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Readers Speak

The translator crunch; Leonard Kahn's CAM-D; consolidation's evils; and the muddle of digital.

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Sawed Off in Georgia

A station recovers from a towering case of vandalism.

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Radio World

\$2.50

The Newspaper for Radio Managers and Engineers

July 2, 2003

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NEWS & ENGINEERING

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▼ We help you brush up your knowledge of FCC regulations. **Page 29**

NEWS ANALYSIS

CCA's Bankruptcy Case Persists

Company Director's Whereabouts Unknown; New Firm Will Service CCA Clients
 by Randy J. Stine

FAIRBURN, Ga. Six broadcasters who had paid all or part of the purchase price for new transmitters from Commercial Communication Associates Inc. but failed to receive them prior to the bankruptcy filing of the transmitter manufacturer now have their equipment. Their advance payments had totaled approximately \$220,000.

Meanwhile, local police say they would like to speak with the company's director to ask about activity by CCA executives leading up to the bankruptcy filing, but they can't find him.

Separately, two former employees have started their own business servicing and selling CCA transmitter parts.

CCA ceased operations at its Fairburn, Ga., facility last November and filed under Chapter 7 of the United States
 See CCA, page 3 ▶

NEWS ANALYSIS

Debate Just as Fierce In Wake of FCC Vote

by Leslie Stimson

The broadcast world did not grind to a halt when the FCC passed new media ownership rules June 2, although the world of buying and selling radio stations took a dip while everyone tried to figure out where they stood in the new scheme of things. Although many critics painted the vote as a win for consolidators and big media, some radio owners actually considered the vote a step backwards for them.

Business executives don't like uncer-

tainty in the market. Several experts awaited the release of the details of the agency decision before commenting as they contemplated their legal challenges. Viacom/Infinity and Clear Channel had hoped for more radio deregulation. Viacom was disappointed in the decision to retain local radio ownership limits, believing that in the largest markets it should be allowed to own more.

Arbitron indicated it doesn't want to be in the middle of the controversy — as it may well be under the FCC's plan to

See OWNERSHIP, page 6 ▶

Console Makers Explore New Routes

Buyer's Guide delves into consoles, mixers and routers. **Page 33**



Shown: Wheatstone Generation 9 Digital On-Air Radio Control Surface

FLASH IN THE HAND

▼ Yee-ha! A Texas reader wins a Maycom Audio Systems HandHeld recorder.

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N.H. Tower Case Hits New Snag

LEBANON, N.H. Seven months after the New Hampshire Supreme Court rejected a city zoning ordinance limiting the height of new communication towers to 42 feet, the broadcaster trying to build a new four-tower array remains stuck in zoning limbo after another setback.

Attorneys for Koor Communication Inc. successfully argued last December that the minimum tower height required by the FCC preempts local law governing construction of new communication towers. The city's restrictive zoning was held to constitute a ban on such towers (RW, Feb. 1).

The case drew national attention from radio and television broadcasters and engineering groups at a time when local

zoning boards are making it more difficult to build transmission towers, especially in urban areas. Several observers predicted the case could set a precedent.

They feel their ordinance is valid as to where a tower can be located.

— Fred Hopengarten

Massachusetts attorney Fred Hopengarten, a communications law specialist representing Koor in the case, said the city of Lebanon this spring again

struck down a request by the company to build a four-tower array to the height of 266 feet for WQTH(AM) in city. If built, the 50 kW station, at 720 kHz and

licensed to nearby Hanover, would have the most powerful daytime signal in northern New England, according to Koor.

Hopengarten said the city's zoning

board of adjustment denied Koor's request to build the towers in an industrial area in Lebanon.

"The city's opinion is that new communication towers are allowed only in what they classify as the rural land zone. The city believes that the New Hampshire Supreme Court's ruling overturned the height restriction in rural land zones only," Hopengarten said. "They feel their ordinance is still valid as to where a tower can be located."

Koor appealed the denial in May and planned to apply for a variance to build in the industrial zone, he said. The company also is exploring land options in rural zones.

"Predicting the outcome of a variance application would require great hubris," Hopengarten said, when asked whether the city could still face more litigation over the tower permit if the variance is denied.

Koor did receive zoning approval in June for a 259-foot tower for a proposed 1 kW AM radio station in a rural land zone of Lebanon. However, Koor still must conduct a wetland study and receive approval from the Lebanon planning board in order to begin construction.

Bob Vinikoor, president of Koor Communication Inc., said it's not easy building a new station in light of the difficulties an applicant faces from local zoning boards when an individual needs to construct new towers.

Koor first filed for variances to the ordinance in 1999 seeking to construct the four towers to the height of 266 feet in accordance with its FCC license and CP. The broadcaster lost several court decisions, leading to an appeal to the state's highest court in 2002.

— Randy J. Stine

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CCA

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Bankruptcy Code, which calls for the immediate liquidation of assets to pay off creditors. The court listed approximately 40 unsecured creditors owed a total of nearly \$100,000. (Radio World is among the unsecured creditors.) In voluntary petition papers filed with the court last fall, CCA estimated total debts of between \$100,001 and \$500,000.

The trustee overseeing the bankruptcy proceedings of CCA says funds may be available for distribution to unsecured creditors of the former transmitter manufacturer. Proof of claims by CCA creditors must be submitted to the federally appointed bankruptcy trustee by July 21.

Partially built

The six broadcasters received their transmitters this spring in various stages of completion. The bankruptcy trustee ordered each broadcaster to pay a \$2,500 fee to gain possession of their partially completed transmitters.

Chris Myers, chief engineer for WGNX(FM) in Vero Beach, Fla., said the station received its rebuilt Broadcast Electronics FM30-T transmitter in early March. The station paid CCA \$20,000 last June for the transmitter but it wasn't delivered before the bankruptcy filing.

"We feel fortunate to have our hands on the thing. We still have some work to do on it," Myers said, "including setting the remote logic and retuning the exciter. It will cost us another \$4,000 to finish it."

The station had been preparing to upgrade from 25 kW to 50 kW, but the project was put on hold until the transmitter was delivered, Myers said.

KZDX(FM) in Burley, Idaho, paid CCA \$35,713 for a new CCA GS two-tube 12 kW transmitter. The company failed to deliver prior to the bankruptcy.

"The transmitter was about half-finished when the bankruptcy trustee released it to us this spring. So we ran into some additional expenses, but we're just happy to have it," said Gerald Thaxton, chief engineer for KZDX.

The broadcaster contracted with Jerry Meier, CCA's former director of engineering, to finish the transmitter, Thaxton said.

Meier and Van Nguyen, CCA's former production manager, have started V&J Electronics, based in Riverdale, Ga. The company will service and sell CCA transmitter parts.

"We hope to start building new transmitters this summer and expect to market them under the CCA name," Meier said. "We're servicing and selling parts for Sintronic and CSI transmitters, too."

Meier said V&J Electronics worked hard to "clean up the mess left by CCA" for the six broadcasters stranded without their new transmitters. "We accommodated them the best we could," he said.

V&J Electronics purchased a portion of CCA's inventory at an auction of transmitter parts and test equipment at the Fairburn headquarters in January. The sale netted about \$40,000, according to court records.

Another option for users seeking CCA transmitter parts is Goodrich Enterprises Inc., in Omaha, Neb. Charles Goodrich, president of Goodrich Enterprises Inc., said the broadcast equipment supplier is stocked with most CCA transmitter parts.

"We have new and rebuilt tuning line assemblies, tubes, plate blockers, Rotron CX33 blowers ... we have nearly everything for CCA transmitters. We were one of CCA's main suppliers before they went under," Goodrich said.

Goodrich Enterprises is listed as an unsecured creditor of CCA in court papers.

Also now in possession of its transmitter is an Arkansas broadcaster who filed a complaint with Fairburn police last November. It alleged CCA executives sold the station a transmitter while knowing it was preparing to file for bankruptcy.

According to court documents, Caldwell Broadcasting paid CCA \$58,096 for a transmitter for KSMD(FM) in Pangburn, Ark. KSMD officials told Radio World they made final payment for a FM-G two-tube 12 kW transmitter in late October, just weeks before CCA's filing.

Police Sergeant J.H. Metcalf said the CCA file has been classified as "inactive" for now. "We are not currently pursuing any criminal investigation pending the outcome of CCA's bankruptcy proceedings. I feel there was some criminal intent by CCA's people. Unfortunately we would have to go overseas to find some of them," Metcalf said.

According to court documents, Commercial Communication Associates' majority owner is Sistec S.A.R.L., based in Luanda, Angola, in Africa. Sistec imports and exports transmission equipment to and from Angola and owns several other manufacturing companies. Alvar St. Aubyn is listed as director of CCA.

"We have not been able to track down St. Aubyn and a former salesman to speak with them about their involvement," Metcalf said.

Gary Brown, the attorney representing CCA in bankruptcy proceedings, declined comment.

The original CCA Electronics was founded in 1963 by a group of RCA transmitter engineers, after RCA announced it was ending its transmitter program. Ron Baker bought the company when it went bankrupt in 1982. Baker owned CCA Electronics until Commercial Communication Associates purchased the company's assets in early 2000.

◆ NEWS WATCH ◆

HD Radio

Conversions Continue

Several radio groups recently transitioned stations or signed on as Ibiqity Digital licensees and committed to purchase HD Radio transmission equipment.

A master purchase order placed with Broadcast Electronics by Clear Channel, the industry's largest owner, includes equipment for five stations to convert to HD Radio this year: Los Angeles stations KIIS(FM) and KOST(FM), San Francisco's KYLD(FM) and KKSF(FM), and WDTW(FM) in Detroit.

Cox Radio Inc., the third-largest group based on revenue, has chosen Harris analog and digital transmission equipment for five Atlanta-area stations. Cox will use Harris Z HD and Z CD transmitters and Dexstar digital exciters for its WSB Radio Group. The equipment is being installed at FM stations WSB, WALR, WBTS and WFOX as well as WSB(AM).

The University of Southern California has outlined its HD Radio schedule for its four-station network; equipment was ordered from Broadcast Electronics. KPSC(FM) in Palm Springs plans to turn on HD Radio on Aug. 1, followed a month later by KCPB(FM) in Thousand Oaks. KFAC(FM) in Santa Barbara goes HD-R on Oct. 1 and flagship KUSC(FM) in Los Angeles will convert later in the year.

Bonneville classical KDFC(FM) in San Francisco has been operating full-time with HD Radio signals since May 1. It had been an Ibiqity test station previously. Bonneville's other San Francisco FM stations, KOIT and KKDV, planned to begin full-time HD Radio transmissions by early summer.

BE Wins Clear Channel Contract

QUINCY, Ill. Clear Channel Communications has placed an order for 69 Broadcast Electronics transmitters and exciters for delivery this year, the supplier said.

Steve Davis, the senior vice presi-

dent of engineering and capital management for the group, called it a "huge buy." BE declined to state the value of the contract.

The purchase order includes "almost a dozen" each of the Broadcast Electronics AM-1A and AM-6A transmitters; 10 solid-state BE 1kW, 2 kW and 5 kW FM transmitters; 10 BE FXi-60 exciters; five HD Radio FMi BE transmitters; and 16 BE "T" series single-tube FM transmitters ranging in power from 10 kW to 60 kW.

Williams Cuts Short His Stay at SAS

BURBANK, Calif. It was a short stint for Jack Williams and SAS.

Williams, known in the industry from his years running console supplier Pacific Research & Engineering, had signed on with SAS during the spring NAB convention as that company's director of consoles and systems development.

But Williams told friends and colleagues in an e-mail that he didn't plan to stay with SAS. He said he was leaving on good terms.

He told Radio World that the arrangement simply was not a good fit. "It looked good on paper but it just didn't."

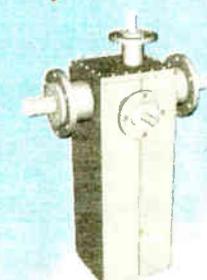
Howard Mullinack, SAS director of strategic development, said, "A year ago, SAS made the commitment to be a leader in console control surfaces. The result was Rubicon, introduced at NAB, and winner of Radio World Cool Stuff, Radio Hit Picks and NAB Achievement in Media awards.

"Jack Williams joined SAS at NAB to help with systems integration, after the design and feature set of Rubicon was completed. We regret his decision to leave, but his departure does not change our commitment. Development of Rubicon is proceeding on schedule, with the first complete system integration slated for KABC Radio Los Angeles this summer."

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FROM THE EDITOR

Building a New Big Apple Branch

by Paul J. McLane

I love photos of towers and antennas on high; and I love New York. So I was doubly pleased by a batch of photos sent by Shively Labs and taken by my friend John Lyons from atop 4 Times Square, site of a new master antenna project.

Shively has won the contract from The Durst Organization to provide the FM antenna and coaxial transmission line; it will work with Myat to supply the transmission lines. ERI will build the structure for the TV and FM antennas.

The facility is home to eight FM stations; WKCR has signed for a ninth spot, following the World Trade Center disaster in 2001. The overall project is valued at \$25 million.

This will be the first new broadcast structure in the city since the 2001 terrorism attacks. The owners hope it will attract clients who will use it as an auxiliary site, as we reported in June.

The ERI contract is for a 385-foot tower to be mounted on the 48-story office building at 42nd and Broadway. ERI also will provide structural analysis to support modification of the existing 75-foot tower so the roof can accommodate the new one.

Shively said it will supply a Model 6016 panel antenna system designed to broadcast HD Radio along with analog signals. It will



For use during construction of the new master antenna, Shively has supplied a 6017-1/4 single-level Lindenblad-style antenna, seen at left, for use by the stations now broadcasting atop 4 Times Square.

replace a Model 6016 analog-only panel, in use since 1999. It said the new antenna will be the first major multi-station facility designed from inception to handle both HD Radio and analog signals.

"The antenna is capable of handling 19 stations broadcasting simultaneously and features a low-windload design that is of critical importance to the self-supporting tower design," according to the company.

I love this kind of stuff. You can see more rooftop photos at www.shively.com under News, including a nice view of the Chrysler Building. Lyons, who took the photos, is manager of communications and broadcast operations for Durst and a former radio engineer. John, keep those pix coming.

★ ★ ★

I wrote here earlier that the Broadcast Engineering Conference at NAB looked particularly good for radio this year. Indeed it was. Radio World has now published several articles summarizing those presentations, including one by Jeff Johnson in this issue about facilities management.

If you are interested in these topics, I suggest you pick up a copy of the BEC proceedings, available through the NAB Store at

www.nab.org/nabstore. The cost is \$95 for the book/CD combo, or \$75 for just the CD-ROM; there is a discount for NAB members.

★ ★ ★

I have news about several contributors. Richard Fry has compiled a number of papers about FM broadcast transmitters and antenna systems. Fry is a former radio and TV chief engineer and most familiar to the industry for his work as a broadcast field service supervisor for RCA and then as senior FM applications engineer for Harris Corp. See the papers at <http://rfry.org>.

Barry D. Umansky, who writes our *Broadcast Law Review* column, will become the Edmund F. and Virginia B. Ball Chair in Telecommunications at Ball State University in Muncie, Ind., in August. The former NAB deputy general counsel also has moved his law practice to the communications law firm of Irwin, Campbell & Tannenwald, P.C. He will continue to contribute to Radio World.

On a sadder note, I'd like to take a moment to remember Bob Rusk, a contributor who passed away recently.

Robert Donald Rusk died of heart failure at the age of 43 in Astoria, Ore., the town of his birth; he was survived by two sisters and three brothers. His partner, Patrick Martin, a companion at many trade shows and on many trips, had known Rusk for 32 years.

"I was working at KVAS Radio in Astoria and he walked in the station, as he was interested in broadcasting." Speaking to me by phone after Rusk's death, Martin remained deeply affected by the loss. "Bob was, by far, the greatest thing that ever happened in my life. Many things I would have never had the chance to do without him."

Rusk, a former news director, disk jockey and on-air host, loved radio and Hollywood show business. Not surprisingly, his specialty was the celebrity interview. He interviewed more than 200 stars including Drew Carey, Bob Hope and Steve Allen.

He wrote for Radio World on topics as diverse as congressional regulation, gay and lesbian broadcasters and heritage radio. His work also appeared in *Daily Variety*, *The Hollywood Reporter*, *The Los Angeles Times* and the *Detroit News*.

The staff of Radio World is grateful for his hard work and friendship; we send our condolences to his loved ones.

This issue we give away a HandHeld recorder from Maycom Audio Systems in our New Technology Sweepstakes. You can still sign up for a shot at six more months of prizes at www.rwonline.com.

The HandHeld is a convenient portable MPEG-2 recorder that uses Flash Card technology. Its associated Docking Station allows you to copy the Flash Card to a computer via USB, recharge the recorder's Smart Battery, record via XLR inputs, monitor via headphones (a feature also available on the main unit) and operate on A/C power. Retail value: \$1,145.

You can learn more about this recorder from Bradley Broadcast & Pro Audio. Maycom Audio Systems is a trade name of Solid Semecs B.V.

The winner is James Heck in Pharr, Texas, director of technical services for the World Radio Network.

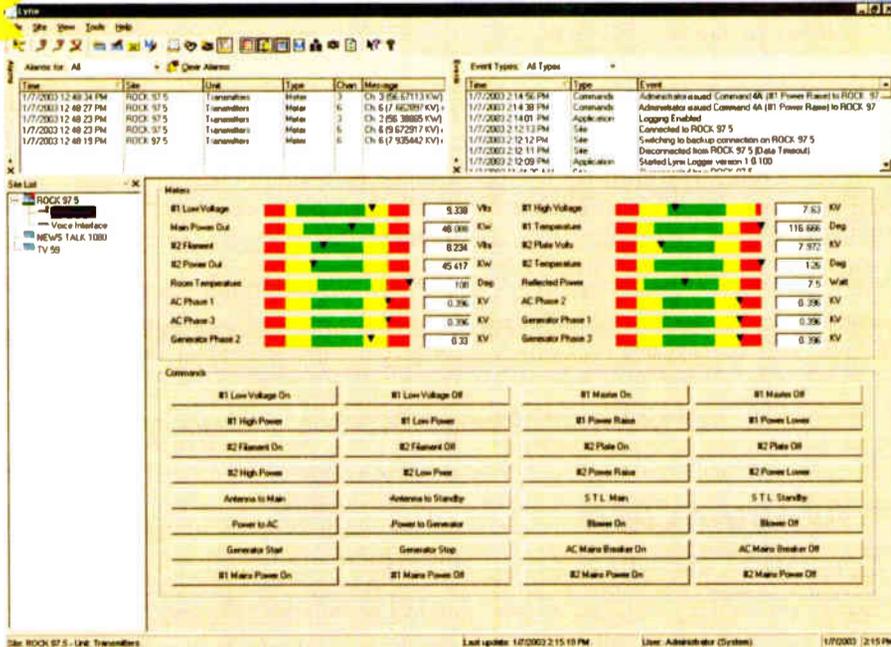


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Newest Commissioner Roars Loudly

Jonathan Adelstein Invites Congress to Step In on Media Ownership Questions

Jonathan Adelstein is the newest FCC commissioner, confirmed in November to serve the balance of former Commissioner Gloria Tristani's term, which was to expire June 30. Under a provision in the Communications Act, Adelstein can continue to serve until the 108th Congress adjourns. At that time, he could be renominated for a full five-year term.

Before joining the FCC, Adelstein served for 15 years as a staff member in the U.S. Senate staff member, most recently for Majority Leader Tom Daschle, a Democrat from South Dakota.

Adelstein joined fellow Democratic FCC Commissioner Michael Copps in opposing new media ownership rules that passed 3-2 in June. Both men traveled the country to hold about a dozen hearings on the issue.

What follow are excerpts from Adelstein's testimony during an FCC oversight hearing before the Senate Commerce Committee that took place two days after the agency vote.

I'm convinced the FCC can benefit from this careful review by Congress of our recent decision allowing further media concentration. Since this issue goes to the heart of our democracy, we desperately need input from members of the world's greatest deliberative body. ...

Over my strong dissent, the FCC approved the most sweeping and destructive rollback of consumer protection rules in the history of American broadcasting. ...

In the end, our new rules will simply make it easier for existing media giants to acquire more outlets and fortify their already massive market power. (The order capitulated to many of the long-standing demands of the media companies the FCC oversees.

As media conglomerates go on buying sprees, they will accumulate enormous debt that will force them to chase the bottom dollar ahead of all else. This is likely to result in more sensationalism, more crassness, more violence and even less serious coverage of the news and local events.

Concentration 'not healthy'

The American people instinctively grasp that media concentration is not healthy for our democracy. They know how it will affect coverage of issues of local concern.

This is why we heard such a public outcry. Commissioner Copps and I reached out to Americans at field hearings across the country. People take their media very personally, and they are very articulate and substantive in what they say.

We listened to thousands of people firsthand in city halls, schools, churches and meeting rooms. We heard a loud and unanimous chorus that they think media concentration has gone too far already and should go no further. ...

In my years on the Hill, I worked on a lot of hot issues. But I've never seen an issue on which such strong opinion is so

one-sided. It's touched a raw nerve. Three-quarters of a million people contacted the FCC, and 99.9 percent of them opposed further media consolidation. Of the thousands of e-mails I personally received, I saw only one that didn't oppose allowing further media concentration. ...



FCC Commissioner Jonathan Adelstein

We've heard opposition from people and organizations from every political stripe, from liberal to conservative, Republican to Democrat, and virtually everyone in between. Organizations of nearly every political stripe have weighed in, from the National Rifle Association to the National Organization for Women, from the Catholic Conference of Bishops to the Leadership Conference on Civil Rights. The Parents Television Council, Common Cause, the National Association of Black-Owned Broadcasters, the National Association of Hispanic Journalists, the Writers Guild, and the Association of Christian Schools. Each of these organizations expressed grave doubt about the wisdom of allowing greater consolidation. ...

This should not be seen as a partisan issue simply because it broke down along party lines at the FCC. ...

The FCC's order assumes that economic efficiencies and cost savings from mergers will always get channeled into better news and programming. But it requires no steps to actually make that happen.

The majority made the leap of faith that fixed rules based on oftentimes arbitrary numbers are the be-all and end-all of what's in the public interest. They rejected an approach to look case-by-case, market-by-market in favor of bright-line rules. They refused even to ask parties that seek to merge to say anything about how many news staff would be retained, the number of hours of local programming planned, cross-programming plans for TV duopolies or the overall impact on news and public affairs programming. ...

It's true that Congress and the courts forced a massive review. But they did not force massive deregulation. The FCC had to undertake the review, but it

had a choice on the outcome. Certainly, the media markets have changed, and our rules must keep pace. But Monday's order goes much further than Congress or the courts required. It elects gratuitous deregulation. ...

To protect the public, we could have required a market-by-market, case-by-case approach that would ensure that each merger served the interest of the communities affected. By failing to do so, the order went further than necessary in eliminating most of the last safeguards the FCC had in place to protect the public.

TV profits

One argument in favor of unleashing the media giants is that free over-the-air television is threatened. That's a worthy goal, but the rumors of its demise, widely spread, are greatly exaggerated.

Broadcast network advertisers (in May) spent a record \$9.4 billion in upfront sales for next season, up 13 percent. The Wall Street Journal recently reported that some networks make \$600-\$700 million, though others are less profitable.

It is quite telling that the best case for consolidation is that the networks need to make still more. It's not the FCC's job to make sure every big TV network makes money — that's up to network management. ...

The day we will know over-the-air

TV is in real trouble is when broadcasters start lining up to turn back their licenses. Today, instead, the value of television stations continues to skyrocket because these licenses are so scarce. ...

Neither the Internet nor cable changes the fact that people still get the vast bulk of their local news and information from the same places they always have: their local newspaper and local TV stations. And these are the very outlets we are giving the most new flexibility to merge.

We are moving to a world where in larger markets one owner can combine the cable system, three television stations, eight radio stations, the dominant newspaper and the leading Internet provider, not to mention cable networks, magazine publishers and programming studios which could produce the vast bulk of the programming available to those outlets.

In smaller markets — say, the town of Great Falls, Montana, with a population of 56,690 — under our new rules one entity could own the cable company, the dominant television station, the dominant newspaper and multiple radio stations. Is that automatically in the interest of the residents of Great Falls? ...

In this order, we face tradeoffs between efficiencies and other public interest goals such as localism and diversity in the media. Guess who wins. ...

To paraphrase Winston Churchill, this is not the end, or even the beginning of the end, but just the end of the beginning. 🌐

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StudioHub+ wiring installed by Technet Systems', (L to R) Lindsay Collins supervising engineer, Bob Smith, Mark Bisbee with Stu Albert, contract engineer (in white) in front of the newly installed Radio Systems' StudioHub Interconnect System.



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Ownership

► Continued from page 1
use Arbitron statistics for defining which stations are actually part of a radio market.

Opponents of the FCC's vote were pondering their legal options, from filing Petitions for Reconsideration at the commission to a lawsuit in the federal court system. NAB's radio board members passed a resolution stressing the importance of presenting a unified front before Congress, the FCC and the public in support of "preserving and strengthening free, universal, over-the-air radio and TV signals."

The radio board directed NAB to form a working group to develop recommendations for NAB's position on the commis-

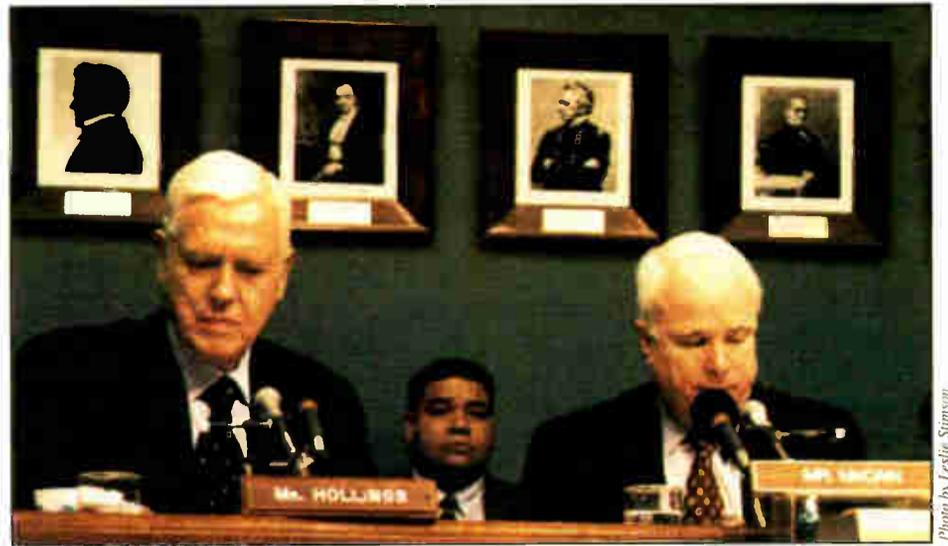
sion's upcoming rulemaking on market definitions for unrated radio markets.

One radio board member said the group had to figure out not just what it could do, but what kind of legal option was likely to succeed.

A week after the vote, Chairman Michael Powell told the Boston Globe he "didn't eliminate one rule" governing media ownership, but changed standards for several. He disputed criticism that the public didn't have sufficient notice about the vote, and suggested that a "silent majority" of Americans backed or accepted the changes.

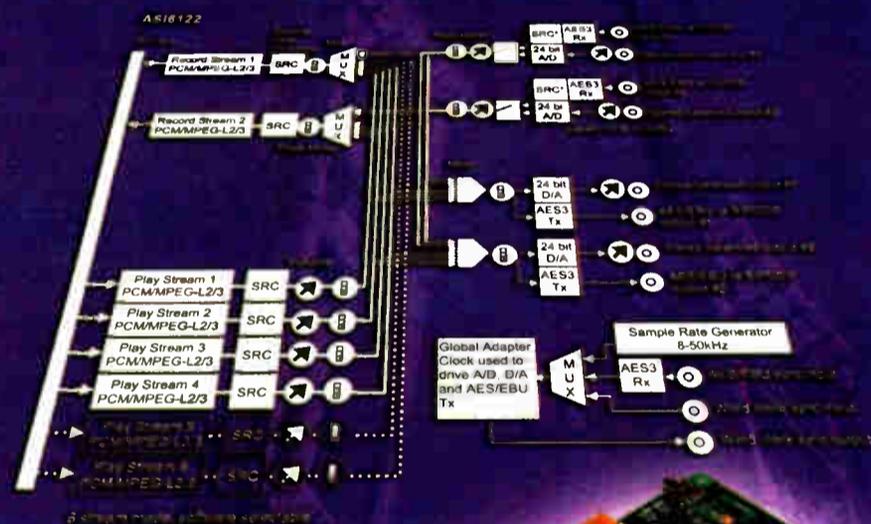
Lightning rod

Congress called on commissioners for an explanation, and some lawmakers introduced measures to change portions or the entire decision.



Sens. 'Fritz' Hollings, D-S.C., Ranking Minority Member and John McCain, R-Ariz., Chairman of the Commerce Committee

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The media ownership rules have also become the darling of presidential hopefuls, eager for a chance to get their name in print with an issue they think the public would care about.

But Democrats and some GOP allies are not assured that any bills would pass both houses of Congress and survive a potential presidential veto.

More likely, experts believe, is that the issue will end up in the courts.

Arbitron is not pleased that the FCC chose Arbitron Radio Metros as the new radio market definition to replace the contour overlap method. Arbitron President/CEO Stephen Morris said to analysts after the vote, "About the last thing in the world we want to be is the definer of radio markets when the political and financial crossfire begins over what should be a market." He believes that's the FCC's purview.

"We're really just trying to facilitate buyers and sellers coming together in whatever geography they want to work in and this introduces a radically different definition of a marketplace that I'm sure we're going to wish had never happened."

Several small-market group owners expressed confusion to Radio World over how the new rules apply to them. They awaited word from the FCC on how it will define a radio market in cases where Arbitron has embedded metros and continuous markets, such as the Baltimore-Washington area. Embedded metros raise questions for broadcasters because stations in the embedded metro are not always measured as often as stations in the larger metro.

Congress grills commissioners

Some members strenuously protested the new rules in a hearing of the Senate Commerce Committee shortly after the vote.

"I believe the FCC decision rings the dinner bell for the big media conglomerates who are salivating to make a meal out of the nation's many small media outlets," said Sen. Ron Wyden, D-Ore.

Sen. Barbara Boxer, D-Calif., said she was "frosted" with a statement made earlier by FCC Commissioner Kathleen Abernathy, who spoke of the public's "fear" and misunderstanding of the media ownership issue.

"Just because you sit behind a microphone does not make you smarter. It's an insult."

Boxer read aloud portions of letters sent to her and the FCC protesting more media consolidation. One writer stated she no longer listened to radio because of a lack

See OWNERSHIP, page 7 ►

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Ownership

► Continued from page 6 of music choice.

While experts don't believe sweeping bills would change the outcome of the vote, limited changes are more likely, they say.

Commerce Committee Chairman Sen. John McCain, R-Ariz., wants to let regulators impose strict ownership limits, and offered such a measure. McCain asked each of the commissioners if the Communications Act would let them, in effect, re-do the new media ownership

limits. McCain was specifically referring to the TV national audience cap. He opposes measures to return the cap to 35 percent, but said he was not sure what the number should be.

McCain pursued this change in legislation.

Powell defended the new rules but said the agency would work with Congress as members consider changes.

McCain declared his intent to include language in the upcoming FCC reauthorization to clarify that the agency may reimpose ownership restrictions as part of its media ownership review when it finds such actions would be in the public interest.

Other lawmakers on the committee, Democrats Bryon Dorgan, N.D., and Fritz Hollings, S.C., have discussed attaching an amendment to the FCC's appropriation measure, preventing the agency from spending federal money to pay for the rules changes.

McCain expressed his disappointment with fellow committee members for already deciding to put limits on the FCC's upcoming appropriation before the hearing. "That's not what this committee is about."

Hollings replied, "I think it's that serious." ●

Powell suggested that a 'silent majority' of Americans backs or accepts the changes.

McCain asked Powell if the requirement that rules be reviewed every two years is excessive. Powell said the timetable is destabilizing for the FCC and suggested a five-year span.

The senator asked each of the commissioners whether they thought there was too much concentration in radio markets. Each said that in some markets, there is too much.

Opponents Fear Media Might

At first, House members let the Senate get all the ink on the new ownership rules, but eventually members of the other body of Congress had their say.

Several representatives introduced a bill to undo the new media ownership rules, led by Rep. Bernie Sanders, an Independent from Vermont.

Sanders said, "This is not a partisan issue or an ideological one. You have people all over the political spectrum fighting against this FCC ruling — from consumer groups to the Catholic bishops to the NRA — because they know what a danger this new rule is. It will be very frightening when we wake up one day and find that three or four huge conglomerates control the flow of information in this country."

The "Protect Diversity in Media Act," if passed, would rescind the FCC ruling and restore the regulations to where they were before the June 2 vote.

Chances of passage seem slim. Commerce Committee Chairman Sen. John McCain, R-Ariz., opposes the measure, as does his House counterpart, Rep. Billy Tauzin, R-La.

McCain still planned a June 19 vote on the bill.

Hinchey goes further

Meanwhile, Democrat Rep. Maurice Hinchey of New York was drafting legislation that would affect radio if passed.

"The Reclaiming the Public's Airwaves Act" would restore radio's national ownership cap, strengthen the local radio ownership caps, as well as reverse all the media ownership rules just passed by the FCC. The bill would also restore the Fairness Doctrine, requiring broadcasters to give equal time to opposing points of view. The FCC jettisoned the Fairness Doctrine when Ronald Reagan was president.

Hinchey was one of 16 House members to oppose the '96 Telecom Act.

"(T)hree companies own half the radio stations in America," he stated. "Two-thirds of America's independent newspapers have disappeared since 1975, and nearly three-quarters of the country's media markets have only one local daily newspaper. One-third of the nation's independent TV stations have vanished."

"The result is that local news coverage is neglected, political opinion is censored and entertainment is degraded. Even popular musicians are banned from broadcast if they express political opinions that the media magnates dislike."

— Leslie Stimson

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Georgia Radio Station Replaces Sawed Tower

FOLKSTON, Ga. New equipment has been installed at a small Georgia radio station that lost its signal after its tower was sawed in half, although the work was complicated by a lapsed insurance policy and the pending sale of the station.

In less than seven weeks, WOKF(FM) erected a new 300-foot tower on the same base as its old tower, which collapsed on March 15 when vandals sawed off a steel post that helped support the structure. The 6 kW oldies station, which went back

on the air on May 8, reaches listeners in southeastern Georgia as well as parts of northern Florida.

The incident occurred about two weeks before the station was set to close on its \$650,000 sale to the TAMA Group, a Tampa Bay-based, independently-owned minority radio group that owns six stations in Florida. WOKF owner Jack Mays intends to continue to operate the station for a limited amount of time and then retire in coming months.

A week after the tower collapse, the



Vandals sawed WOKF's tower in half.

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station set up a temporary transmitting site at a tower leased by the city of Folkston and using its transmitting equipment, Mays said. WOKF then broadcast at 100 watts from that tower, located 10 miles away in Hilliard, Fla.

Mays also postponed the sale of the station until May 30, which allowed the station time to tackle a problem with its insurance policy.

Although equipment replacement costs normally are covered under the station's policy, Mays said the station inadvertently let it expire in February because of a postal error that prevented him from receiving the premium and cancellation notices. For years, he said, mail addressed to the station's studio address would be forwarded to its transmitter site, but these particular notices were not.



Nassau County sheriff's deputy and firemen are shown at WOKF's tower site after the vandalism was discovered.

Mays had to use \$100,000 set aside for the sale in an escrow account to purchase a new custom tower with a 36-inch face from Towers 'R Us, as well as an antenna from Electronics Research Inc. and a Scala antenna for the studio-to-transmitter link. The funds also were used to pay for engineering studies on the site, the professional installation of the equipment and tower painting at the transmitter site.

A spokesman for the Nassau County Sheriff's Office declined to comment because the investigation was continuing. No arrests had been made two months after the incident.

According to Mays, investigators do not have any leads on the perpetrators.

"I have no idea what the motive would be," Mays said. "There is no history of these incidents in our area."

— Naina Narayana Chernoff

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Radio World, July 2, 2003

Past columns are archived at www.rwonline.com/reference-room

How to Get a Jock's Attention

by John Bisset

Jeff Loughridge is the market engineer for Infinity in Washington. He and his staff are the guys who had fun installing a brass pole for hiding wiring in the Sports Junkies' studio (*Workbench*, May 21).

They're always thinking about solving problems. After a recent LED beacon SBE presentation by Dialight, Jeff and team "borrowed" the beacon for a day and hooked it up as a "time to break" warning light for the Junkies the next morning. It seems the small red warning light was being ignored by the air talent when it flashed to signal "time to break."

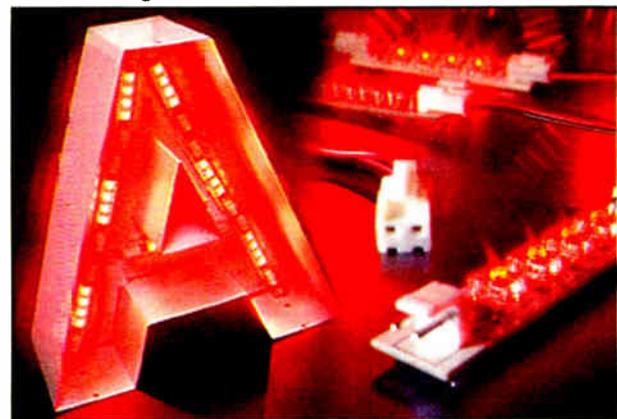


Fig. 1: LEDtronics StripLED Connectable LED Modules

The next morning, when it was time for the first break, the producer hit the warning light and the studio was bathed in red as the beacon came to life. One of the Junkies remarked the light could probably be seen in Florida.

To keep OSHA happy, the beacon was placed high on a shelf, so no one was in the direct beam of the light. If you saw the beacon demonstrated at the NAB show, you can attest to how efficient Dialight has gotten its LED product. It's the only LED tower light product that has been FAA-approved.

Now, LEDtronics is out with StripLED Connectable LED Modules. These modules, shown in Fig. 1, can be used

for signs, or displays, making it possible to configure your own "shut up, it's time to break" studio sign, without resorting to a tower beacon.

The LED modules are wired in parallel and function independently. Just like the beacon, if one LED fails, the others continue to operate. With an average life span of 11 years, the LED modules operate more than 20 times longer than incandescents.

Another advantage is that LED lamps produce almost no heat and require substantially less operating power than their equivalent incandescents. It's only a matter of time before LEDs take Las Vegas by storm, being so environmentally and budget friendly.



Fig. 2: Garden hose hangers are good for hanging coaxial test cables.

The StripLED Connectable LED modules range from \$2.75 to \$3.80 each. Find out more by visiting the www.ledtronics.com, or call (800) 579-4875 and request Data Sheet Log 157.

★ ★ ★

Reginald Swedberg is chief of KJNP(AM-FM) at North Pole, Alaska.

He and Jeff Turkel provided photos (Figs. 2 and 3) that show traditional garden hose hangers as a great way to hang coaxial test cables. The hangers are cheap and easy to obtain; they prevent the cables from devel-

oping flat spots or kinks as would occur if the cables were hung on a nail.

Hose hangers also permit the cables to be spread out, so selection is easier than if they are coiled on a shelf.

Reginald has expanded their use to hold extension cords either in the transmitter building or in a garage or shop at home. E-mail him at redgy@mosquionet.com.

★ ★ ★

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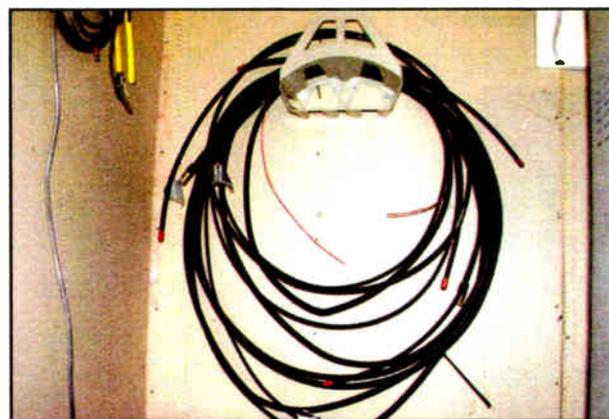


Fig. 3: The hangers prevent the cables from developing flat spots or kinks.

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★ ★ ★

Having plugs fall out of critical pieces of equipment can be an engineer's nightmare. Expecting air talent to root around behind a rack only compounds the problem.

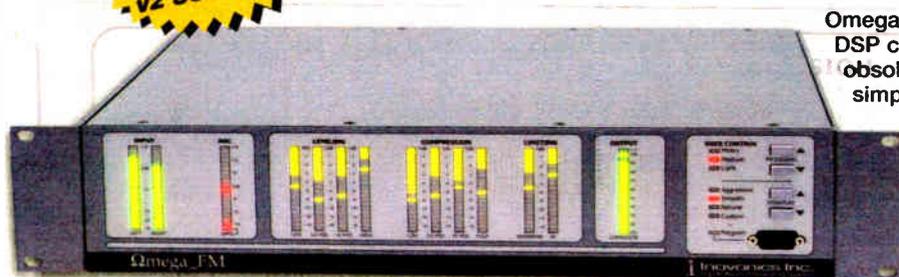
See WORKBENCH, page 12 ▶

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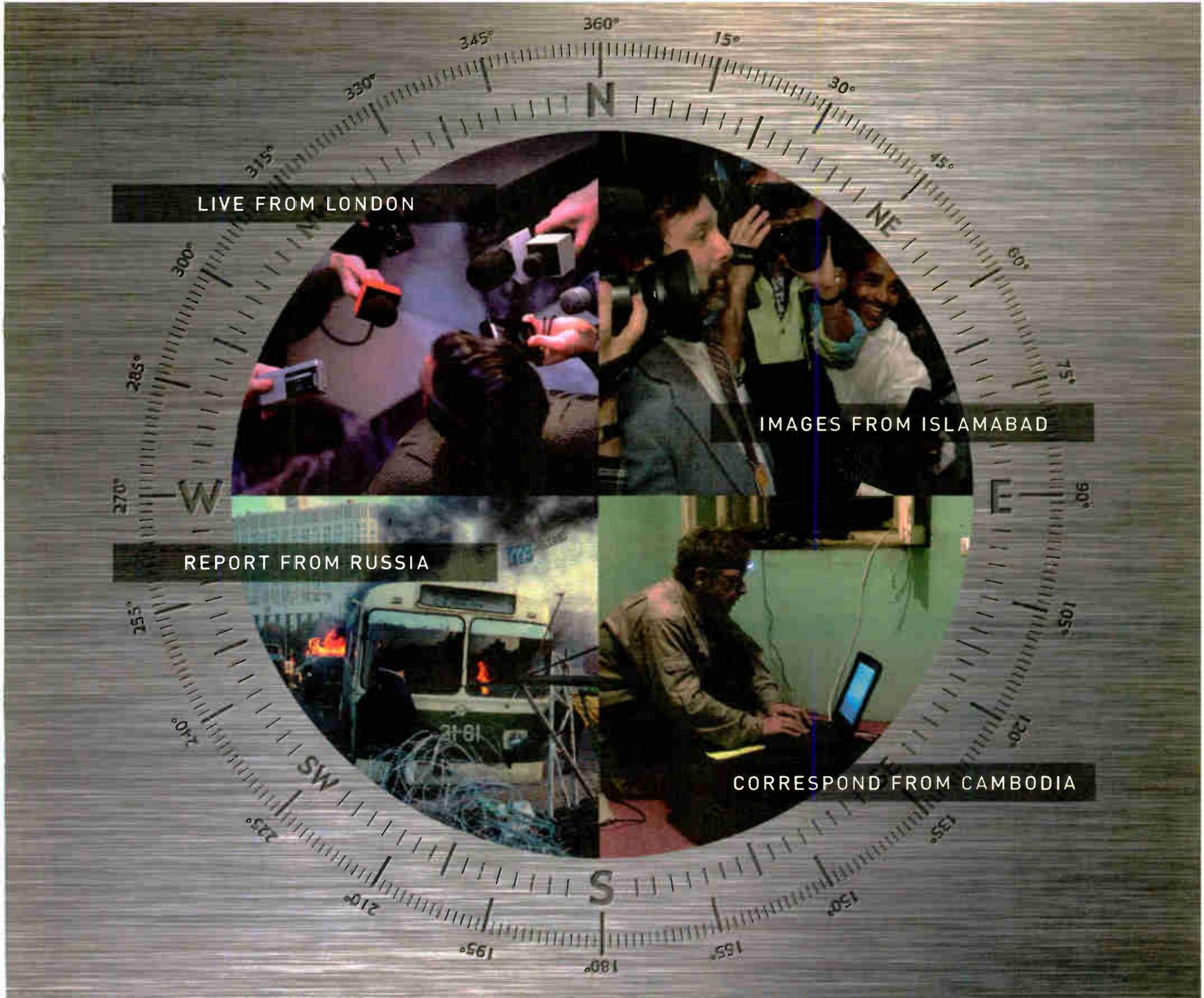
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World Radio History

802.11: Cheap, Easy, Efficient

As Wi-Fi Continues to Evolve and Expand, A Closer Look Reveals Its Strengths, Weaknesses

As we noted in a discussion that started last issue, the 802.11 format has achieved phenomenal acceptance, and its penetration shows no sign of abatement soon. Yet there are issues of concern that may require enhancement or improvement.

Foremost among these is security, which takes on a new and challenging dimension when applied to wireless networking. At the same time, 802.11 offers unique advantages, and the Wi-Fi revolution it has sparked provides significant lessons that warrant further examination.

Wi-Fi security

There are three primary features in Wi-Fi security, all of which have been criticized for certain weaknesses.

First is an encryption protocol for the data transmitted into the air by a Wi-Fi system, intended to prevent the interception of data by unauthorized devices. It is called Wired Equivalent Privacy or WEP, which implies that a wireless LAN user should be no more concerned when using Wi-Fi than when putting the same data on a wired Ethernet. WEP has two flavors, one using a 40- or 64-bit key and the other, sometimes called WEP2, using a 128-bit key.

Security experts don't think much of WEP, however, primarily because it uses static keys — i.e., it keeps using the same key for a long period of time, and all clients on the network must use the same key; and it reuses the same keys frequently. But just as the cracking of DVD format's CSS protocol has not brought the DVD market down — far from it, in fact, as the format continues to soar — WEP's shortcomings have not rendered Wi-Fi useless. With some work, hackers can gain access to WEP-encrypted data, but the data is still secured for the bulk of Wi-Fi enabled platforms today.

There is also a method of limiting the computers that are allowed access to a particular Wi-Fi network, through use of Media Access Control filtering. Every Wi-Fi transceiver card has a unique MAC address, and most Wi-Fi access points — or AP, the term used to describe the "wireless hub" device that is most commonly used as the RF portal for a Wi-Fi network — can be configured to only allow specified MAC addresses to log on.

This approach works well for home or small office networks where all users are identified, but is of little value for the public hot spot where users' MAC addresses are not known *a priori*. It is also possible to spoof MAC addresses, and extract them from unencrypted data transmissions. So the combination of WEP and MAC filtering can provide a moderate level of security for smaller networks.

Another, more flexible approach for larger systems is the 802.1x protocol, which is a generalized authentication system for wireless (or wired) networks that uses the IETF's Extensible Authentication Protocol. EAP supports many authentication methods, including certificates, token cards, one-time passwords and public key authentication.

The 802.1x approach allows dumb wireless access points to authenticate clients via a remote authentication server — i.e., the wireless network itself need not intrinsically manage the complete authentication process. It does this by allowing the network to initially open a channel purely for exchange of EAP data. Once the remote server authenticates the client, the network allows other data to flow. But even 802.1x is not impervious to hacks, typically via forged EAP packets.

Putting these network security shortcomings into the open airwaves only increases their vulnerability to attacks. The IEEE is aware of these issues and is working on a comprehensive, multi-staged solution to Wi-Fi security under the 802.11i moniker. Until then, many Wi-Fi network operators, chiefly in the enterprise space, have implemented additional security solutions such as Virtual Private Networks or VPNs on top of the standard Wi-Fi components, providing reasonable effectiveness in the interim. Of course, the same network firewalls used on wired networks can also be added to Wi-Fi, and they are generally recommended.

Finally, there is some work underway under IEEE's auspices to improve other elements of 802.11, including the addition of quality-of-service (QoS) and prioritization decisions (especially valuable for streaming media traffic), handoff performance between access points, and mitigation of interference. The latter is of particular importance in Europe where the 5

GHz band is shared with radar and satellite services.

It is always of some value to explore the reasons underlying a popular system's success.

Benefits

Wi-Fi owes its victories in the marketplace to a unique combination of attributes and contextual circumstances.

First, it is incredibly cheap and easy to deploy 802.11a or b services. A typical access point installation, even for heavy-duty application, runs in the hundreds of dollars, and can service dozens of simultaneous users in a concentrated zone of usage. A coordinated installation of multiple access points can extend the coverage and expand capacity without significantly great spectrum usage.

Next, consider that the micro-cellular

The Big Picture

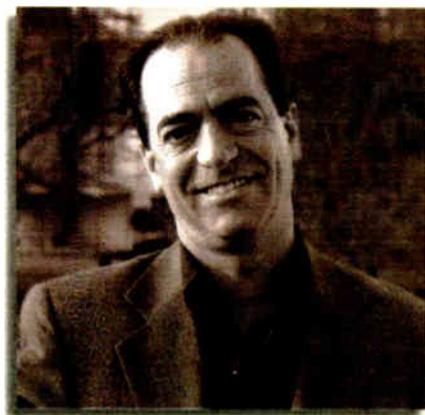


Photo: Gary Hayes, BBC

by Skip Pizzi

nature of Wi-Fi allows growth to take place in a most efficient manner. The fine granularity of service nodes allows the deployment of inexpensive access points only where they are needed most, and thus

See Wi-Fi, page 14 ▶

Workbench

▶ Continued from page 10

John Huntley, chief at WEVN(FM) and the New Hampshire Public Radio Network, shares a simple, effective solution. Fig. 4 shows a cable tie through a

works well with IEC AC power cords, and is useful not only in the studio, but also at the transmitter. Hopefully John's tip will eliminate at least some of those "late night" calls, and in the case of remote equipment, prevent those panicked calls that the remote gear isn't working. Reach him at jhuntley@nhpr.org.

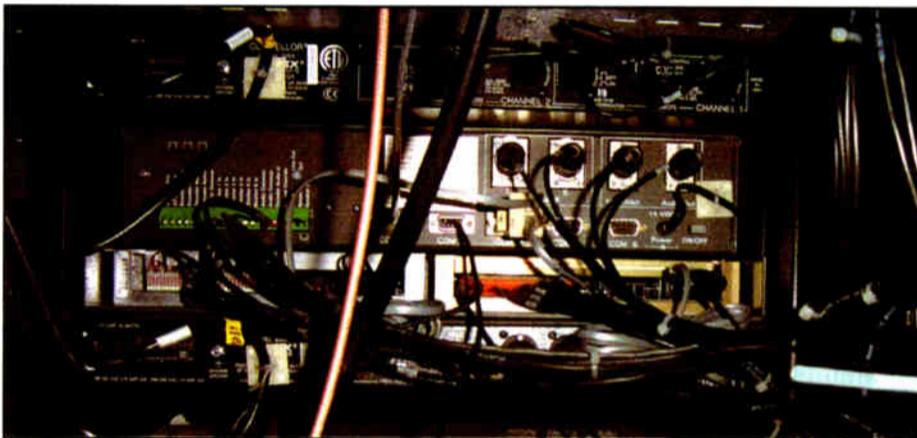


Fig. 4: A cable tie through a 'stick-on' tie clamp holds the cord from a wall-wart into a piece of equipment.

"stick-on" cable tie clamp, which holds the cord from a wall-wart into a Sage Endec, in this example. This type of cable restraint can be used on virtually any equipment.

Note that John has left enough slack that the plug can be removed, if need be.

This type of cable restraint also

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is a district sales manager for Harris Corp. Reach him at (703) 627-0233.

Submissions for this column are encouraged and qualify for SBE recertification credit. Fax your submission to (703) 323-8044, or send e-mail to jbisset@harris.com.

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World Radio History

WIRED FOR SOUND

Radio Pioneers Enter Story of Wire

by Steve Lampen

Let us continue our story of the history of wire, which we began in September and discussed recently in the May 7 issue.

Into our story comes a figure, a simple man with a simple idea. He worked for a company named Kellogg. Not the cereal people; this company supplied wire and cable to Western Electric, vendor to the Bell System.

At the turn of the century, the popular wire was covered with silk. If you looked inside an operator's switchboard in 1900, it was filled with silk-covered wire.

Down the wire

Our subject purchased such wire. But he became dissatisfied with the quality he was offered so he left Kellogg and started a wire manufacturing plant in Chicago. His name was Joseph C. Belden (1876-1939).

The plant made superior cloth and silk-covered wire. One of his employees had a breakthrough in 1906, flexible enamel. Now they could coat a wire with a thin layer of non-conductor. And when it was coiled into an inductor or transformer, the enamel wouldn't chip or flake off, as regular enamel would, shorting out the device.

What perfect timing. The vacuum tube amplifier, the "audion," was born the

same year.

By the turn of the 20th century, long-distance phone service was a major problem. To send a telephone signal down long wires, high voltages were required simply to overcome the resistance of the wire. That meant that, at the starting end, lethal voltages had to be run through carbon microphones, endangering operators.

Further, the voltages slowly destroyed the carbon microphones as they were used. A way to increase the signal strength was needed.

This had been done easily in the telegraph world by the use of a relay, where a small voltage could control a switch handling a larger voltage. Now something similar was called for, but it would have to be a "variable switch," something we know today as amplification.

Lee de Forest (1873-1961) patented his audion vacuum tube, which had a gain of 5-10, in 1906. But here, boys and girls, I must tread lightly, because the issue of who invented amplification remains controversial.

In later court documents, de Forest couldn't adequately explain how the audion worked. On Oct. 30, 1912, Harold D. Arnold, working for what would become the Bell System, was given a demonstration of the audion. He recognized the potential

of the tube to amplify telephone signals. Arnold built his first amplifying vacuum tube Oct. 18, 1913, with an improved "vacuum." These were installed as telephone amplifiers for long-line transmission.

But the actual "triode amplifier" was credited to Major Edwin H. Armstrong (1890-1954). In 1912, while still a student at Princeton, he made improvements to the audion. The main one was to send the slightly amplified signal back into the grid, thus re-amplifying the signal. This "feedback" arrangement was instantly successful and gave an amplification factor of 10,000 or more.

Armstrong and his fellow students could listen to telegraph signals without even putting on headphones. And when he increased the feedback, he could get the tube to oscillate, the basis for all future broadcast transmission.

By 1916, all sorts of people were into broadcasting, including Armstrong and de Forest. In fact, the Federal Department of Commerce, then in charge of "experimental" radio, shut down de Forest's experimental station because it was *playing*

music. The letter sent to him explained, in no uncertain terms, "There is no room in the ether for entertainment."

There is another figure who was "playing with radio" that same year. He single-handedly changed the landscape of broadcasting and of American culture. And he was responsible for the purchase and installation of a lot of wire and cable. See if you can guess who he is.

No rabbi he

He was born in Russia in 1891. His parents send him to rabbinical school. It is probably lucky that he never pursued this career, as he would probably have made the worst rabbi ever.

To avoid the pogroms, the family moved to the United States in 1900. Here the young boy learned English and became entranced by the telegraph. In his late teens, he got a job as a telegraph operator working for the Marconi Wireless Telegraph Company atop the Wanamaker Hardware building in New York City.

There, on April 14, 1912, at age 21, he was operator on duty when a call came in. This was no normal call, but an S-O-S from a ship at sea. (The use of S-O-S for emergencies had only been established a few months before.)

See WIRE, page 16 ▶

Wi-Fi

▶ Continued from page 12

no service is "wasted."

Contrast this bottom-up approach to the top-down style required by 3G services, where multiple, expensive, larger-cell installations including costly towers must be built before service can be offered. The difference in these services' prospects becomes readily apparent.

Wi-Fi's always-on, real-time (AORTA) service mode is also advantageous over some other wireless services that require discrete connections to be established before each session, adding to customer satisfaction.

Finally, Wi-Fi's use of unlicensed spectrum allows it to avoid a morass of local regulations that slow deployment and add substantially to the cost of operations.

Laptop computers continue to increase their penetration, and wireless networking

is one reason.

Both PC and Mac systems are built around CPUs that are increasingly optimized for portable use (such as Intel's Centrino chip), and these platforms routinely include native Wi-Fi capability, so a PCMCIA Wi-Fi card is no longer required.

Some campus wide-installations now use secured Wi-Fi as their primary LAN distribution architecture, so desktop PCs also may use wireless connections on these networks, typically via PCI cards.

But in the context of Internet radio usage via Wi-Fi, its real impact will not be felt until handhelds and dedicated appliances (Internet radios) include the technology. Such capabilities are expected to become available soon. These small devices may also or instead use other wireless interconnection schemes besides 802.11, however.

We'll have more on these and other facets of wireless media.

Skip Pizzi is contributing editor of Radio World. 📺

NEWS WATCH

Legal Action Threatened Over Touch Screens

Radio automation suppliers are keeping relatively tight-lipped on their plans to reply to a legal complaint alleging patent infringement. The matter came to the attention of the industry when a copy of a letter to the vendors was circulated to the industry trade press.

The letter was addressed to five companies: Radio Computing Services, Broadcast Electronics, Prophet Systems Innovations/Clear Channel, Broadcast Software International/Cumulus and ENCO Systems.

The letter is from a law firm representing Media Digital Corp. and John Connell, formerly of MediaTouch, who is listed as co-inventor of the "Computer Touch Screen Radio Station Control System" patent. The patent was issued in 2000 and originally filed 10 years earlier. The other inventors listed are Dennis Mills, Doug Cyr and Norman Buck, but they are not mentioned in the letter.

The letter urges the five firms to settle the matter without litigation, but states the company is prepared to proceed with a complaint it has already filed in a Texas court.

It also states that Media Digital recently asserted the patent against "a major supplier of touchscreen equipment in the radio broadcasting industry" and said that "that litigation was quickly resolved and the supplier is now a licensee" of the patent.

"We are willing to discuss a similar arrangement with you," it states.

The letter came to the industry's attention when another automation vendor, Scott Studios Corp., distributed a copy to the press with a cover note stating that Scott "denies infringing on the Media Digital patent, but a royalty arrangement was worked out."

Company President Dave Scott stated that no suit had been brought against Scott Studios nor its sister company Computer Concepts.

None of the suppliers contacted by Radio World chose to comment.

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Facilities Management for Radio, TV

by Jeff Johnson

Radio World asked several contributors to attend various sessions at the NAB2003 convention this spring. Here, Jeff Johnson summarizes presentations at "Facilities Management for Radio and Television," chaired by Troy Pennington of Cumulus Broadcasting, Mobile, Ala., and presented by a range of industry professionals concerned with the safe, efficient and legal management of broadcast property. It was part of the Broadcast Engineering Conference.

"New Standards for Broadcast Structures ANSI/TIA/EIA-222-G" — Discussing the next revision of structural standards for steel antenna towers and antenna supporting structures were David Brinker, PE, Rohn Industries Inc.; John Wahba, Ph.D., PE, Radian Communication Services; and Mark Malouf, PE, Malouf Engineering International.

The most comprehensive change to the standard since its first publication in 1949 will take place with the release of TIA/EIA-222-G later this year. It incorporates a performance-based approach called "limit states design" to ensure that structures are safe under extreme loading conditions. By comparison, the old stan-

dard, which uses a "serviceability limit states" approach, checks only that the structure is capable of the service under normal conditions, according to a white paper published with the presentation.

"The changes are being made not because of structure failures, but to be compatible with contemporary building codes," said Brinker.

Too many of the reasons for tower failures and how they fall are hidden in lawsuits and insurance claims and are not publicly available.

— Vincent F. O'Flaherty

Three structure categories will be introduced according to reliability requirements. Category I structures present a low hazard to human life and are used for optional or non-critical services. Category II structures represent a substantial hazard to human life and are used for services that may be provided by other means. Category III structures are used for essential facilities and represent substantial haz-

ard to human life upon failure.

More sophisticated modern understanding of wind loads, ice loads, seismic loads and foundation parameters generally will allow more capacity on existing structures under the new standard, although not in every case. Wind loads will take into account the immediate environment of a structure, such as urban

or hilly, flat open or hurricane shoreline. A three-second gust wind speed is the basis of the new criteria replacing fastest-mile. Ice loads will be escalated with height, and seismic loads will be by geographic area. All three loadings will be determined by specific local county criteria from wind, ice, and seismic maps.

222-G eliminates the term "normal soil." It is replaced by "presumptive" soil parameters for sandy and clay soils. Presumptive parameters are not allowed for Category III structures. In addition to hot dip galvanizing, cathodic control or concrete encasement will be required for guy anchors in corrosive soil.

It was stated that existing towers do not need structural review unless a change is made. Removing a load from a tower also constitutes a change, and no towers will remain "grandfathered."

"Designing for the Unexpected" — George W. Crowe, former head of radio engineering at the BBC and later of the internal property (real estate) team there, asked "What have we learned in 80 years; are we still making the same mistakes? And are we really taking notice of the lessons learned?"

Wire

► Continued from page 14

The ship was the Titanic. As news hit the streets, this young man's name instantly became a household word. And for the last time in history, radio silence was declared all along the East Coast so that this man could receive and send messages to the Titanic and the ships going to its aid.

The story has been carefully crafted into legend, so it is not known for sure if he was the first person to hear of the disaster. However, it is accepted that he stayed at his post for 72 hours, relaying messages to and from the ships going to rescue the survivors.

By 1916, along with Armstrong and de Forest, he was using his newfound fame to push the idea of commercial radio, something he called the "wireless music box," although this idea was before its time. Even as late as 1920, one potential investor wrote him to say, "The wireless music box has no imaginable commercial value. Who would pay for a message sent to nobody in particular?"



The NSP RF protective suit provides protection in fields up to 1,000 percent of the FCC's MPE exposure limits. It is shown without the hood in this image from Richard Strickland's presentation.

Crowe answered by stating, "Do not design to prescription" and "justify the cost of the unexpected in early planning." It is important to design resilient facilities adaptable to changes in technology, programming and organization. Work with architects from the beginning to expect
See FACILITIES, page 18 ►

Even the Marconi Company, his employer, rejected the idea of radio as anything but a communications medium. So he went to work for the Radio Corporation of America in 1920.

By 1921, RCA's broadcast of the Dempsey-Carpentier boxing match attracted 300,000 radio listeners. Radio was off and running.

Our hero eventually rose to chairman of the board from 1947-1970. His exploits regarding the founding of NBC, his ruthless business dealings, especially with inventors such as Philo T. Farnsworth and C. Francis Jenkins, are detailed elsewhere.

His name? David Sarnoff (1891-1971). He liked the honorary title of "General."

RCA pretty much owned the broadcast industry and, therefore, was responsible for a lot of wire and cable

Stay tuned. Next time we will visit the formation of Bell Labs, and boy, do things take off from there.

Past articles in this series are available at www.rwonline.com. Steve Lampen's book, "The Audio-Video Cable Installers Pocket Guide," is published by McGraw-Hill. Reach him at shlampen@aol.com.

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Facilities

► Continued from page 16

change and flexibility in usage throughout the life of a structure. An example given was locating primary services along defined zones to eliminate the necessity of relocating them later.

Resiliency also is important in backup facilities and disaster recovery plans. An "N+1" approach, meaning a greater number of smaller units and more of them than necessary, should be planned. Be prepared to use alternate studios, revised interconnectivity and backup power. Review and be certain to test procedures to be implemented when the unexpected occurs.

"Telecommunications Towers and Equipment: Legal Duties of Owners, Engineers, and Contractors" — "What do you do when you receive that chilling call that your tower is on the ground?" asked attorney Vincent F. O'Flaherty of Niewald, Waldeck and Brown.

Referring to "tall towers" as those exceeding 1,000 feet, O'Flaherty handles litigation resulting from the unexpected event of a tower collapse.

"Tower loss occurs more often than you think. It may occur due to weather related causes, such as ice loading, human error of those working on towers or simply age," said O'Flaherty. "However, too many of the reasons for tower failures and how they fall are hidden in lawsuits and insurance claims and are not publicly available."

The legal terms "cause" and "origin" will be used by the involved parties to determine why a tower fell. It is critical, as broadcasters, to get your own team — insurers, engineers, attorneys — on site as quickly as possible, he said. Secure the site immediately. Many parties, including government agencies, contractors and tenants, will be involved. Cooperate with these fully, but concentrate on your own investigation.

The next area of concern is the immediate return to air and the rebuild process.

"Any delay — financial, or engineering — may result in long-term legal ramifications if income has been lost," said O'Flaherty. "Insurance and business

interruption programs should be specifically designed for your tower."

Consider replacement costs under new regulations, extensiveness and adequacy of coverage, liability for workers on towers, adequacy of tenant's and contractor's insurance, and the possibility of damage to neighboring property.

"Collapse of a 2,000-foot tower is a major news event," said O'Flaherty. It will attract attention. Damage control and

Note that the average ungrounded adult male makes a great Channel 6 antenna, and a possibly shorter female an FM antenna.

— Richard Strickland

investigation are under your control if you are the first on the scene, contact your insurer immediately and secure evidence that will be necessary later. Make certain nothing leaves the site. Photograph and document the damage within a two- to three-day window.

"Initial damage control is very critical to your defense in the matter," said O'Flaherty.

"RF Hazard Control Equipment" — With the FCC ramping up enforcement of RF safety regulations and using large fines to encourage enforcement, Richard R. Strickland of RF Safety Solutions LLC gave a timely presentation.

With responsibilities and liabilities being dictated by regulations, Strickland said that hazard control equipment is part of the solution. Regardless of the licensee's transmission location — whether owned, rented, or shared — it is the licensee's responsibility to employees, visitors and contractors for RF safety. FCC regulations must be followed to protect all three of these, and OSHA regulations must be followed for employees.

"If operating under an RF safety pro-

gram, you actually have fewer restrictions," said Strickland. "Without a program, you do not have a controlled environment."

RF hazard control equipment often is a component of such a program. The human body is most susceptible to RF exposure at VHF frequencies. "Note that the average ungrounded adult male makes a great Channel 6 antenna and a possibly shorter female an FM antenna," said Strickland.

Discussing workers on site, Strickland emphasized that they must be "fully aware" and be able to "exercise administrative and engineering controls" of their exposure to RF fields. Access shall be limited only to such workers. Administrative controls are time averaging, RF personal monitoring and RF protective clothing.

An example of an engineering control is a purely mechanical protection device, such as an interlock. "Fully aware" workers have received both written and verbal information and training in RF exposure control.

Strickland, discussing RF personal monitoring devices, stressed the importance of a "shaped" frequency response, being more sensitive in the VHF range, to alert accurately relative to the stricter standards in that range. The monitor, looking like a portable radio, which in a sense it is, should be worn outside any garment, on the torso, facing forward. The most sensitive parts of a body are the eyes, and for males the testes. Be certain the device is loud enough or bright enough to be noticed in the event of an alert.

Protective suits must be worn properly. Particular attention must be paid to electrical contact between the socks worn and the suit, or no protection will be afforded. Hoods should be worn above 800 MHz to protect the eyes. Consider suit protection to be no better than 10 dB. Wear the monitor *outside* the suit for the sensor to work properly.

"Success Factors in the Planning of, Design, Construction and Integration of a High-Technology Digital Facility" was presented in part by Edward Hobson, editorial vice president and fellow of SMPTE. Hobson is responsible for technology issues related to new media systems and their application. Also presenting was John Aalto, senior vice president of National TeleConsultants Inc., Engineering and Consultants Group, responsible for client A+E and strategic planning.

When designing such a facility, consider three areas of strategic importance: business issues, workflow and technology, they stated.

"What is your key business? Creating content, delivering content, delivering eyeballs, transmitting content, or a combination?" asked Hobson. "Maintain focus on your core business in planning a

new facility."

Perform a survey of present and near-horizon technologies and long-term changes. For example, videotape-based technology requires different workflow implementation than server-based technology.

Do not mimic workflow topologies suitable for one technology in another. For example, video servers allow for *one* version of an item to appear in one place only: the server. Plan to ingest, edit, review, air and archive material without creating multiple copies. The item remains on the server at all times and eliminates non-value-added work and multiple versions that may be confused.

Your newly designed facility should be considered a "container" to support your product's creation.

"Vital to successfully implementing large media technology projects requires experience, planning, superior project management and execution," Aalto said. The space planning and architectural support phase of a media technology facility requires more-detailed and future-focused needs planning. A "technical core" must be planned in addition to the building core. A planning goal should be stacking of technical rooms on each floor with one wall common that could be a raceway and accommodate changes that will occur.

Space planning should begin by focusing on a "wish list," then trimming judiciously to meet a budget. An example given was taking a couple of feet off of a large studio, which would probably not be missed, rather than eliminating small craft studios.

Tape storage may require more space than servers. However, will tape be around in 10 years? Transition to server technology will save space, but will increase cooling load.

"Design of media technology should take place as late as possible in the timeline to take advantage of the latest technology," said Aalto. "Open systems technology from different manufacturers allows for making changes, expansions and additions without being tethered to the constrictions of a single manufacturer."

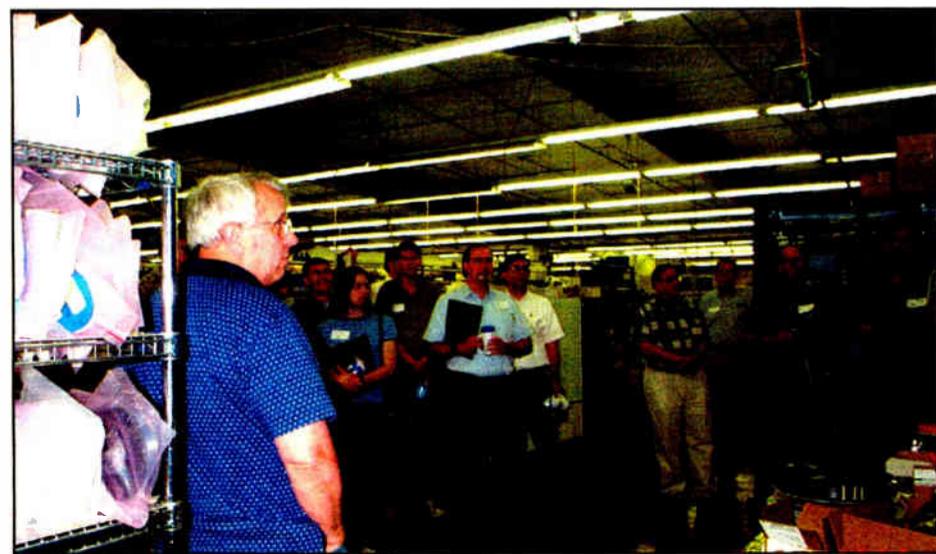
In summation, Aalto outlined three success factors for projects: design from the general to the specific; structure and document the process; and obtain approval by principal people at key points throughout the process. ●

SBE Members Stop by BE

Members of SBE Chapter 49 in Quincy, Ill., visited the Broadcast Electronics factory in their hometown in May.

The chapter covers the central Illinois-Springfield area. Approximately 35 visitors met with BE engineers and service representatives, took a look at HD Radio transmitters and signal generators and obtained tips on IBOC implementation. They toured the factory floor and visited the assembly area where AudioVault products are prepared.

A BE spokeswoman said the visitors expressed particular interest in HD Radio, including the FXi series digital exciter.



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NEWS MAKER

Pierson Works for the Little Guys

by Lyssa Graham

The National Federation of Community Broadcasters sees itself as standing up for the little guys in radio, helping community stations learn from each other and work together to promote community broadcasting. Its staffers consider themselves advocates, fighting for national public policy, funding and recognition for work done by member stations.

the roles of the board are compared to the roles of the staff and volunteers.

RW: That can be challenging.

Pierson: It's very interesting, but often community radio boards are made up of people who love radio but don't necessarily know that much about it — they may not have been on boards before — so they don't have that much experience. It's setting up common under-

standings of how things are going to work and work well. We do an annual conference to bring people together. One of the exciting things we've been doing for the last few years is bringing a number of high school kids in who are doing radio. Over that period of time, many more of the community stations have started youth radio programs at their stations.

RW: Have you received any support from other low-power FM supporters?

Pierson: We've brought together in an advisory group pretty much all of the different groups that were working with community-oriented low-power stations to get them on the air. We've gotten funding from the Ford Foundation and the MacArthur Foundation to help us with that work, so we've actually been able to hire a full-time person here to work with the stations. It's been very

exciting and gratifying as they've come on the air.

RW: There are a lot of hurdles to face if you're trying to start a low-power station.

Pierson: Typically people don't necessarily have a background in radio. The construction permits have a non-extendable 18-month time period, so people have to get these stations on the air in a short period of time and frequently without anybody who has put a radio station on the air before.

We've been trying to hook people up with community radio stations in the same area, engineers and people like that who can help them.

RW: What do you see down the road for low-power?

Pierson: It looks like there could be potentially as many as 1,000 new stations, which is a very exciting development.

See PIERSON, page 27 ▶



Carol Pierson is greeted by the head of Radio Sagarmatha in Kathmandu, Nepal.

NFCB President and CEO Carol Pierson is based in San Francisco. She has a background in radio, having spent 10 years as program director at KQED(FM) in San Francisco and eight years at WGBH(FM) in Boston. She's had a range of jobs including programming, public affairs and operations.

Passion, Pierson says, makes community radio unique.

"You don't come across many people who are just doing their jobs," she said.

In a conversation with Radio World's Lyssa Graham, Pierson exploring the goals and struggles of the NFCB.

RW: What does the NFCB do? What do you do to make it easier for community broadcasters?

Pierson: A lot of what I do is to represent the stations and community radio as a field with Congress and the FCC and the Corporation for Public Broadcasting, along with other national and regional organizations.

It's an effort to make sure that people understand what community radio is and how it's different from commercial radio or larger public radio stations. ... The organization also does a lot of direct services with the stations, so we're available for a consultation by phone.

I do a lot of board trainings. I go to the stations and work with the staff and the board around planning or organizing themselves and understanding what

standings of how things are going to work and work well.

Also during the last couple of years we've had summits for the Native American stations that are members and also for the Latino public radio stations. Those have been inspiring — to bring people together to figure out how they can work together to strengthen all of the stations and carry on all of the important cultural preservation work that they do.

Many of the Latino stations are serving immigrant populations and farm workers, and the Native stations are often preserving the language and the culture. All of the Native stations, except for one, are based on Indian reservations.

RW: How many are there?

Pierson: There are about 30 Native American stations and about 16 Latino stations.

RW: What other groups does NFCB work with?

Pierson: One of the new projects that we've gotten involved in recently is working with the groups that are getting low-power construction permits to help

Digital

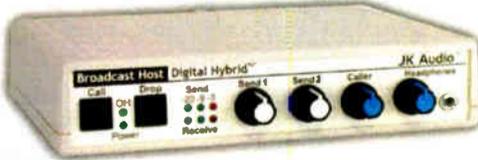
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4th and Final Accord Struck

by Craig Johnston

"And Then There Were None" is one of Agatha Christie's thrillers. The phrase also describes the number of Webcasters without a voluntary recording industry agreement to hitch their business wagons to: none.

Webcaster Agreements	
✓	Small Webcasters
✓	Non-Broadcasters
✓	Broadcasters
✓	Non-Commercial

In early June, representatives of the final group, noncommercial Webcasters, finished negotiating their agreement with the industry. This followed agreements reached by small Webcasters (December), non-broadcaster commercial Webcasters (April) and broadcaster-commercial Webcasters (May).

Web Watcher notes that the noncommercial Internet radio copyright royalty rates are considerable lower than those for their commercial brethren. A minimum fee between \$200 and \$500 annually is charged, plus \$25-\$50 to waive a record-keeping requirement. Those stations with monthly aggregate tuning hours more than 146,000 will also pay 0.02176 of a cent per song, per listener (over the 146,000 threshold), or 0.251 of a cent per ATH.

With rates lower than everyone else's, everybody in this group should be happy, shouldn't they?

The answer is no. The 300-member Webcaster Alliance, for one, charged that the RIAA selectively chose parties with which to negotiate for the noncommercial Webcaster agreement, and that it does not represent the interests of the broad spectrum of non-commercial Internet radio stations.

Not so, a representative of the Recording Industry of America Association told Web Watcher.

Can't please all the people ...

"The agreements reached by RIAA were with a wide variety of Webcasters who have different business models and business priorities," said Steven Marks, the organization's senior vice president of business and legal affairs. He said the group was anything but homogenous.

"Indeed, RIAA was required to make significant concessions in order to reach an agreement that satisfied all the Webcasters at the table. These agreements are broadly supported by the Webcaster community."

One noncommercial Webcaster showed Web Watcher an example of how the new rates can climb.

Deborah Proctor, general manager of WCPE(FM) in Raleigh, N.C., a nonprofit classical music station, said their Internet radio simulcast averages 1,400 streams. When she runs the numbers using the new agreement's fees for an entire year, she said the station's royalty obligation "becomes a five-digit number."

Proctor said she has tried to negotiate the station's own agreement with the RIAA.

"So far, it has been impossible for us to get an agreement." As to negotiating agreements with the individual record labels that make up WCPE play list, "we're talking about a hundred of so different negotiations. It's virtually impossible."

Still, she said abandoning the Web is not an option. Looking 20 or so years into the future, "We're not going to be

broadcasting. Everything is going to be delivered via IP."

She said she doesn't want to repeat the mistake AM station owners made in the 1960s when they gave their FM licenses away to nonprofit operators.

"So that's why I think public radio needs to be involved with the Internet if public radio wants to be around 20 years from now. History is repeating itself."

Reacting to the non-commercial agreement in his online Radio and Internet News, Publisher Kurt Hanson proposed two additional categories of Internet radio copyright royalty licenses: one for mid-sized Webcasters and one for hobbyists.



Steven Marks

In a pair of nutshells:

Hanson argues that mid-sized Webcasters are caught betwixt and between the small Webcaster agreement and the commercial Webcaster agreements. He notes that as such a Webcaster's revenues climb one cent past \$500,000, his copyright royalty fees jump enormously. Hanson calls for a fixed-rate percentage-of-revenues model for these operators.

For hobbyists, he writes, the \$2,000 minimum annual payment, available through the small-Webcaster agreement, is probably still too high. While a hobbyist could form a 501(c)3 non-profit corporation to be eligible under the terms of the non-commercial Webcaster agreement, a better alternative would be to address the hobbyist separately.

So, with all the certainty that the fourth and final of the anticipated agreements between Internet radio and the



recording industry brings, uncertainty remains on the horizon.

Back in April, the U.S. House Subcommittee on Courts, the Internet and Intellectual Property heard testimony on H.R. 1417, the Copyright Royalty and Distribution Reform Act. The legislation targets reform of the Copyright Royalty Arbitration Panel process, in part by making it more economical and thus more accessible to those affected by its rulings.

Future rates?

Because the four voluntary agreements run out at the end of 2004, the possibility of future rates being determined by a CARP is real, and Congress likely will continue to address the process.



Deborah Proctor

And somewhere in the caverns of the Third Circuit Court of Appeals in Philadelphia is an appeal of the Librarian of Congress' determination that broadcasters streaming their

over-the-air signal on the Internet are subject to copyright fees. Brought by the NAB and several radio groups nearly eight months ago, a favorable decision could free broadcasters from the copyright royalty yoke, if the judge ever rules.

★★★

A quick note crossed Web Watcher's desk at press time that America Online's Radio@ Network is now subscribing to See WEB WATCH, page 26 ▶

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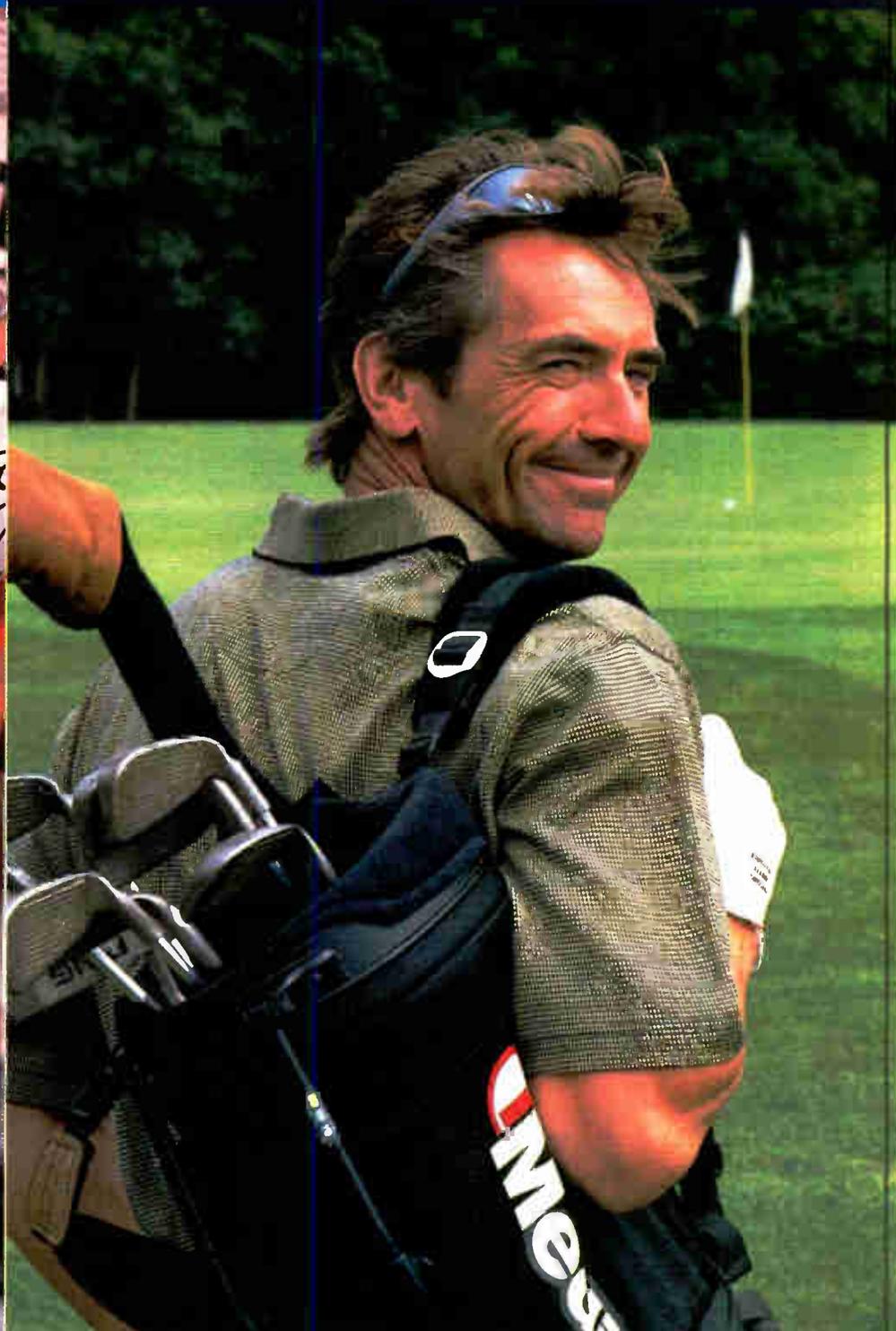
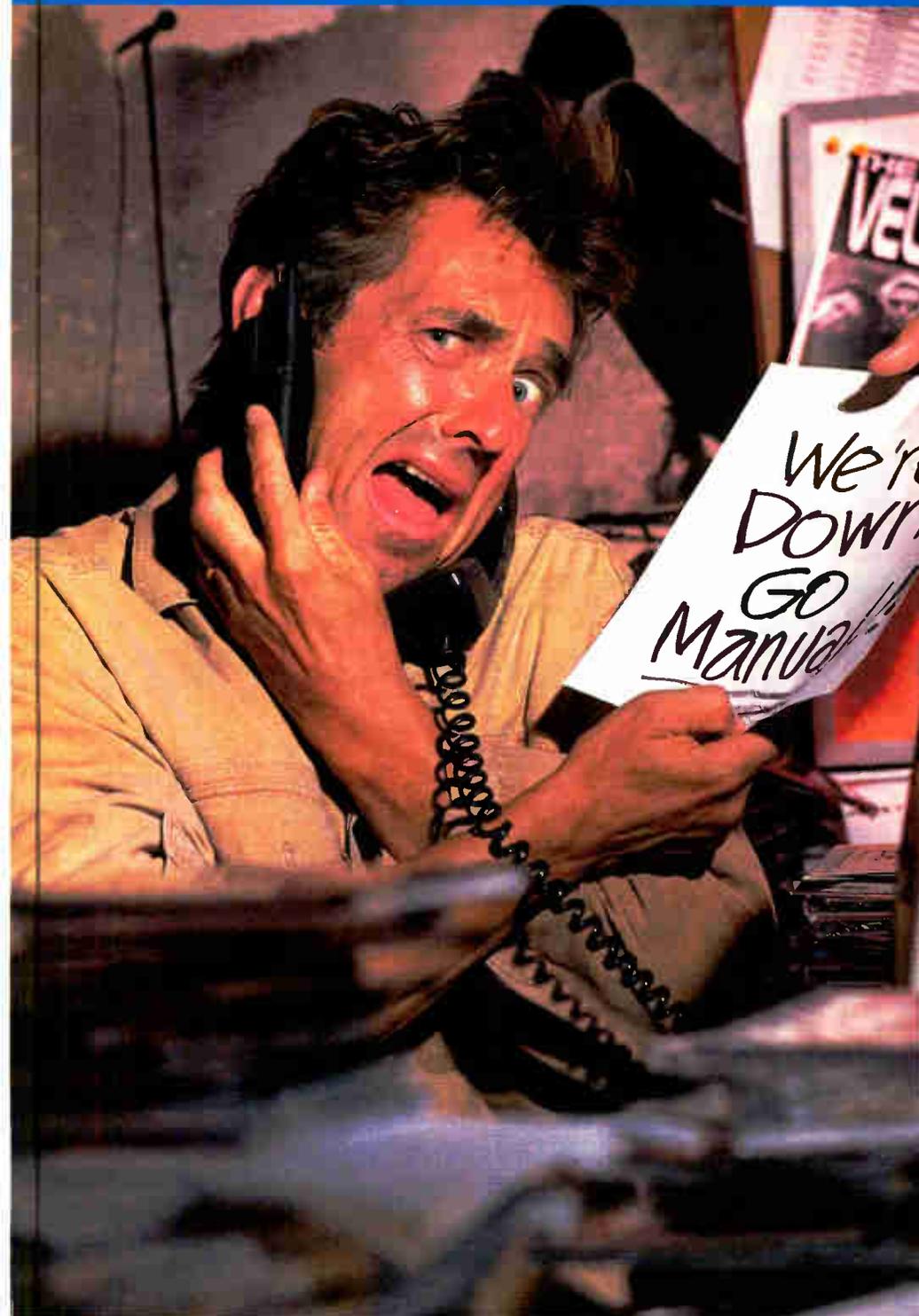
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BSW is celebrating 30 years in business by giving away products worth \$1,000 each and every week for 30 weeks! **Thomas Barnett** of **Raspberry Productions** in Warren, Michigan won the **Aardvark DirectProQ10** package. Says Thomas: "I want to thank BSW for this fine addition to my studio. I'll probably be one of the first to try the Q10 on the Mac. BSW will be my first stop for new hardware and studio accessories in the future. Thanks again!" You could win too - enter at www.bswusa.com!

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New Pro CD Player with MP3 Playback and XLR Outs

The new Denon DNC635 CD player is a professional deck with all the features you want, including MP3 playback, balanced XLR output and digital output, and robust construction for withstanding continuous use. **Features:** index search; A-B repeat; Instant Start; Cue to Music; pitch control $\pm 9.9\%$; program play memory; next track reserve; parallel remote port; headphone jack; adjustable balanced XLR outputs; unbalanced RCA outputs; coaxial digital output.

DNC635 List 600⁰⁰ **469⁹⁹**



Versatile CD-RW Recorder with XLR and Free CD-Rs!

The HHb CDR830 BurnIT PLUS has a full compliment of professional features, including analog and digital XLR I/O. An advanced laser assembly delivers consistent, accurate recordings compatible with a wide range of CD players. A Word Clock input via BNC enables synchronization to a host clock during playback. And for a limited time, we're throwing in a 50 pack of thermal-printable CD-Rs!

Features: balanced XLR analog and unbalanced RCA I/O; balanced XLR digital I/O; optical and coax digital I/O; parallel remote input; SCMS-free digital input; double speed CD finalization.

CDR830PLUS List 789⁰⁰ **699⁰⁰**



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R90 shown with optional modules

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Today is your lucky day. BSW is proud to debut the new R-90 Console from Audioarts. In fact, we are so excited about this console that we purchased a load of them and are passing the savings directly to you. Our exclusive special introductory offer will save you thousands off the manufacturer list price.

Say hello to your new console. The Audioarts R90 is packed with the features engineers want: two stereo program busses and two mono busses, dual phone caller support with mix-minus (requires optional phone module), 23 input/accessory module slots, and more. The R902012 comes with 12 input modules and 11 open slots for ample expansion. Both control room and studio monitoring with talkback are provided offering plenty of monitoring flexibility. All switching is electronic and LED illuminated. And with its desktop design and hinged meter bridge



Pro-Quality Mixing and Signal Distribution at Amazing Prices

This quality Behringer audio gear is at prices so low you'll think they're misprints! (Don't worry; we double-checked.)

The Ultralink Pro MX882 is a unique and universal problem-solver when it comes to signal distribution. Whether as a splitter, a mixer or a matching amp/DI box, it guarantees ultimate reliability and the shortest possible signal paths. Its extensive routing possibilities, professional switching concept, servo-balanced I/O with XLR and 1/4" TRS connectors and generous LED displays make it extremely flexible.

The 12-input, 2-bus mic/line UB1202 mixer boasts 4 state-of-the-art preamps and an extremely musical 3-band EQ plus switchable low-cut filter on all mono channels. You also get 12 balanced high-headroom line inputs, 1 post fader send per channel, peak LEDs on all mono channels; main mix outputs plus separate control room, headphones and stereo tape outputs, and more.

The tiny UB502 mixer features the same state-of-the-art preamps and ultra low-noise design for highest possible headroom. An XLR mono input channel and 1/4" stereo line inputs make it ideal for use with fixed audio installations as well as keyboards, samplers and computer applications. At this price, you're getting a lot of mixing power for your buck!

MX882	List 99 ⁹⁹	79⁹⁹
UB1202	List 129 ⁹⁹	99⁹⁹
UB502	List 59 ⁹⁹	49⁰⁰



We're currently negotiating with a Big-Name Hollywood Action Star to pick up his slightly-used stretch Hummer as our official BSW Corporate Limo, pending a slight increase in orders. If all goes according to plan we'll take delivery soon. If not, we have back-up strategy involving a burnt-orange AMC Pacer, complete with a full library of Frampton 8-tracks...



your audio gear. Just ask Thomas.



...revealing the DB-25 connectors), installation is a snap. The R-90's list of features is way over the top and much too extensive to list here...so give us a call or dive into our website for all the technical info.

Don't drag your feet. The R-90 console will be a fixture of pride for your station for many years to come. However, BSW's special promotion is a limited time offer.

902012 List 10,148⁰⁰ **7,699⁰⁰**

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The SSM (Smart Silence Monitor) utilizes innovative WNSD circuitry and is designed to monitor any stereo or two independent natural sources and generate alarms when white noise or silence is detected. **Features:** active balanced inputs with multi-turn trimmers; alarm sensitivity down to 35 dB below program; precise delay from 2 seconds to 93.5 minutes; alarm activity indicators on each channel; two DPDT relays enabling use as a 2x1 program switcher. Order today! These are limited to stock on hand.

SM List 229⁰⁰ **159⁰⁰**

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Affordable Rackmount CD Player with Jog Wheel and Pitch Bend

The super-affordable CDX601 rackmount CD player from Gemini has up to ±12% pitch control with pitch bend and an Auto Disc Calibration System that recalibrates the CDX-601's motor to each new CD you play (especially useful for CD-R and CD-RW discs, with their widely-varying recording conditions and specs). It also has multi-speed jog wheel search, instant start, mechanical skip protection, a +10 track selector, fly cue, looping feature, and digital output on a BNC connector (if you need RCA, order the NBR253 adaptor also).

CDX601 List 329⁹⁵ **199⁹⁵**

NBR253 **4⁹⁵**

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Audion's VoxPro PC software system is the fast, easy-to-use two-track recording and digital editing system. VoxPro PC software works with a USB or Serial port controller for fast recording/editing as well as for on-air "Hot Key" playback. In addition to importing and exporting files, the system is seamlessly networkable with the included network software, allowing files to be moved instantly back and forth between the production room, on-air studio and newsroom.

The VoxPro PC is optimized to quickly record and edit voice-overs and phone conversations for on-air use. The single screen interface with large sound window displays your recording the instant you make it. Masters are non-destructible. And all VoxPro PC users can have their own password protected space where they can create their own recordings and Hot Keys. Call for more info on this superior system today!

VOXPROS	software package	List 999 ⁰⁰	CALL FOR PRICE
VOXPROCU	USB controller	List 999 ⁰⁰	CALL FOR PRICE
VOXPROCS	serial controller	List 999 ⁰⁰	CALL FOR PRICE



audio-technica.

Stereo Condenser Mic with Mini Plug

The popular AT822 stereo condenser microphone has left and right mini plugs and stereo mini plug output cables, perfect for portable stereo recorders. **Features:** XY stereo pickup pattern; fully mono compatible; 220-degree pickup field; LF roll-off switch; AA-size battery or phantom powering; includes windscreen, mic clip and vinyl pouch.

AT822 List 399⁰⁰ **235⁰⁰**



Quality Studio Mic Package Deal

Save 50% and get a FREE 25 ft. mic cable and stand, with BSW's exclusive AT3035 package! This true large diaphragm cardioid condenser mic has exceptional detail and low noise, high maximum SPL, and wide dynamic range. **Features:** extended low-frequency response; custom shock mount; low-cut switch; 10 dB pad.

AT3035PACK List 399⁹⁵ **199⁰⁰**



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JBL's Control5 speakers sound great and combine rugged construction with a variety of mounting options. The Control5 feature 6-1/2" woofers for extended bass response, 50 Hz-20 kHz frequency response, 175 watts power capacity, 1" titanium dome tweeters, 15" tall cabinets, and are about 10 lbs. each. Priced as pair.

CONTROL5 List 578⁰⁰ **385⁰⁰ /pair**

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Web Watch

▶ Continued from page 22

Arbitron Inc.'s ratings service. AOL joins another mega-Web portal, Yahoo, which signed on with Arbitron at the end of April. Poyning up for the ratings service is

moving RVs and boats. The necessary return data stream for Internet access is handled by a landline or cellular phone. For a moving vehicle, that data stream goes out via a slow-speed uplink to a satellite.

(They also make precise navigation devices for military vehicles, but if they told Web Watcher about it his ghost would have to write this column.)

So far, it has been impossible for us to get an agreement.

— Deborah Proctor

recognition of the importance of third-party, independent audience measurement to the sale of Internet radio advertising.

★ ★ ★

Web Watcher confesses to being a gadget freak. The latest Internet radio gadget that has flicked WW's Bic comes from KVH Industries of Middletown, R.I.

Engineers at KVH were already working on a device to bring live television programming, via satellite, to a moving car. Heck, they thought, "if we can do that, we can bring the Internet as well." And if you've got Internet, you've got Internet radio.

The company already makes products to bring satellite TV and Internet access to

The RV version of the satellite receiver could be in your car, if you had room for a control unit about the size of a desktop computer. Necessarily, the automobile version will be quite a bit smaller.

Company spokesman Chris Watson told us that the auto version of the satellite TV antenna and receiver will be cents under \$3,000. Price for the Internet upgrade is yet to be determined, and there is no firm delivery date for that option.

But once you can get Internet radio in your car, radio isn't necessarily local any more.

Craig Johnston is a Seattle-based Internet and multimedia developer. Reach him via e-mail to craig@craigjohnston.com.

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Arbitron Incorporates Scarborough Data Into Study

Arbitron released its annual update on radio listening and formats. "Radio Today: How American Listens to Radio," 2003 Edition, is available free online and now includes consumer data from Scarborough. According to Arbitron, the move is an effort to develop a comprehensive profile of listening across America.

Scarborough's data helps to demonstrate the uniqueness of each format and how it attracts an audience with distinct purchasing behavior and leisure inclinations. Findings include the following:

- New adult contemporary/smooth jazz listeners are a fitness-conscious audience and are 53 percent more likely than average to buy a new luxury car,
- Thirty-eight percent of those who play golf are news/talk/information listeners,
- Fifty-seven percent of country radio fans eat fast-food at least five times per month,
- Rock listeners are 35 percent more likely than average to have a home improvement loan, and
- Spanish-language radio listeners spend the most per week on their grocery bill compared to listeners of other formats.

"Radio Today" illustrates that radio continues to be one of the most popular and pervasive forms of media among Americans," stated Scott Musgrave, senior vice president and GM of Arbitron Radio.

"The information it provides will help stations demonstrate to advertisers that radio is the ideal medium for reaching all segments of the American population, no matter what their age is, where they happen to be or what time it is."

The study can be downloaded for free at http://www.arbitron.com/study/radio_today02.asp.

Emmis Gets Ethics Kudos

Emmis Communications has gotten the nod as one of three central Indiana companies to pick up the American Business Ethics Award.

The Indianapolis Chapter of the Society of Financial Service Professionals announced the winners. Emmis is among the top-10 largest radio companies in the United States; it is headquartered in that city.

According to Emmis CEO Jeff Smulyan, the company was founded on the belief that a business could succeed by conducting itself honorably. The company's philosophy is guided by 11 "commandments."

"One of the core commandments reads, 'Never jeopardize your integrity — we win the right way or we don't win at all,'" stated Smulyan.

Arbitron PPM Reach Extended to TV, Cable

According to the latest figures from the Philadelphia Arbitron Portable People Meter trial, the device allows the measurement of audiences not only for individual radio formats, but for capturing the TV channels, broadcast and cable that these radio listeners tune in to as well.

According to Arbitron, this capture of both radio and TV audience on a single measurement platform delivers "real" cross-media intelligence for media sellers and buyers.

Statistics show listeners to the news/talk/sports radio format are more likely than listeners of other formats to tune to PBS, independent stations and the big three network affiliates in Philadelphia. Urban listeners show above-average audience numbers for WB, UPN and Fox.

Cable channels pull audience members from a range of radio format listeners. According to Arbitron, a high percentage of urban radio listeners tune to Nickelodeon/Nick at Nite, MTV, BET and Lifetime. CNN pulls in listeners in higher percentages from country and news/talk/sports formats.

Philly Station Honors New Artists

Up-and-coming performers may have an "in" with WXPN(FM)'s new "XPN Award" program. Singer songwriter Damien Rice is slated to pick up the first honor on July 20 during the Philadelphia station's Singer Songwriter Weekend. The noncommercial public station will help introduce Rice to the United States with ongoing promotions.

"Over the years, we've given talented singer songwriters much needed airplay for their music," said Bruce Warren, WXPN PD.

"We've also worked very hard to give our listeners something they really value — a first look at artists who we believe may have a huge influence on the music scene."

STATION SERVICES

Ad Council Releases Parenting PSAs

One out of three kids lives in a home without a father. Two of three African American children live in homes without Dad.

The Ad Council is out to do something about that.

A series of radio PSAs features boys on a playground bragging about their dads. The spots wrap up with a voiceover from actor Tom Selleck encouraging fathers to be there for their children, and "give them someone to brag about."

The spots are tagged with "It Takes a Man to Be a Dad" and direct the listener on how to learn more to become more involved in their kid's lives.

The PSAs are available in a Spanish-language format as well.

For more information visit www.adcouncil.org.

Pierson

► Continued from page 21

One of the things that we find in community radio all of the time is that so many people don't feel that there's any media really speaking to them. We're always pushing on the FCC to create new spectrum or with digital broadcasting — if that can provide an opportunity for stations to do two audio services instead of just one so that they could do a second language service or serve a different constituency.

There's just such a need for programming that isn't being done all over the country.

RW: What are the biggest needs that you see?

Pierson: Certainly language minorities aren't being served as the country becomes more diverse; but also I think there are other underserved populations. Community stations are often the only stations in the market that are doing classical music or jazz or blues. There are a lot of kinds of music that are not typically heard outside of the major markets in this country.

And we need more programming that speaks to public affairs done in the way that public radio does — addressing the needs of African-American listeners, certainly Latino listeners, in terms of longer-form public affairs.

Typically community stations are trying to serve a number of those needs and also be the only local voice and often the only independent voice that's not owned by one of the larger consolidated corporations that don't know anything about the local issues.

That's a lot for one radio station to try and do, so we're delighted that some of these new stations have come along to serve some of these different groups.

RW: How best can NFCB help?

Pierson: Partly by linking them up with other people so that they can learn, providing direct examples of policies, how to do a station log, how to put their political file together. We've got a legal handbook that's online and the print version is out so that they don't need to go to

lawyers all the time to find out what they need to do to be legal. It's a combination of networking, resources and some guidance.

RW: What's been hardest for you?

Pierson: I think finding funding. There's so much more that could be done and needs to be done if we could find more funding. We've been pretty successful, particularly in terms of the youth and low-power initiatives, but it's always a challenge finding enough funding to do the work that will be really useful to our stations. We share this challenge with our members.

Information about the National Federation of Community Broadcasters is at www.nfcb.org.

Lyssa Graham is a free-lance writer based in Galveston, Texas.



Carol Pierson as Part of a Panel on 'Our Right to Communicate' With Steve Buckley, Left, President of AMARC and Lumko Mtimde, Right, Independent Communications Authority of South Africa

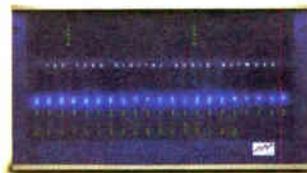
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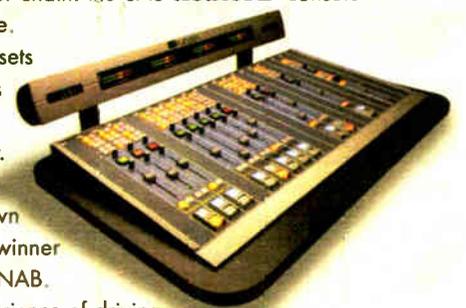
The most critical radio facility user interface is the final link in our chain: the SAS **Rubicon™** console control surface.

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Radio Sales Nudge Upward; Fries Foresees Moderate Growth

Radio revenues reacted to a healthy first quarter with a small increase across all sectors in the month of April.

Local, national and combined revenue each climbed 1 percent compared to the same month a year ago.

Year-to-date, radio grew 3 percent in combined local and national dollars through April. National revenue jumped 6 percent.

"As these numbers bear out, radio maintained a relative level of stability during the height of the war," stated Gary Fries, president and CEO of the RAB.

"While we anticipate some residual effects of the war over the next few months, radio is well-positioned for moderate growth in the second half of the year."

Products & Services SHOWCASE

Control Solutions by CircuitWerkes



The SEN-6 Subaudible Tone Encoder

The SEN-6 is a single channel Subaudible tone encoder with integral audio filtering that can produce 25Hz, 35Hz and combination tones from external closures.



Control your world with CircuitWerkes DTMF Tone decoders and controls

The DTMF-16 and DS-8 DTMF tone decoders provide economical remote control over audio lines. The DTMF-16 decodes single or dual codes while the programmable DS-8 accepts up to 8 four-digit sequences. Silencer option removes DTMF tones from audio.

More Features
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The SUB-03 Subaudible Tone decoder

The SUB-03 is a single channel subaudible tone decoder that can detect 25Hz, 35Hz and combination tones on audio channels. Each tone gives a distinct relay closure. Integrated filters strip each tone from the SUB-03's audio output so no one hears it.



The DR-10

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Dial-up remote control with audio interface lets you control anything over regular phone lines. Interfaces with most studio automation systems. Control it from a dial-up line or external audio path. The DR-10's active, balanced, telco audio output lets you do live remotes, remote announcement recording and...much, much more!

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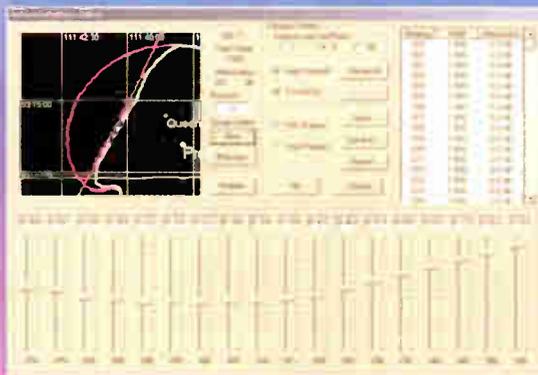
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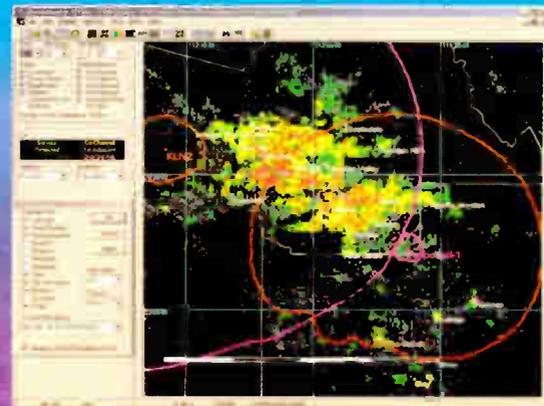
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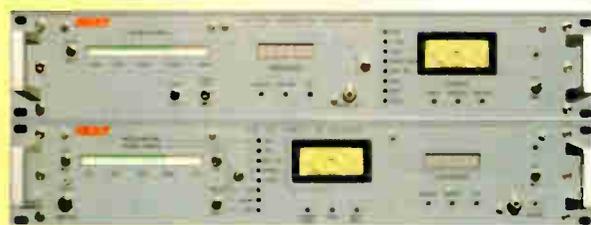
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BROADCAST LAW REVIEW

Broadcasters' Summer School

by Barry D. Umansky

"Broadcasters' Summer School" is designed for station personnel needing some new and/or remedial work on understanding the rules and regulations that govern their stations.

It's not just for rookie broadcasters any more. With all the recent rule and policy changes — particularly the new FCC equal employment opportunity rules — all broadcasters need to take the time to brush up on their regulatory knowledge.

Here's a short checklist. If you find that you've been missing the mark on any of these matters, you promptly should take corrective action, or risk a D or F in your summer school grade, let alone an FCC fine.

Programming

Station ID — Be sure you use your "real" call letters in your official ID at the top of the hour and at the start/end of the broadcast day. You aren't "Magic 104" for FCC purposes.

You must follow your call letters with the name of the community to which your station is licensed. Any other city or cities may be added, but only after the mention of your community of license. And all that can go between the call letters and the community of license is your frequency. No promotional language can be part of a formal ID.

Sponsor ID — Whenever you are paid to deliver a message or program, you must disclose the identity of the party trying to persuade your audience — whether it's to buy a product or to subscribe to a point of view. Can the listener easily figure out from your air copy who is paying you for the spot/program? If not, you should alter the sponsor ID.

For political ads, you must use the "special" words of "paid for" or "sponsored by" in identifying the political advertiser.

Lotteries and Casino Gambling — Federal statutory changes about a decade ago opened the doors to broadcast advertising of many lotteries, with the legal focus now on state law.

While most broadcasters can air spots for church bingo and other charitable lotteries, some state statutes still restrict this advertising. Most states still forbid the advertising of lotteries conducted by commercial establishments, such as car dealers. And if your station is licensed to a city in a state that has no state-operated lottery, you can't advertise state-operated lotteries conducted by other states.

STATION SERVICES

DG Systems Offers e-Traffic Feature

DG Systems has released the latest version of its Media Manager technology, enabling users to access traffic instructions and spots. The Media Manager is a dedicated on-site server that promises guaranteed delivery of spots and music to radio stations. It features desktop access and space for 10,000 spots; it can be accessed simultaneously by multiple users.

For more information visit www.dgsystems.com.

The FCC will not interfere with your advertising of casino gambling that is lawful in the state in which it is conducted. But watch out for any state law restricting advertising of in-state or out-of-state casinos.

Contests — Even if the game in your station promotion or co-promotion isn't a lottery, you aren't necessarily out of the woods. When you are the one putting on the contest (not just running advertiser copy), you're held to a higher standard.

The commission's "licensee-conducted contest" rule requires, among other things, that you fully disclose the "material terms" of the contest, such as how to enter, entry deadlines, how winners are selected, the value and nature of the prizes, etc.

Operations

Main Studio Location and Functionality — You may locate your main studio anywhere within the principal community contour of any station (radio or TV) licensed to your community of license, or within a 25-mile radius of the central "reference point" of your community of license, whichever is larger.

To locate your main studio beyond the farther of these perimeters requires the grant of an FCC waiver.

Also, make sure your main studio is a fully functional studio, capable of program origination. Sure, you can have a "remote studio" with more bells and whistles than the main studio. But, the main studio must look and operate like a studio, and have "meaningful staff and management presence."

For stations with five or more full-time employees, at least one "management-level" employee must be assigned to the main studio, and that person must spend a "substantial amount of time" there each business day. A full-time staff person also must be assigned to the main studio, but the staff person could be "shared."

For stations with only one studio and four or fewer full-time employees, the management-level person only needs "report" to the main studio each day.

EAS — All stations must have Emergency Alert System decoding equipment, and must participate in weekly and monthly tests of the system (and also monitor for state and local EAS activations), regardless of whether the station has chosen to "participate" in the EAS plan. Make sure your station logs contain entries showing all EAS tests.

Tower Lights/Painting — Regularly check your tower for compliance with the lighting/marketing requirements. Make sure the paint has not faded and that your light bulbs/strobes are in working order and comply with the relevant FAA tower lighting circular.

Public File: Lists, Letters and Lots More — Check Section 73.3526 of the FCC's rules for a list of what must be in commercial stations' public files. Section 73.3527 provides the noncommercial station list of requirements for the public file.

Some of the most important components of the local public file are:

- **Quarterly Issues/Programs Lists:** These should include information on the programs that gave "significant treatment" to particular issues of concern to the station's community of license and service area during the preceding three months. You have 10 calendar days following the conclusion of a calendar quarter to place the list in the public file. The lists should include the date, time, duration, title and short description of each program.

- **Letters from the Public:** Whenever a radio broadcaster receives a letter (which includes faxes and e-mails) from the public that concerns station operation or programming, the letter must go into the station's public file, where it must be retained for three years.

- **"The Public and Broadcasting — A Procedure Manual":** Revised recently from the old 1974 text, this pamphlet, available from your communications counsel or from the FCC Web site (www.fcc.gov), is to be placed in the public file to serve as a guide for citizens and groups wishing to participate in the commission's processes. Such participation, of course, usually is not good news, in that it may involve a petition-to-deny an application, informal complaint, etc. Nonetheless, this guide must be kept in your public file indefinitely.

- **Applications and Reports:** All applications filed at the FCC, plus any reports (e.g. the FCC Form 323 Ownership Report) must be retained in the file and open for public inspection.

- **EEO Public File Report:** This is a new requirement, part of the commission's revised EEO rules that went into effect on March 10. This annual report, placed in the public inspection file on the anniversary date of when your license renewal application is due, provides information on how the station filled full-time job vacancies and the kind of "supplemental" outreach

efforts conducted by the station during the preceding year.

- **New FCC EEO Requirements:** In a previous article ("License Renewal Is Tricky Biz," April 7), I gave a summary of the revised EEO rules. If your station is subject to the breadth of the EEO rules (a determination based on full-time employee size and the size market in which you are located), you must begin contacting referral sources, letting them know how they may contact your station to ensure that they notified — by you — whenever you have full-time employee vacancies.

Do your recruitment when vacancies arise, and be sure to complete the paperwork needed to substantiate the fact that you've engaged in those activities.

- **LMAs/Unauthorized or Premature Transfers of Control:** Make sure that your relationship with your LMA partner doesn't actually amount to an unauthorized or premature transfer of control. Each station only has one licensee. And it's that licensee who is responsible for licensee decisions — particularly those involving programming, finances and personnel.

Such compliance is even more important now, with the commission's decision in June to revise the media ownership rules. Make sure you haven't "jumped the gun" and taken over a station prior to FCC grant of an assignment or transfer application, or that you haven't abused an LMA relationship.

While by no means comprehensive, this list of "summer school" topics can help ensure that you get a passing grade that will help you be free of FCC fines or other legal and regulatory jeopardy.

To make sure that you comply with the relevant law, contact your communications counsel.

Barry D. Umansky, the former deputy general counsel of the National Association of Broadcasters, holds the Edmund F. and Virginia B. Ball Chair in Telecommunications at Ball State University in Muncie, Ind. He practices communications law at the firm of Irwin, Campbell & Tannenwald, P.C. in Washington. Reach him via e-mail to bdumansky@bsu.edu or bdumansky@iwpc.com or call (202) 491-7974. 🌐

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EEO Work for Hire

Company Hopes to Succeed With Online Service That Helps Stations Comply With EEO Rules

by **Dee McVicker**

New FCC equal employment opportunity rules put the onus squarely on broadcasters' shoulders to prove their hiring practices are in the public's best interest or face the regulatory consequences come license renewal — and perhaps at other times during the license term.

Broad outreach for every full-time job opening, notification to any organization said to be interested in job postings and participation in recruitment activities are the major hiring responsibilities for which broadcasters must show accountability.

Compliance

With broadcasters and cable operators scrambling for a less burdensome way to comply, at least one company sensed a business opportunity and has come out with an online service aimed at this market niche.

Baltimore firm Broadcast Compliance Services launched its EEO Compliance Service during the recent NAB show. It seeks to give broadcasters outreach and reporting means to stay in the FCC's good graces.

At least one company is now on the market with a service aimed at helping stations meet updated EEO requirements.

"We can't make it go away, but we can make it so much easier," said BCS General Manager Chip Weinman, who is also president of the Maryland/D.C./Delaware Broadcasters Association.

The company says the service helps stations post job vacancies and tries to achieve wider dissemination of information about job openings in compliance with the new rule, which is based in large part on "Option A" of the previous FCC EEO rules.

The commission's new approach is three-pronged, aimed at providing the local community with information about job openings, aiding recruitment organizations in the process and conducting supplemental activities to attract job applicants.

"All of this data has got to be recorded by the station, so the question is, are you going to put it on scraps of paper and then when it's time to file try to re-create everything?" Weinman said.

BCS promises to automate the outreach and job hiring notification process and provide some help with recruitment activities for its subscribing members, charging stations a flat fee of \$50 a year per employee for unlimited use of the service. An average station employing

20 people will pay \$1,000 a year, for example.

Legal experts say the FCC has made it abundantly clear that radio stations cannot delegate their EEO responsibilities to someone else. They can, however, use third parties to help. That's where BCS seeks to expand its niche.

"The FCC has not defined how much outreach is required," Weinman said. But he claims to have 35,000 recruitment

resources linked to BCS' human resources database, which can be culled by location depending on type of job posting.

The system pinpoints the longitude and latitude of the station seeking to recruit as well as the organizations at the local, regional and national level wanting to place people. It uses a SQL server software program to match notices of openings with the resources, and transmits the notices to those resources by mail, e-mail or fax.

Notification

BCS provides notification of organizations requesting broadcast job listings and can disseminate notices of job fairs, internships and other recruitment activities. Reports that document each sta-

tion's outreach efforts are provided by BCS to give stations accountability; the company formats reports to conform to FCC requirements and makes that information accessible to subscribers online.

Included in the recruitment database are job banks, professional organizations and media trade groups. BCS uses an Internet job bank service and is linked to state and federal employment services, plus other sites such as the Department of Labor's America's Job Bank, the NAACP and American Women in Radio and Television.

Dee McVicker can be reached at (480) 545-7363 or via e-mail to deemcv@qwest.net. Barry Umansky contributed to this article.

WEBCASTER Q&A

Conversation With a Webcaster

Michael Roe's Top-Ranked Radioio Was An Idea That Started in a Bedroom

by **Craig Johnston**

Over the past year, as Internet radio Webcasters came and went, radioio kept rising in the ratings. Literally started in a spare bedroom, the subscription service Webcaster's radioioEclectic channel rose to place first or second in the Arbitron MeasureCast ratings of Web listening.

(Radioio chose not to subscribe to Arbitron's ratings service beginning in April, but for the period from March 24 through March 30 it ranked as the No. 3 Internet radio station in the Arbitron MeasureCast Ratings.)

Radioio also made news in January when it went public with its refusal to recognize Acacia Research Technology's digital media transmission patent royalty claims (RW, March 12).

Internet radio columnist Craig Johnston talked with radioio founder and operator Michael Roe about his company's amazing ascent.

RW: What led you to Internet radio?

Roe: I had moved to Jacksonville, Fla., from Nashville, Tenn. Nashville had great radio. I don't have a background in radio. My background is as a market research analyst.

But I was turning 40, realized that I was not doing what I had always wanted to do, which was to own a radio station, even though I had never worked in radio.

Long story short, I had a couple of folks who were interested in joining with me in purchasing a radio station here in Jacksonville, the idea being to do something interesting. Jacksonville is pretty representative of most radio around the country: It's controlled by Cox, Clear Channel and Infinity. It's very, very horrible.

We started looking at stations. I found a C3 in Baldwin, Fla., that didn't really have much of a footprint into Duvall County. The owner wanted \$1.3 million for it. The station was a complete train wreck.

RW: And he got the \$1.3 million, too.

Roe: He got \$1.7. I read an article at the time in Wired Magazine about a guy who calls himself Cravin Morehead in Tampa, Fla., who's considered to be kind of the godfather of pirate radio. I thought the idea of pirate radio was somewhat intriguing as a hobby. I wound up making contact with this individual at a public place in Tampa and discussing pirate radio with him.

He basically told me that pirate radio was over, that it was unnecessary, that the glory days of pirate radio were over. It was being replaced by Internet radio, which, four years ago, I'd never heard of, and no one else had heard of either.

I started doing some research. I heard about a company called NullSoft. I made contact with Tom Pepper, one of the principals in NullSoft, and I became one of the first ShoutCast stations in the world.

I just set it up in a spare bedroom in my home with a Compaq DeskPro and a DSL connection. It was kind of an alternative to me schlepping my CD collection to work every day. I turned my friends on to it. And then I started to notice I had more listeners than friends.

RW: At this time you had no income stream from the station.

'I set up my operation in a spare bedroom in my home with a Compaq DeskPro and a DSL connection.'

Roe: It was just a hobby. Then my hobby was threatened by the CARP ruling in March (2002), and I became involved as an activist in the CARP issue.

I organized a sort of rag-tag of folks like myself. There were about 23 of us, and we formed an organization known as VOW, Voice of Webcasters. We started soliciting Congress; we tried to elevate the plight of small Webcasters on the hill. We made 13 trips last year to Washington. I have personally spoken with representatives in offices of every single Senate and House member, talking about Webcasting.

A lot of press came out of that, and radioio as a brand started getting out there. That March we had 20 people listening, and in May we had 2,000 people listening. All the sudden I realized that it was a business, or it could become a business.

There really wasn't much of a business future without securing a future for Webcasting in general. The Small

Webcasters' Settlement Act is a good thing for this industry. It does a lot to provide for our future, particularly for Internet-onlys.

Anyway, I'm the accidental Internet business owner whose hobby became a business. And once we had the SWSA in place, I was actually able to secure and bring to this project a seven-figure investment.

We have resources now, we have employees now. We have plans now. We're the No. 1 station, and we very much intend to be the No. 1 network next year this time. We're in the process of launching seven more channels. We think the future's bright.

RW: I understand you've never advertised.

Roe: We have yet to spend a dime. It's all been word of mouth.

We have such a great relationship with our listener base — they want to tell their friends about what we're doing. They like our service, they like the way we treat them, they like how responsive we are to what they do.

We constantly get e-mails from people who say "You know, I used to listen to SmoothJazz, or I used to listen to Virgin, and I had a technical problem and I wrote to them and I never heard back from them. I'm absolutely shocked that I wrote you five minutes ago and you're writing me back. I can't believe it."

RW: Do you have a formal system to generate the word of mouth, or do you request it?

Roe: Yes, we often have conversations with the listeners. You know, where we say "We want to be No. 1 next week." The conversation we're having with them now is, "We'd like to bury No. 2. We'd like to be twice as large as No. 2. Please tell your friends and family about radioio."

We have a little thing online on our Web site that makes it real easy for people to recommend radioio to a friend.

RW: Don't you also have favorable
See RADIOIO, page 31 ▶

Radioio

► Continued from page 30

placement on some of the media players?
Roe: Absolutely. We have a preset on the Windows Media Player, we have a preset on the Apple I-tunes player, we have a preset in the RealMedia Player.

But what's funny about that is, I wouldn't want you to think that we're No. 1 in the ratings because we have that preset. Actually, we were like No. 10 in the ratings and all of those various folks came to us and said: "We keep seeing you in the ratings, we checked out your station, we love it. We'd like to add you to the Windows Media Player, we'd love to add you to the I-tunes player, we'd love to add you to the QuickTime player." They all came us; we didn't go to any of them.

But our biggest audience gain comes from word of mouth. I imagine we get two listeners from word of mouth for every one we get from a preset position.

RW: Your timing was also good in that Clear Channel pulled their streams, at least temporarily, around the time you rose to No. 1.

Roe: Actually, we were riding high in the ratings before that happened.

People don't listen to Internet radio because they can't get a Clear Channel station over the air. They listen to Internet radio because they think radio sucks.

If you listen to what we're doing, it's very different from what any terrestrial radio is doing. Our announcers aren't radio-types. The pacing and overall mood and feel of our streams is not hype, and not high energy — it's very relaxed.

You have to remember where most people listen to Internet radio. Ninety-percent of listening takes place during work hours. People are listening at work, while they're sitting in their cubicles, they're listening at relatively low volume levels, and listening is a very passive activity.

We are background, and I don't think folks in the terrestrial space understand that. Most listening to terrestrial radio takes place in the car, while I'm driving. I want to be talked to, I want to be entertained, I want to be kept awake, I want to be jarred to attention.

Internet radio is an entirely different experience. The listener is an entirely different listener. The listener definitely does not like terrestrial radio. In fact, I would venture that 50 percent of our audience doesn't listen to radio period, or if they do they listen to NPR.

You know what came in my box not 15 minutes ago? It was from someone who said, "I heard about radioio through a friend's recommendation, I had given up on radio, I hadn't listened in years. This reminds me of radio back in the '70s. I'm glad I found you."

We get them every day.

RW: Can you outline what your subscription model is?

Roe: We have a free, 20-kilobit, peer-to-peer stream, that's our preview stream; that is ad-supported. Any stream costs us money, so somebody has to pay for it. The free stream is paid for by our corporate sponsors, folks like Spin Magazine.

But our goal with the preview stream is to allow people to hear what we're doing, and if they like it, we then want the listener to become what we call a listener supporter. And a listener supporter is, in effect, a subscriber.

We have a weekly, monthly and annual plan. If they're donating a dollar a week, if they're donating a \$1.50 a week or \$5 a month, or \$50 a year, they can receive a 20K stream that is ad-free. If they donate \$3 a week, \$10 a month or a \$100 a year,

which is near-CD quality. The vast majority of our subscribers are subscribing to our high K-bit streams.

RW: You're very bullish on Internet radio.

'We are background, and I don't think folks in the terrestrial space understand that.'

they can receive our 64K, or mid K-bit stream, which is near-FM quality. Actually, it is FM-quality.

Donating \$6 a week, or \$20 a month or \$200 a year, they get a 128K stream,

Roe: We think the Internet is to radio what cable was to TV.

We believe that just as the big networks, NBC, CBS and ABC, have not been the big players in cable TV, we

don't believe that Clear Channel, Cox and Infinity are going to be the big players in Internet radio. It's going to be the companies who aren't, who don't have all kinds of pre-conceived notions about how radio should be done.

We are inventing something different. When we look to a model of ... if we are looking to a business model, we don't look to Clear Channel, we look to HBO. We see ourselves as a subscription service. We see, we believe that we will differentiate ourselves by creating original content, we're very actively involved in bringing legitimately licensed live content and B-sides, unsigned and unsigned artists that you aren't going to hear anywhere else and adding it as programming on an exclusive basis. There are lots of artists that you'll hear only on radioio. ●

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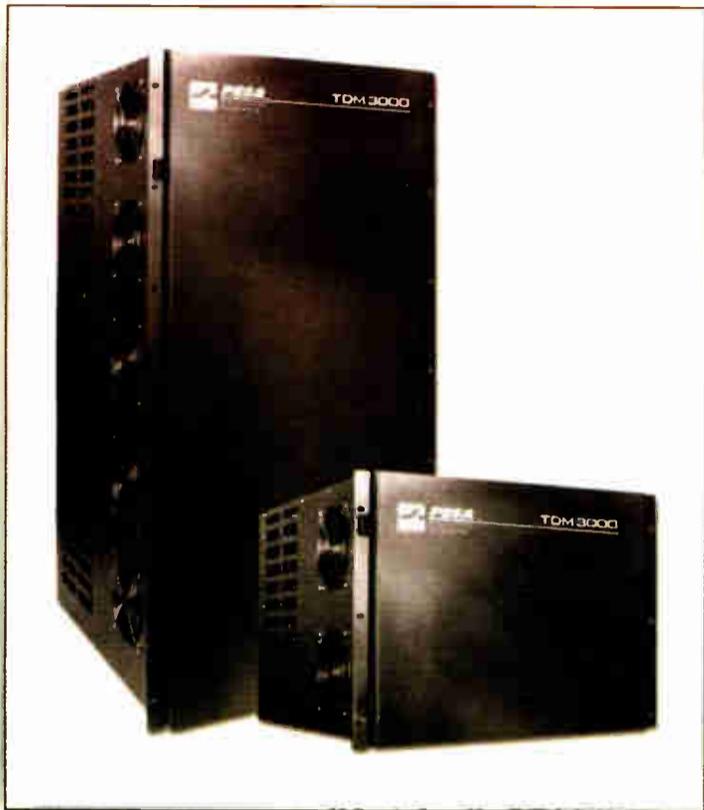
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PESA SWITCHING SYSTEMS

TDM Audio Router Technology



PESA has recently announced the acquisition of the TDM audio router technology from the former Lighthouse Digital Systems of Grass Valley, Calif.

The OZ, as it was known at Lighthouse Digital Systems, is currently in use throughout the world and complements PESA's full line of audio routing switcher and distribution solutions. This technology, now called the TDM-3000, interfaces

with PESA's WIN3500PLUS and WIN3500PRO control systems, allowing existing customers a seamless interface to other PESA products.

The PESA TDM-3000 is the perfect solution for large-scale and mixed-format digital and analog audio routing needs. Although similar in function to a traditional crosspoint router, the TDM-3000 instead uses a high-speed TDM/DSP addressing engine as its "crosspoint" routing core and is I/O format-independent. I/O modules are available for analog audio, AES/EBU audio (synchronous and asynchronous), time code and machine control that can all exist within the same frame.

Matrix sizes are available from 32 x 32 up to 1,024 x 1,024 and all use the same TDM core module. Frame sizes are available in 8RU, 16RU and 24RU. All frame sizes can be cascaded to form larger, multi-format matrices. I/O modules can be mixed and matched within the same frame eliminating the need for separate

frames. This results in rack space savings of up to 50 percent as compared to traditional crosspoint routers.

The design of the TDM-3000 provides an integrated solution for mixed analog and digital audio environments. All analog inputs and outputs are converted to/from digital using 24-bit converters, then synchronized and connected to the TDM core. This allows analog and digital signals to be routed to each other without external A/D and D/A converters or tie lines. AES/EBU inputs are processed as separate left and right channel sources, making L/R breakaway possible.

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- Frame sizes in 8RU, 16RU and 24RU
- Optional dual TDM core
- Optional redundant power supplies

About PESA:

PESA Switching Systems Inc. is a leading manufacturer of audio and video, analog, digital and wide-bandwidth routing switchers, distribution amplifiers and control systems. Corporate Sales is located in Melville, N.Y., and regional sales offices and distributors are located throughout the United States. A network of dealers represents PESA products for other parts of the world. ●



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Radio World

Consoles, Mixers & Routers

July 2, 2003

USER REPORTS

WGUC Goes Legacy With Harris

by Don Danko
Vice President of
Engineering and Operations
WGUC(FM)

CINCINNATI At WGUC(FM) 90.9, we have a long history of providing classical music to the Greater Cincinnati area. Our listeners are, for the most part, discerning music consumers, which requires us to provide the best audio broadcast possible.

That is one reason we decided to overhaul our existing on-air studio and install digital equipment.

The studio received a complete face-lift — everything except for the walls and acoustical treatment was gutted and replaced, even the hardwood flooring. The one item that was a “must-have” for our studio was the Harris Legacy Digital On-Air Radio Console. Our experience with PR&E consoles proved to us that they provided the quality, flexibility and reliability that we needed.

The studio received a face-lift — everything except for the walls and acoustical treatment was replaced.

The Legacy is the most flexible console we have found. Each of the input modules on the Legacy will accept digital or analog audio, and are easy to work with. The connectors on the Legacy require no punch blocks, which add to cost and installation time, as well as the potential to be failure points.

I like the Legacy's quick learning curve. The console has the valuable tools our staff needs without overwhelming them with unnecessary features. This allows our on-air staff to learn the system quickly. It lets them focus on programming for the station and the actual stop sets, instead of running the console. Also, something as simple as angling control-button faces toward the user and including a permanent legend for the controls can make a console easier for operators.

Another quality of the console that we found appealing was its appearance. As a public radio station, we have tours of our studios on a regular basis. Our equipment needs to look good as well as perform the necessary tasks. Along with the custom PR&E furniture, the Legacy adds to the overall look of our professionally



Don Danko and His Harris Legacy Digital On-Air Radio Console

designed studios.

We are building a new, ADA-accessible studio that will be used as a production room. This studio will be new, from floor to ceiling. We've decided to purchase another Legacy for this studio. Almost every department of our station will be using this console from time to time, so again, ease-of-operation is critical.

With Legacy installed in the production studio, we receive a bonus: It will be capable of becoming an on-air studio with the flip of a switch.

We recently signed a contract with Ibiquity Digital Corp. to transition to HD Radio. Within a few months, WGUC should be broadcasting a digital signal. Our upgraded consoles will make the transition to digital as smooth as possible.

The Legacy console by Harris has been a great purchase for our station. We couldn't be more pleased.

For more information, including pricing, contact the company in Ohio at (513) 459-3400 or visit www.broadcast.harris.com.

WBFO Marries AudioVault, Logitek

by Bill Stachowiak
Chief Engineer
WBFO(FM)

BUFFALO, N.Y. Public radio's reputation as cost-conscious dates to the 1960s and '70s, when some of the better-known names in public radio got their start at WBFO(FM) in Buffalo.

Our studio budget then, as now, reflected the public-radio mindset of extending the life of equipment for as long as possible. That was still the case in 1985 when we purchased Broadcast Audio consoles for the very studios used by Terry Gross and Ira Flatow, who went on to host national shows — Terry as host of “Fresh Air” and Ira as host of “Talk of the Nation: Science Friday.”

Making a decision

That mindset continued into the late 1990s, when WBFO made the leap into digital with the Broadcast Electronics AudioVault digital audio system. Still, I had no idea then that our choice of a digital audio system would affect the future capability of WBFO's studios in general, and our ability to upgrade easily to Logitek's digital console network system in particular.

At the time, we were looking for a centralized digital system that was reliable and could do it all: schedule events, take satellite feeds, produce and edit, and playback in digital. PC networking was the big deal then, too.

We wanted a digital audio system that could be networked through a local-area as well as a wide-area network using standard network protocols. We are, after all, one of the legacy jazz stations for National Public Radio, and we provide local news services for the western New

York community as well as the faculty and student population of the University at Buffalo.

Over the past four years, I have received nothing but favorable comments

digital inputs and outputs, which for us meant one less digital-analog conversion in our quest for the all-digital radio studio — something we thought our jazz listeners would appreciate.



David Benders and Bill Stachowiak sit before WBFO's BE AudioVault.

from WBFO Program Director David Benders and others regarding the AudioVault. It proved to be stable and reliable, in part because it marries the open-standard PC with a high-performance audio card made specifically for the rigors of radio.

The AudioVault never outlived its usefulness as we expanded our studios into the digital realm. In fact, I now realize that it was way ahead of its time when we purchased it in 1999.

Many other audio systems on the market then, like now, didn't have its AES/EBU

An AES/EBU input into the audio system proved important last year, when we started exploring board options to replace our Broadcast Audio analog consoles.

Framework

We realized that replacing the analog consoles with Logitek's digital routing and frame system would eliminate the patch field in our central office and do away with a tangled variety of distribution amplifiers and analog routers.

The Logitek system would create a

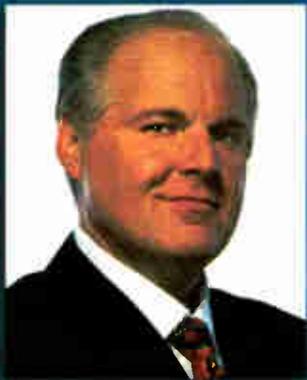
See BE, page 35 ►

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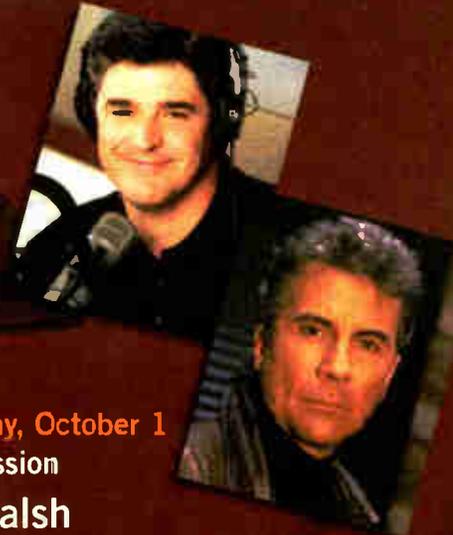


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USER REPORT

Logitek Rescues WKDF Radio

by Cameron Adkins
Citadel WKDF(FM)/WGFX(FM)

NASHVILLE, Tenn. I was working the day watch (and the night watch, or whenever the phone would ring) when I received a frantic call from ops guy with news of yet another last-minute morning show problem.

Seems they wanted a full-blown stereo remote needing mix-minus and IFB and the morning show studio was never wired for it.

Before I could react, I got another call from the production manager. The only prod room available didn't have access to the satellite feed that was coming down in 10 minutes. Next, the jock of the moment was running down the hall complaining of the failure of yet another pot on the 20-year-old console. Of course the remote on the air was on that pot.

I began to look for the patch bays to try and help the immediate problems, but there were none. I found a roll of 8451, some alligator clips and a whole lot of tape, and began the uncomfortable process of running cable down the hallways until the crisis was past and I had time to figure out what I had gotten myself into.

No, this wasn't "Dragnet" or "The Twilight Zone." It was "Radio Hell," my first day as engineer of the aging and inflexible facility of WKDF/WGFX. And it was only 9 a.m.

Most engineers have had this experience at least once in their career, and this was admittedly not my first.

In the past I would have begun the process of selling the need for new consoles, patch bays and a router. All of these systems would, in their way, attack a part of the problem. All of these solutions were time-consuming, long-term and collectively beyond the budgets. To put this facility on the right track, it needed all of the above quickly and on a squeaky budget.

We also had to acknowledge that whatever the solutions, we didn't need to nor could we afford to replace every con-



Logitek's Audio Engine is installed in WKDF(FM).

sole in the building at the same time.

So what if you could get the solution to these problems in one product? It seemed impossible until I found **Logitek**. Logitek fixed the problems. All of them.

The Logitek line of router-based console products was the perfect fit for a piecemeal retrofit project such as ours, but the overall flexibility made it the best choice for facilities new and old.

In today's tight capital environment, Logitek gave us the router and the consoles for the cost of the average medium-priced analog console.

Our project started more than a year ago with one Audio Engine and one console. As budgets have allowed, we are now up to three consoles, two Audio Engines and a multitude of router outputs to accommodate the studios not yet switched to Logitek control surfaces.

The router ports are controlled by a small software application in each room's local computer called "V Route" which eliminates any additional hardware and is expandable as needs change.

Now take what you know about the average audio router and console and throw out the normal limitations. If you

interface seamlessly, we will be able to serially control events and route audio with the mere click of a mouse. At present, we set up the system to do remote starts by having the AudioVault take command of the contact closures in the Logitek frame.

As NPR and WBFO continue to expand into digital, the AudioVault will likely continue to expand with us.

This digital audio system is set for growth in terms of the Internet and HD Radio. Now available with MP3 support (the Fraunhofer licensed MP3 encoder/decoder is integrated into the system), the AudioVault will be useful should we want to encode audio files for playback on MP3 consumer devices or over the Web.

It supports RDS and Java applications as well, and with the Main Program Service data specification now an option for the AudioVault system, we could synchronize the transmission and reception of HD Radio data displayed on HD Radio radios should the time come for WBFO to go all-digital.

For more information, including pricing, contact Broadcast Electronics in Illinois at (217) 224-9600 or visit www.bdcast.com.

can think it, Logitek can do it.

The Logitek Audio Engine not only can accommodate any input or output standard, analog or digital, but automatically handles remote machine control functions within the engine and routes those functions to whatever room or control surface at the same time.

For more elaborate functions, Logitek has provided another simple software utility called "Command Builder." With a little practice, we have been able to switch control room audio feeds, module remote-control functions, telephone control functions and audio and a host of other functions with the push of one button. Logitek handles this functionality seamlessly between

one of its own Numix control surfaces in one studio and a traditional analog studio setup for one of our morning shows.

This would have been a real mess, if not impossible, in a traditional studio setup. I was able to program the functionality of the setup from my office PC and monitor the status at any time.

Inputs and outputs once wired to their respective I/O port are also programmed from my PC to any or all studios as needed. This I/O table is how you name each input or output (in real English) and where it will be available so you have control of what signal goes to which room or console. This is as easy as it can get.

If putting "all your eggs into one basket" is a concern, not to worry. The engine architecture provides redundancy and has been found in our experience to be the most reliable of any other critical system in the facility. It just keeps working.

As our facility continues to grow and evolve, Logitek will grow with us. The line of control surface options and router options does not limit us. In contrast to the traditional studio or facility upgrades, Logitek empowers us to let our imagination go and come up with the best solution for each need.

I have built a variety of facilities in my 30-plus years in radio and have been proud of each accomplishment in their time. However, I can honestly say that with Logitek at the heart of this facility, I am most proud of what it has allowed me to accomplish here. The Logitek system has taken away the boundaries of the traditional project and allowed me to be a better engineer.

For more information, including pricing, contact the company in Texas at (713) 664-4470 or visit www.logitekaudio.com.

TECH UPDATE

AEQ Mixes Features for BC-2000

AEQ's BC-2000 is a digital routing, mixing and audio processing intercom and communications system for broadcast center. It has a TDM bus in the BC 2000 DF subframe with the capacity to route 2,048 channels simultaneously.

The BC-2000 uses MAD1 links as interconnection between the various sub frames. The system, or a part of it, can be decentralized using optical fiber links between the units.

Each subframe has a maximum configuration of 128 x 128 and can be a mix of analog and digital inputs and outputs. Features include microphone inputs and GPI/O. The TDM bus is divided into an input bus and an output bus with the possibility of insertion of DSP cards making a flow of DSP processing available.

Control can be performed from various surfaces including mixing consoles, dedicated panels, intercom panels and PCs. The E@sy control allows audio codecs with ISDN interface and a link to the Mar4 WinAutomation System.

For more information, including pricing, contact the company in Florida at (954) 581-7991 or visit www.aeqbroadcast.com.



Jose Manzano sits before the AEQ BC-2000 D.

BE

► Continued from page 33

framework for which to run and share digital audio throughout all studios. Because of the AudioVault's AES/EBU inputs and outputs, we would be able to install the Logitek system without analog-digital conversion between the board and console.

We purchased four Logitek Audio Engines, one for each studio (on-air and production), another for the newsroom and one for the central office. We connected the "virtual router" using fiber, and added another AudioVault server to store and convert additional digital files.

Logitek interface to the AudioVault was simple. No analog channel balancing to worry about and no setting levels. Just straight, clean digital audio.

With the exception of a few audio sources and a remaining half-mile landline used for running audio from the studio to the digital STL uplink (soon to be converted to fiber), WBFO's studios are now digital throughout. This has opened up a new world for us in terms of quality of audio and studio communication capability.

Because the Logitek and AudioVault

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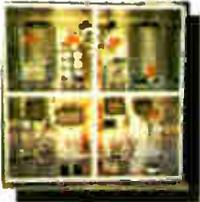
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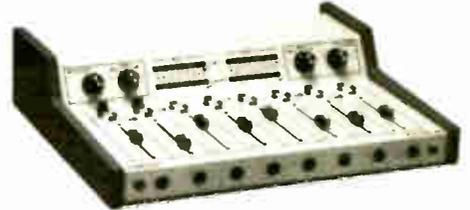
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USER REPORT

SAS Meets Susquehanna's Needs

by Rob Chickering
Susquehanna Radio Dallas

DALLAS Susquehanna Radio Dallas is four stations: KPLX(FM) 99.5 The Wolf, KLIF(AM) 570 talk radio, KDBN(FM) 93.9 The Bone and KTCK(AM) 1310 The Ticket. All are located on two floors of an 18-story building in downtown Dallas.

Among the four stations, we have 16 on-air studios and production studios. The main technical operations center or TOC is on one floor, with a smaller TOC on the other.

Air studios use various PR&E consoles with ENCO for on-air delivery of music and spots, while the production studios are equipped with Yamaha 03Ds. The two FM control rooms and six of the production rooms are fully digital, the rest are analog. The result is a mix of analog and digital sources and destinations.

Router planning, layout

The router prior to the Sierra Automated Systems' installation was an 18-year-old BSM 64 x 32 mono analog router. It was seriously underpowered for our operation, and parts were no longer available.

The RIOLink

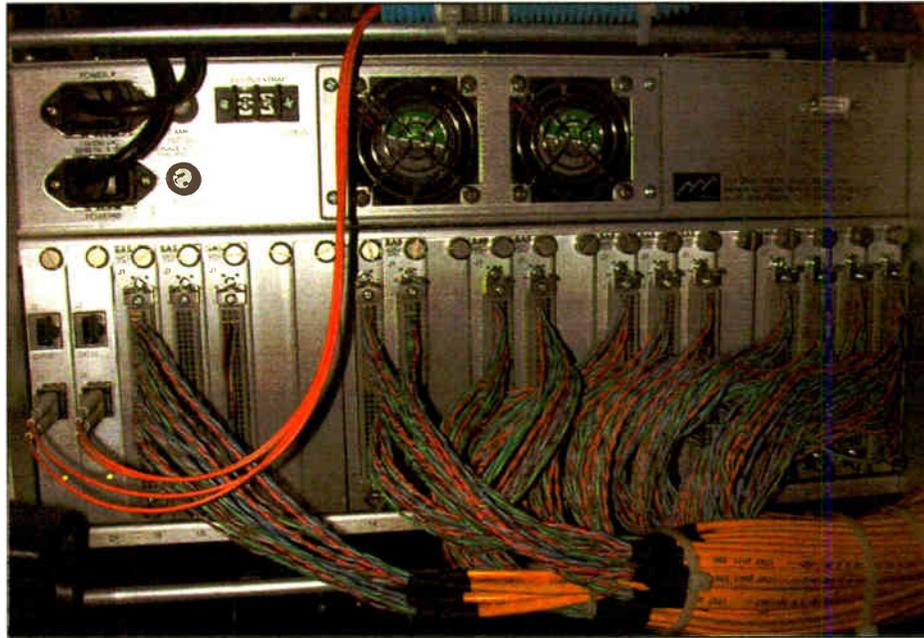
connects back to the main 32KD with Cat-5 or multimode fiber.

We looked at our needs: add digital, expand router feeds to more console and recorder inputs in the control rooms and production rooms, add feeds to ISDNs, couplers and loops and expand feeds to the transmitter sites. When we laid it all out and the dust settled, we needed a 224 x 256 router that could handle both analog and digital.

The new SAS 32KD fit our needs. I chose it for multiple reasons: The first was the SAS RIOLink, a sub-router chassis for analog and digital inputs and outputs and control. Each RIOLink can handle 16 stereo inputs and 16 stereo outputs (or 32 x 32 mono), 16 serial control and 16 GPI and GPO. This fit in our plan because 30 percent of our sources and destinations are three floors away from the main 32KD in the TOC.

The RIOLink connects back to the main 32KD with Cat-5 or multimode fiber. Because we already had 12 pairs of multimode run from the 16th floor TOC to the 13th floor TOC, RIOLink via fiber was a suitable solution for us, much more cost-effective than buying two full router frames.

The second selling factor for us was the 32KD's ability to handle multiple types of audio. Mono analog, stereo analog and digital are interconnected without any problems. The DSP in each output channel can sum a source to mono, select left source to both output channels, or right to both.



Rear View of the 32KD Router

You can do level control within the router as well. The 32KD can be externally clocked or will run with its internal clock.

The third consideration was the range of router control options.

The main 32KD chassis can be wired with Euro 96-pin or RJ21 50-pin connectors. We choose the Euro and enlisted the assistance of SAS to prewire the connectors on Belden Media Twist. When the router and cabling arrived, we plugged

and punched onto 66-style Krone blocks.

The RIOLink comes with RJ21 connectors, so we purchased the same Krone block pre-wired to RJ21s and 30-foot RJ21 jumpers to connect the RIOLink to the blocks on the back wall of the TOC. With this plan the router was wired in just two days.

Next was router control. We used the SAS 32KD router control built in to the Harris Pacific BMX Digital console, with

communication between router and console via IP. Other on-air rooms were outfitted with custom inlaid rotary router encoders in the consoles. Production rooms and the audio-equipped offices were given software soft-panel control. These worked out well, saving us quite a bit hardware cost.

Once online, the SAS 32KD Router performed as promised. We now have the ability to share sources across production studios, dub satellite feeds offline in control rooms and put multiple remotes on air.

Performance

We have also used the 32KD to feed simulcast transmitter sites for The Ticket for minor league baseball broadcasts.

Once the game is over, the simulcast is rejoined. The router's automation software handles much of the switching automatically: the feed to the transmitter from the off-air production room, the ISDN return for the game and the game broadcast from the ISDN to the production studio.

Included with our 32KD was the SAS Automation software. This allows us to do specific X/Y routing functions as scheduled events. We use it primarily to accommodate return audio for remotes. The Susquehanna Dallas stations do about 1,000 remotes per year combined, so this feature gets a lot of use.

The 32KD has much more power than we're using. In the future, we plan to use it for signal processing and off-site mixing. Technical support from SAS was excellent and thorough.

For more information, including pricing, contact the company in California at (818) 840-6749 or visit www.sasaudio.com.

TECH UPDATES

Symetrix Router Targets Mid-Size Radio

Built on the Symetrix SymNet Audio Matrix technology, the SymNet Airtools Studio Matrix, now shipping, provides a scalable, modular, redundant system for the audio routing and processing needs of small to medium-sized radio and audio-for-video production facilities.

Networking up to 15 redundant pairs of specialized, 1 RU DSP-driven devices into a matrix configures systems allows hundreds of input and output signals to be brought into the systems and routed via mixers, selectors and/or crosspoint matrix/mixers up to 32 x 32 (stereo). Symetrix says interconnection is facilitated by a low-latency audio bus technology that allows routing between any two or more points in the system on demand.

Each network device contains two SHARC processors for handling of audio signals including dynamics, equalization, filtering, mixing, switching, routing and logical control. Local access and control can be gained from a variety of sources including Ethernet control, RS-232/485 or analog pots and closures.

Signals originating in air studios or production rooms outside of the central network location can be brought into the system through a 4 x 4 interface known as Homer (model 7000). This device converts signals between the analog and digital domains and transmits them in and out of the network as AES/EBU audio over CAT5 cable. Homer also supports a microphone preamp with phantom power.

For more information, including pricing, contact the company in Washington state at (425) 787-3222 or visit www.symetrixaudio.com.

Klotz Digital Offers Routers, Consoles

Klotz Digital has developed several control interfaces to provide audio routing control of its VADIS AudioMedia platform.

Used to control audio routing and distribution functions of the VADIS 880 "audio engine" frame, these controllers connect via Cat-5 cable. Up to 64 controllers can be connected to the Master Control Panel, which in turn interfaces to an unlimited number of inputs and outputs across VADIS frames.

The Master Control Panel acts as the central processing unit and does not require an external PC for configuration or operation. A monitor, keyboard and mouse can be attached to the Master Control Panel for configuration and status display.

Several versions of "slave" control panels offer a variety of configurations. The 19-inch rack-mount and 9.5-inch desktop control panels offer backlit LCD screens, rotary encoders and user-programmable push buttons. Prices range from \$599 for desktop controllers to \$2,999 for a Master Control Panel with Dual LCD/Rotary encoder selection controls.

Klotz Digital also has introduced the KDC-200 line of broadcast on-air consoles.

These control surfaces, based on the DC-II console line, come in standard configurations for plug-and-play setup and can be integrated into a facility-wide platform network. The consoles use central processors, eliminating the need for an external PC to configure and operate the console. A monitor, keyboard, and mouse can be attached directly for configuration and status display.

According to the company, an integrated GUI makes console configuration, source and GPI naming simple.

Prices start at \$18,995 for an eight-fader, 24-input console with six stereo buses. KDC-200 consoles are available with up to 28 faders.

For more information, contact the company in Georgia at (678) 966-9900 or visit www.klotzdigital.com.



Klotz's VADIS Router

TECH UPDATE

Wheatstone's Gen-9 Links Up

Wheatstone's Generation 9 Digital On-Air Radio Control Surface is an extension of the Bridge digital audio network routing system.

It lets users create a platform-based system, in which 50 surfaces can be configured to share sources, destinations and control signal information. One hundred remote satellite cages can be supported to accommodate large multiple-studio builds. Because the system is embedded, the network operates independently of external computers.

GEN-9 control surfaces can be linked, allowing users to create large or small platform-based systems. Wheatstone Bridge network cages

house the I/O ports and engine cards, and may be wired in tandems within one equipment room or interconnected to separate remote locations by means of fiber optic or Cat-5 cables to provide single wire studio integration schemes.



The system also uses Wheatstone's VDIP configuration software, so studio functions (like mutes, fader and timer starts, tallies, etc.) can be completed at a user's desktop. Once finished, settings are retained in non-volatile storage, allowing the system to run independently. Ethernet protocol is built in, providing

interface with automation, scheduling and hardware controllers as required.

Targeting small, centrally located studio networks as well as large, multiple-format buildouts, Wheatstone says Generation 9 Digital Control Surface can provide integration of audio routing, communications and machine logic functions.

For more information, including pricing, contact the company in North Carolina at (252) 638-7000 or visit www.wheatstone.com.

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TECH UPDATES

Tascam Has SX Appeal

Tascam's SX-1 Digital Production Environment is a 40-input, eight-bus digital mixing console with 100 mm faders, dynamic automation and 16 phantom-powered mic preamps.

It has a 48 kHz, 24-bit, 16-track, hard-disk recorder with internal disk drive and the ability to add SCSI drives via front-panel slot or rear-panel SCSI interface.

The console has future support for 88.2/96 kHz recording. The SX-1 has surround mixing capabilities, a 128-track MIDI sequencer with editing modes on the fly, a CD-RW drive for creating Red Book CDs of stereo mixes and DSP technology.

It comes with analog, digital, MIDI and computer interfacing

that includes 16 balanced XLR inputs, 1/4-inch TRS line inputs, TRS inserts on each analog input, eight channels of ADAT optical digital interface, two stereo S/PDIF inputs and outputs and an SCSI port.

With timecode/sync support via SMPTE/LTC, MTC, video sync and Sony P2, the SX-1 has expansion slots for 24 more channels of digital I/O or additional analog I/O

For more information, including pricing, contact the company in California at (323) 726-0303 or visit www.tascam.com.



Z-Systems Features Detangler/Router

Z-Systems promotes its 8x8 Digital Detangler as a solution to digital cabling entanglements.

Each Detangler is an automated digital audio patchbay/router, format converter and distribution amplifier. The x-8.8 features eight input/output ports.

The company has a number of configurations and can custom-build to meet a particular need, with any number of AES/EBU, S/PDIF and optical input and output ports.

"Once configured as you require, you would hook up all of your digital audio sources and destinations to the z-8.8's rear panel," it states. "The connection pattern is then simply established by the touch of a few buttons on the unit's front panel."

For more information, including pricing, contact the company in Nevada at (702) 365-5155 or visit www.z-sys.com.

Titus Offers Digital/Analog Audio Monitor

With Titus Technological Laboratories' MDA-8, six AES-3 digital sources and two stereo analog sources can be switched-to and monitored. Each of the AES-3 digital inputs feed an internal DAC on the MDA-8 with stereo balanced audio outputs from each digital input provided on the rear of the unit. This allows each digital input to be decoded with the stereo audio on that input available as an analog output. Two stereo analog sources can also be switched-to and monitored.

Each digital input also is monitored for digital errors and loss of audio on the source and any problems will trigger an internal relay for remote alarm of the problem. The two analog inputs are monitored for loss of audio and trigger an internal relay for remote alarm. Time delay as well as loss of audio threshold are set on the front panel.

The MDA-8 switched source is output on the rear panel (balanced stereo outputs). The level of the selected source is presented on a front-panel LED meter. The meter features a peak-hold function and a mono check button that turns the meters from showing the left and right channels to showing the sum and difference audio (checking for polarity and mono integrity).

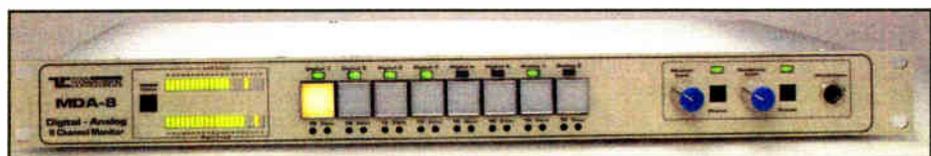
The MDA-8 has a headphone jack that lets the user listen to the switched source and the sum and difference audio when the mono button is pressed.

Switched audio output level from the eight audio sources (six digital and two stereo analog sources) is via front-panel volume control, which features a user-set pre-set level button.

Another capability of the MDA-8 is connectivity to the Internet via an RJ-45 jack on the rear panel. The MDA-8 has an internal Web server that can be attached to a local LAN or to the Internet. This access allows the user to switch remotely between MDA-8 sources and monitor status of each source from anywhere.

The MDA-8 has a universal power supply (100 to 240 VAC input) as well as "Phoenix-" type terminals on the rear panel. Remote alarm conditions are via a DB-9 type connector.

For more information, including pricing, contact the company in Connecticut at (800) 806-8851 or visit www.tituslabs.com.



Broadcast Tools Supplies Switcher Range

Broadcast Tools Inc.'s SS 16.16 provides crosspoint audio switching of 16 stereo inputs to 16 stereo outputs. Crosspoint switching allows any one of the 16 inputs to be assigned to any or all outputs, while inputs may never be mixed.

Additional features include selection of any active source at power-up, last source selected, audio mute, an enable switch, 16 macro locations, control via front-panel encoder controls, contact closures, 5-volt TTL/CMOS logic, open collector and/or multi-drop RS-232 or RS-485 serial port, 16 GPI inputs and 16 OC outputs. Removable screw terminals are provided for most connections.

The SS 16.4 provides matrix audio switching of 16 stereo inputs to four stereo plus four monaural outputs. Matrix switching allows any or all inputs to be assigned to any or all outputs.

Additional features include selection of any active source at power-up, last source selected, audio mute, an enable switch, 16 macro locations, control via front-panel encoder controls, contact closures, 5-volt TTL/CMOS logic, open collector and/or multi-drop RS-232 or RS-485 serial port, 24 GPI inputs, 16 OC outputs and 8 SPST relays. Removable screw terminals are provided for most connections.

For more information, including pricing, contact the company in Washington state at (360) 854-9559 or visit www.broadcasttools.com.



SAS Shows Console For Digital Network

Rubicon, new from Sierra Automated Systems, is a console control surface that interfaces with the SAS 32KD Digital Audio Network or the SAS RIOLink.

SAS began shipping the 32KD Digital Audio Network, an expandable router of audio and data that includes integral mixing and summing, a year ago, followed by the RIOLink, a remote I/O for the studio.

Rubicon is a router controller in the form of a console, which SAS says completes its SAS Connected Digital Network: an integrated system of console, local I/O of audio and data and system-wide routing.

Rubicon is a modular console that can be equipped with a few modules for a news or announce booth, or up to 40 or more for a larger control room. Consoles are configurable to provide or lock-out functions. Session save/recall allows the console to be reconfigured with the push of a button.

For more information, including pricing, contact the company in California at (818) 840-6749 or visit www.sasaudio.com.



Intelix Touts Mic/Line Mixer

The Intelix 8002MCB-FP is an eight-channel, dual-bus, studio-quality mic/line mixer for mobile live and recording applications. Each mixer features front-panel controls including channel gain, mic/line pad and phantom power.

Features include dual-bus mic/line mixing with recessed selector switches, which allow bussing of individual input signals to the Main, Aux or both outputs; bus selectors per channel; studio-quality compression and limiting with threshold, adjustable from -40 dB to +20 dB and a ratio from 1:1 to ∞:1; actively balanced inputs and outputs (each input has a -50 dB mic/line pad and a low-cut filter, including a 9th Aux input on the main output); and a dual-function LED VU meter, which may be internally jumpered to meter the Main or Aux bus.

The 8002MCB-FP has selectable AC or DC power, +15 V phantom power and front-panel headphone output; it is linkable for applications requiring additional inputs/outputs. The mixers are suitable for broadcast, remote public address, field production, mix-minus, rental/PA and sound reinforcement.

For more information, including pricing, contact the company in Wisconsin at (608) 831-0880 or visit www.intelix.com.

TECH UPDATES

Telos Explores Ethernet

Telos is touting Livewire, a technology that enables broadcasters to transport audio over standard Ethernet, as a low-cost way to connect audio and data for a studio facility. The company says Livewire lets operators monitor microphone and other live audio with almost no discernible delay and calls these fast audio connections Livestreams.

In addition to Livestream traffic, Livewire allows other forms of network traffic on the same Ethernet. For example, PCs can send IP-Standard audio streams over the network to be mixed and merged with Livestream data. Non-audio message traffic such as program-associated data (PAD) and routine communications can be conveyed over the same network.

Telos claims Livewire is the first audio network targeting broadcast studios. A single Cat-5 or fiber conveys multiple audio channels, control, program-associated-data, VoIP phone and general computer data. The product is designed to use the traffic management and prioritization capabilities of modern switching Ethernet hubs. The switch delivers

Livewire packets only to those ports wishing to subscribe and prioritizes the audio packets so they take precedence over all other traffic.

Multiple studios are joined using Livewire. Audio sources are made available throughout the plant. Livewire features low latency, enabling real-time monitoring of live audio sources. Per-link delay is less than 1 ms for high-priority audio signals.

PCs are directly connected to Livewire. A Windows software driver emulates a sound card, enabling delivery systems and editors to pass audio directly to and from the Livewire network.

Audio is prioritized over all other data types. A 100Base-T link can carry 50 bi-directional stereo channels of 48 kHz, 24-bit linear PCM audio; a 1000Base-T link or Gigabit fiber can carry hundreds.

For an extended explanation, please refer to Steve Church's article "Going Digital? Consider Ethernet" (RW, May 21) or visit the Telos Web site. For more information, including pricing, contact the company in Ohio at (216) 241-7225 or visit www.telos-systems.com.

Henry Engineering Supports Consoles

Henry Engineering's Superelay is a multi-circuit control unit that connects to the Mic Tally output of broadcast consoles. It provides a switched AC output for operating on-air warning lights (up to 200 watts), plus six SPDT relay outputs that can be used for the utility switching functions described.

Superelay is a rack-mountable unit that is 1/3 unit wide by 1 unit high. It comes with plug-in "euroblock" connectors instead of the screw-terminals that were used on the older unit. There is a provision to connect multiple Superelay units in tandem, if more control circuits are needed.

The Superelay features a flasher for the Warning Light output, with front-panel status LEDs. The AC output is switched using a synchronous solid-state relay to prevent arcing or radiated noise. The AC power supply is built in; no wall wart supply is needed.

For more information, including pricing, contact the company in California at (626) 355-3656 or visit www.henryeng.com.



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Mackie Mixer Provides Its Own Power

Mackie's 1604-VLZ Pro is a compact mixer choice for any live or recording application. Mackie says it has low-noise, high-headroom XDR mic preamps and each channel is equipped with an 18dB/oct. 75 Hz low-cut filter as well as a solo function and a three-band active EQ with sweepable midrange. It has trim, aux sends, pan, mute, -20, Solo and OL LED indicators. Mackie says EFX to Monitor and Aux Sends let users take control of their mix, how they want it to sound and where they want it to go. To accurately hear a mix in a control room or through headphones, Mackie has Control Room and Phones outputs with a multi-input source matrix.

The 1604-VLZ Pro, in a 19-inch rack mount, has a built-in power supply instead of a wall wart as well as a solid-steel main chassis. Rotary controls are sealed. Mackie says the 1604-VLZ Pro has sound quality, wide dynamic range and mix headroom.

For more information, including pricing, contact the company in Washington state at (425) 487-4333 or visit www.mackie.com.



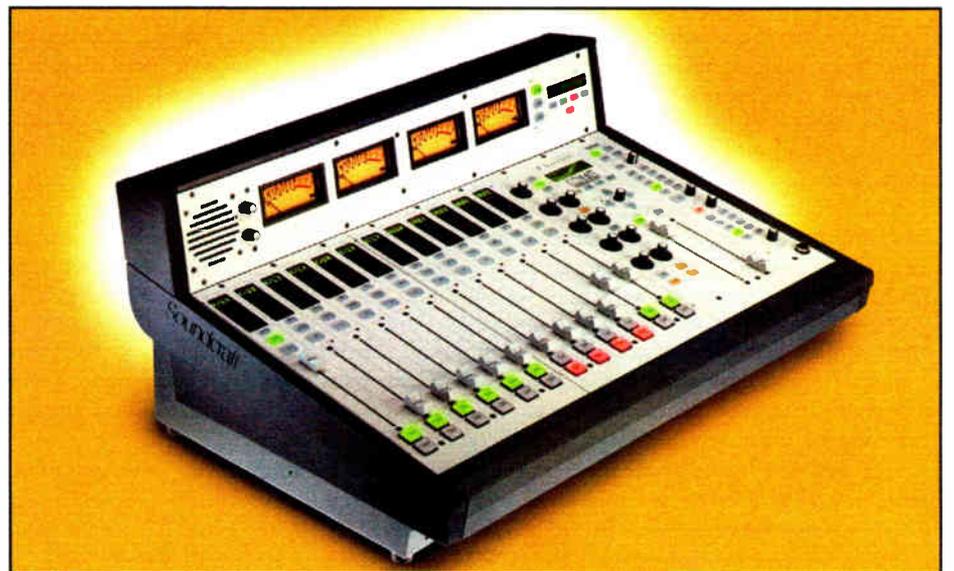
Soundcraft Console Targets On-Air Use

Soundcraft's digital radio console, the RM1ds, is based the original RM1d. The "s" version is meant specifically for on-air use, rather than both on-air and production, and incorporates features including separate Start and Stop functions for each channel. Soundcraft says the front-panel and control-menu labeling are more in line with the terminology found on dedicated on-air desks.

The console uses a digital processing path with assignable input selection from analog mic/line, S/PDIF, TDIF and AES/EBU sources. The RM1ds also features dynamics processing and Lexicon effects, cue speaker and dual timers; digital processing lets users store and recall 128 presets of desk settings.

Soundcraft's board can be integrated with RCS Master Control, the on-air digital audio system. Using a four-channel stereo TDIF audio interface (analog interfacing is also possible) and RS-232 control interface, the desk indicates which channel is handling the current track and which channel will cue the next one using the LED display in the channel On buttons. The RM1ds is available in six- and 12-fader formats, with optional script tray frames available.

For more information, including pricing, contact the company in California at (888) 251-8352 or visit www.soundcraft.com.



Yamaha Touts Digital Production Console

The Yamaha DM2000 multi-platform mixing system features 96 channels of dynamic control, noise-free 24-bit/96 kHz audio and effects and outputs and uses DSP7 LSI's with 32-bit internal processing. A 22 x 8 (four-stereo) matrix system provides cue monitor mixes or zone level control for sound reinforcement applications.

The functional patching system enables 24 busses (eight record/subgroup busses, 12 auxiliary sends, L/R stereo buss and Solo stereo busses) assignable to any output connector. DM2000 provides automation of console parameters and 24 touch-sensitive 100 mm motorized faders.

For more information, including pricing, contact the company in California at (714) 522-9011 or visit www.yamaha.com.

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Eventide H3000B Ultra Harmonizer in excellent condition with manual, stereo, rack mount, \$950. Gerry Turro, WJUX, 75 Secono St, Dumont NJ 07628. 800-585-1031.

Nagra BMII (2) mixers for use with Nagra III, IV & 402 recorders, both in mint cond, one w/output cable, other without cable, \$125 & \$100. Al Ross, 3309 214th St., SW, Brier WA 98036-6841. 425-775-8853.

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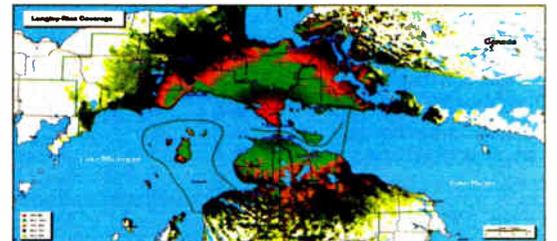
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Career-oriented rookie searching for the perfect broadcasting gig. Willing to travel & love interacting with people. Jose, 405-229-0413 or NQBUSFAN@yahoo.com.

CE position wanted. Experienced w/computers, xmtrs, automations, DCS, UDS, digital studios. Robert King, 978-479-4855.

City rocker with Country seasoning talent seeks position within the U.S. Willing to do what it takes. Nathan Castles, 972-660-7296.

Energetic female talent seeks on-air position. Willing to relocate. Comfortable with all music formats; especially alternative. Work well under pressure. Chelsea, 940-365-9246.

Enthusiastic rookie looking for job on-air or in production. Shooting for the top of the tree, not halfway up! Jimmy, 817-429-0500.

Hard-working disc jockey fresh out of school looking for a station to show me the ropes. Willing to relocate for first job in radio. Rodney, 405-412-8536.

Joshua Fuel: enthusiastic graduate seeking on-air talent position. Qualifications include: play-by-play, color commenting, internet radio, Cool Edit Pro. Strong communications skills. Willing to travel. 972-691-6360.

Straight out of ABS. Skilled in the art of production. Hell-bent on working for you. Christopher Gordon, 817-444-6418 or wetwillie455@msn.com.

Just graduated from American Broadcasting School! Eager to find an entry-level position as a copywriter. I'm a creative female who's ready to go! Jennilyn Giese: jennilyngiese@yahoo.com.

My name is Shekinah, and I am interested in a position with your station. My interests are: disc jockey, production, voice-overs, and news writing. 405-324-5752.

Rookie broadcaster who loves music wants to work for you. On-air, production, board ops experience. Will travel. Chris, 405-455-1742 or austinontheir@yahoo.com.

Will you let me help your station be even more successful? Graduate looking to do Whatever it takes to make your station the best. 817-649-2634 or scottyprice@juno.com.



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So what are you waiting for? Don't miss out in '03. Enter to win New Technology products from these fine Radio World supporters:



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Radio World, July 2, 2003

FCC and Translators: An Exercise in Futility

In 1926, the Supreme Court ruled that the Commerce Department had no power to regulate the building of new radio stations. To avoid complete chaos, the Congress, in 1927, enacted the Federal radio Act, directing a commission to consider the "public interest, convenience and necessity" before issuing new broadcast licenses.

Well. Seventy-six years have passed and the commission we have now wishes to replace order with chaos — as long as their price is met. This may well be the result of the commission's foolish attempt to auction translator channels.

After a freeze of some six years, the commission opened a filing window for just one week. More than 13,000 applications flooded the FCC's computers. More than 40 percent came from just five applicants: CSN Network (114); their sister organization, Calvary Chapel (365); Educational Media, the K-LOV folks (876); Edgewater Broadcasting (1,770); and Radio Assist Ministry (2,455).

These last two applicants are really one. Edgewater Broadcasting Inc. and Radio Assist Ministry Inc., share officers and directors. They are both based in Twin

Falls, Idaho, although one director hails from Running Springs, Calif. Through that California director, there seems to be a link right back to CSN Networks and then to the Calvary Chapel operations in Twin Falls, which already operates 10 percent of all the translators now on the air. Most are in the reserved band and many are fed by satellite from Twin Falls.

tions (albeit often from impossibly weak signals), thus giving their applications preference over more legitimate, but non-profit, applications. Under new FCC policies, where a commercial application is mutually exclusive with an applicant proposing to relay a non-commercial station, that second applicant will be summarily dismissed.

our biggest mall on my second adjacent (94.3 to my 93.9). It is proposing to relay a 94.1 station from 100 miles away. Right. Once granted, watch the satellite dishes sprout like mushrooms beside these new translators.

Unfortunately, the FCC's auction procedure leaves little opportunity to protest these abuses. Apparently, applicants need not provide a real proposal to meet the filing window, only "expressions of interest." If there are no other competing applicants, the FCC will publish a list and direct the filing of the "real" application. Only then will existing stations be able to file petitions to deny an application and they will have only 15 days to do so.

Until then, fighting these mass-produced applications is akin to nailing Jello to the wall. In the end, I suspect that the FCC will spend more money processing all these applications than they will ever collect from the few fools who insist on going to auction. But then, the commission can always increase our regulatory "fees" the following year.

Tom Taggart
WRRR(FM)
St. Marys, W.Va.

Once granted, watch the satellite dishes sprout like mushrooms beside these new translators.

— Tom Taggart

You can't feed a translator in the commercial band by satellite, although Calvary Chapel has a proposal before the commission to change this rule. Most of the Edgewater/Radio Assist applications propose off-air relay of commercial sta-

Many of the Edgewater/Radio Assist applications also propose to camp out on adjacent channels inside the protected contours of existing stations, such as the three on my adjacent channels. One, with 250 watts, is just a few hundred feet from

City profile misses mark

The article in the May 7 edition about radio in Wilmington, Del. ("Wilmington Radio: A Unique Niche") was informative, but I was disappointed that, unlike other city profiles in the past, this one gave no detailed mention of the evolution of AM radio in town, particularly that of WILM(AM).

The Hawkins family has owned the station for decades, including a time in the 1950s when they programmed some jazz and R&B from that golden era. WAMS(AM) always seems to get the credit for playing the "hip" stuff for boomers in that era, but WILM was ahead of them in the 1950s. Also, there's no mention of Joe Pine's talk show on WILM — the first talk show in the nation.

I know Newark is not in Wilmington, but in discussing the outside effects of Philly radio on Wilmington, there is no mention of other stations nearby, like WVUD(FM). The reasons for that may be justified, given that the station appears to be adrift in several ways (that's a whole other letter), but the station is still worth mentioning, don't you think?

I got the strong sense that the writer hasn't spent much time in the old town.

Pete Simon
Jazz Announcer/Producer
KUVU(FM)
Denver

An explanation, please

I am reading "Ethernet, Tomorrow Radio and Tin Cans" (May 21). On page 31 there is a schematic diagram with bold line reading "1,800 volts between grounds" meant to accompany the blurb on a paper from Bill Whitlock.

Please if you are going to include a diagram from a paper, explain the darn thing. As it stands I find that schematic and the accompanying article somewhat less than useful. Aside from that I like the newspaper.

David D. Allen
Chief Engineer RF Systems
Media Production Facilities and Services
Roy H. Park School of Communications
Ithaca College
Ithaca, N.Y.

Note: A PDF of Bill Whitlock's paper on "Understanding and Avoiding Ground Loop Problems" can be obtained by contacting radioworld@imaspub.com. Excerpts will be printed in an upcoming issue. For further information, Whitlock refers readers to www.surgex.com/pdf/surgex52001.pdf, another paper on the subject.

Can CAM-D save AM?

IBOC was touted as the savior of AM radio. It was said that it would be equivalent to FM radio in quality and sound, but look at what is happening. Proponents of IBOC are requesting that, in order for it to work, the kHz need to be reduced to 5 kHz from 8 kHz. This will quash the signal to just above an ordinary telephone line at 3 kHz.

Skywave signal will disappear with IBOC. Many areas of the country depend on these signals for service. A 50,000-watt signal will be reduced over 75 percent at night. Think what it will do for lesser-powered stations.

IBOC will render 500 million radios obsolete, which will need to be replaced with more-expensive radios. Think how long it will take to get these radios into consumer hands. Look how long it took for stereo to penetrate the market.

It's time for AM broadcasters to support the Kahn CAM-D plan.

— Ralph J. Carlson

Broadcast stations must pay a license fee to the transmitter companies, plus a fee to Ibiqity. There are also increased costs in towers. Some are making separate towers for analog and digital. These costs can approach over \$150,000. Directional arrays are going to be a challenge.

IBOC/HD Radio takes up 1-1/2 times more bandwidth (from 20 kHz to 30 kHz) and is known to cause interference on adjacent channels. Check out the New York and Detroit areas where this has proven to be the case. WOR(AM) in New York had to give up broadcasting baseball games in digital because of a second delay between the event and the station signal. Imagine hearing about a base hit eight seconds after its occurrence in the ballpark. So what is the alternative?

Leonard Kahn has come up with the CAM-D, which will allow 8 kHz and, when enough digital radios are in existence, 15 kHz to compete with FM and CDs.

There will be no need to purchase a new transmitter and re-do towers to air IBOC. The cost for IBOC will be between \$100,000 and \$175,000 for each station. CAM-D allows AM station to protect their nighttime skywave contours. CAM-D allows AM radio to be what it was originally intended to be: a full-service, wideband stereo signal.

The IBOC system was rammed through by big broadcasting groups and manufacturers. It will end up costing broadcasters millions of dollars and lower the quality of AM radio.

It's time for AM broadcasters to support the Kahn CAM-D plan and save AM radio from destruction.

KKDS will be installing the CAM-D equipment during 2003.

Ralph J. Carlson
President, Carlson Communications
Salt Lake City

◆ READER'S FORUM ◆

Down with consolidation

I read with great interest William O'Shaughnessy's guest commentary ("Radio, Closest to the People," April 7). His thoughts on radio stations run out of airport lounges by paid-gun, itinerant, journeymen "market specialists" trying to squeeze every last dime out of their properties is so true.



Having spent more than 35 years in every phase of the radio business, from DJ to owner, I believe in small-town radio and understand that radio is designed to serve the community.

Consolidation is the worst thing that could have happened to radio and its listeners. A DJ from Texas programming a station in Kansas or any other state is wrong. There is no room in radio for the words "30 minutes past the hour." An 800 number should not be required to request a song.

O'Shaughnessy's statement that locally-operated hometown community radio stations are fast disappearing is true, but it shouldn't have to be. There is still plenty of room for hometown radio stations, in any market, and they can all make money if they know how to.

I bailed out of several stations in all sizes of markets, and I can't walk on water. I took a small-market AM station from \$13,000 to \$54,000 a month and a medium-market AM from \$30,000 to \$94,000 a month and I can do the same for any station.

I have not seen a station yet that I couldn't increase the billings. "Local" is the key to profit and it works every time. Remember, in radio all stations sound the

**More Letters
On Page 45**

same during the music; it's only between the music where stations differ.

Over the last few years, many good broadcasters left the business because of consolidation. Many owners were tempted by the big offers only to see their stations become one of the many. Their community involvement may be gone but it is not forgotten. Radio will return to where it belongs.

Thanks, William O'Shaughnessy, for speaking out for radio the way it used to be.

Donald D. Sabatke
Ixonia, Wis.

A digital muddle

I just can't stand it anymore! These letters to the editor about IBOC, daytime-digital yes, nighttime-digital no...

HD Radio — what nonsense. That was a great letter Scott Clifton wrote for the May 7 issue. But he's looking at radio from an engineer's point of view and deriving from that what makes a successful radio station. Yet he certainly points out how IBOC can destroy the band. His letter should be required reading by every AM station owner.

The one thing it seems all engineering articles are missing is content. It's content, folks, not quality, that is the bread and butter at the business end of radio.

What are some of the highest-rated stations in your nearby city? AMs. Why? The quality of transmission, therefore, is next to irrelevant. They're listening to the content of the modulation, not the quality of it. If quality of modulation had any relevance, the AM band would be silent.

I own an AM; it's all local but for the music and has three full-time newspeople, live news every hour and expanded news during drive hours. We're doing fine financially, thank you, because of our local content.

My son is 26. He gets his music from his computer and he burns to the CDs to his specifications. He's like most of the others of his generation.

I listen to XM for my kind of music, but guess where I go when I want local content? Do you really believe "they will come" because you have IBOC? I don't think you do.

Engineers and engineering do not make a station successful; it's all about content. Rarely is there any discussion of the inferior audio circuits at the receiver end. Please, show me a car radio, or any radio, that can pass the same specs that an FCC audio proof requires. Even if it did, so what?

A Trial Radio Run

How many of us got our start as interns in this industry? A good number, we're guessing. Whether it was an official "internship" for college credit or part-time pay, or just an unpaid gopher position for the young radio-obsessed, the value of a trial radio run is, as they say, priceless.

WTOP(AM-FM) in Washington has been offering internships for well over a decade. According to Jim Farley, station vice president of news and programming, the arrangement works out well for both student and station. "It gives us more hands, feet and voices ... to go out and gather sound, answer the phone, do research and surf the Web for stories."

And more importantly, according to Farley, "It allows us to look for candidates for jobs. It's an audition for employment here at WTOP."

Former interns have definitely made their mark at the all-news station: In the June 4 issue, RW told you about Julie Ziegler, a summer intern at WTOP who was recently hired at the station as a free-lance assistant editor and Web writer for WTOPnews.com.

The station's morning editor is the product of a Penn State internship; another former intern was hired away from WTOP by WCBS(AM) NewsRadio 88 in New York. This is her story: worked as a WTOP intern during her junior year at American University, was hired on part-time as a college senior, hired full-time the day she graduated, promoted to editor one year after graduation, then hired away the very next day by NewsRadio 88 (nearly doubling her salary, according to Farley).

"All told, about a dozen interns have been hired full or part time since I got here in 1997," said Farley.

Farley said other former WTOP interns now have gigs at Reuters and the Associated Press.

An internship allows the student to get a taste of real-world radio. "They get to experience the deadline-every-minute pressure cooker of all-news radio, to work with some seasoned professionals, and decide whether this is really what they want to do for the rest of their lives," said Farley.

The number of small- and medium-market FM full-service stations is dwindling, along with the talent pool for the up-and-coming radio-ready. Recruiting farm-team talent is becoming an impossibility. Help yourself, help a student, and help the industry by offering an internship at your station. Be it in sales, engineering or on-air, you'll be contributing to the overall solution.

Mr. Farley puts it best: "We grow our own talent. We raise them from puppies."

— RW

Management Expectations for WTOP Interns:

- ✓ Ask questions
- ✓ Apply yourself
- ✓ Volunteer
- ✓ Research, suggest story ideas

virtually irrelevant to the listener.

I'll make a better rating with a carbon microphone in my studio than an IBOC station if my content is superior to theirs. Now, let's see who's correct after you spend all that money.

HDTV, anyone?

Larry Tighe
Owner
WRNJ(AM)
Hackettstown, N.J.

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GENERATION 9 DIGITAL CONTROL SURFACE

Designed to integrate flawlessly with the Wheatstone BRIDGE digital audio network router, the Generation 9 control surface allows you to easily create large or small platform-based systems that are exceptionally user-friendly and flexible. Wheatstone BRIDGE network cages house all I/O ports and engine cards, and may be wired in tandems within a single equipment room or interconnected to separate remote locations by means of fiberoptic or CAT-5 cables to provide single wire studio integration schemes.

Once configured, the system operates entirely independently of external computers. Configuration itself is intuitive and carried out onsite by means of user-friendly graphic interfaces provided by Wheatstone desktop software. We have gone to great lengths to make these setups easy for your field engineers, allowing expansions and changes to be achieved painlessly. Naturally, the Generation 9 system also takes full advantage of Wheatstone's exclusive VDIP® configuration

software as well, so that studio functions (like mutes, fader and timer starts, tallies, etc.) are easily accomplished right at your desktop. Once set-up is completed the desktop is disconnected; all settings are retained in nonvolatile storage and the entire system runs standalone. Ethernet protocol is built in, providing interface with automation, scheduling, and hardware controllers as you require.

Whether you're planning a small, centrally located studio network or a large, multiple format build-out, the Generation 9 Digital Control Surface can form the basis for a fully integrated, reliable and user-friendly broadcast system that will handle your most demanding requirements *and* be able to change with your varying needs as they arise.

At Wheatstone we have more combined digital design expertise than anyone. **Benefit from our hard work!** Choose **WHEATSTONE—the Digital Audio Leader.**

 **Wheatstone Corporation**

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