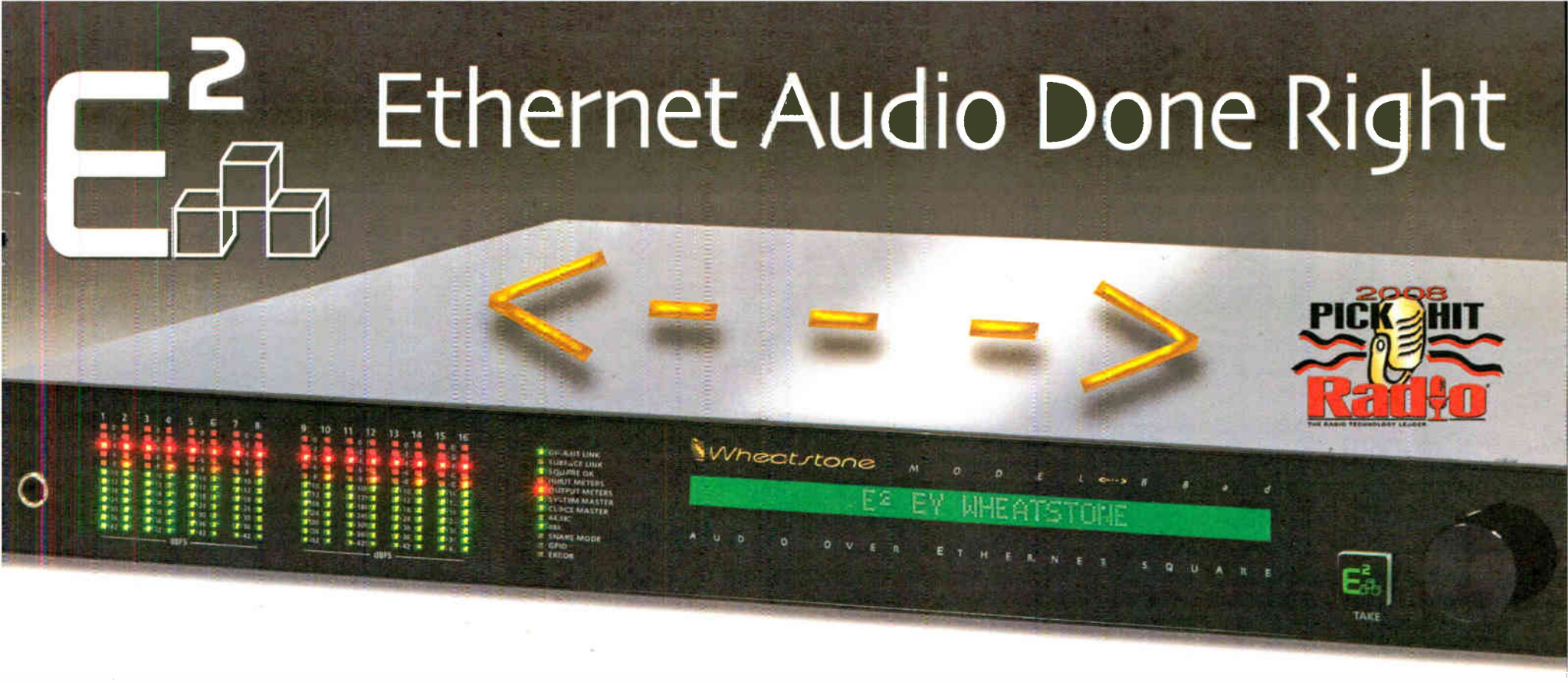

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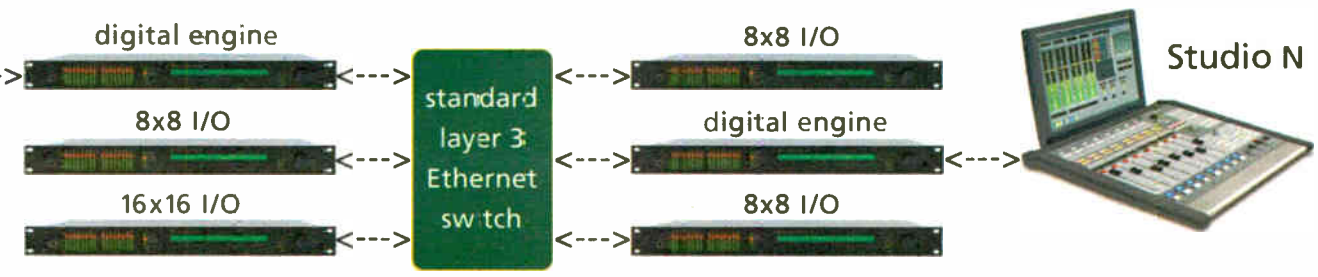

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