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Outlook: Partly Sunny
 Attendance was down but economic hopes were improving at NAB2002.

Radio and DSD
 Mike Pappas explores high-resolution audio on 'JazzSet.'

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Radio World

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The Newspaper for Radio Managers and Engineers

May 8, 2002

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▼ We send a handy RDL audio signal test package to a reader in Illinois.

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NAB 2002 The Convergence Marketplace



PHOTO GALLERIES INSIDE



Clockwise: The Floor of the Radio Hall; Welcome to NAB; Paul Schafer and Lynn Claudy; The John Lennon Songwriting Contest Educational Tour Bus

Photos 1, 2 and 3 © NAB; photo 4 by Paul McLane.

DIGITAL NEWS

The 'Official Launch' of IBOC DAB

Struble Hopes for FCC Summer Endorsement; NRSC Recommends AM for Day Only, and Ibiqity May Be Thawing on Station Fees

by Leslie Stimson

LAS VEGAS For Ibiqity Digital Corp., NAB2002 was the official launch of in-band, on-channel digital audio broadcasting.

Several RF manufacturers exhibited IBOC gear. Broadcast and consumer electronics organizations joined at a press conference to urge the technology forward. The head of Ibiqity said he was "confident" of an FCC endorsement this summer. Radio manufacturers hope to have receivers available at next winter's CES show.

Some attendees heard encouraging news from Ibiqity that it is considering incentives for stations to make the

See IBOC, page 12 ►

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◆ NEWSWATCH ◆

FCC Looks at Media Security

WASHINGTON The FCC has created a federal advisory committee on media security, called the Media Security and Reliability Council.

MSRC's members will study, develop and report on best practices designed to assure the reliability and security of the broadcast and multi-channel video programming distribution industries in case of further terrorist attacks.

The council will comprise about 40 representatives of mass media compa-

nies, cable television and satellite service providers, trade associations, public safety representatives, manufacturers and related entities.

The group is modeled after the Network Reliability and Interoperability Council established for the telephone industry in 1992.

Dennis FitzSimons, the president/COO of Tribune Co., will chair MSRC's inaugural term.

The designated federal official of MSRC will be chief of the video division of the Media Bureau, Barbara Kreisman, Attorney-Advisor in the Policy Division of the Media Bureau. Susan Mort will serve as deputy DFO.

'Free Speech Stations' Proposed

WASHINGTON Should the FCC create a new class of broadcasters called Free Speech Stations?

The Minority Media and Telecommunications Council has called on the FCC to do just that. Its proposal was made in comments about a local radio ownership proceeding. Free Speech Stations would be devoted primarily to nonentertainment programming, including news, public affairs, reli-

gious programming and public service.

They would broadcast at full power, commercially or noncommercially, for at least 20 non-nighttime hours per week. Free Speech Stations would be independently owned by small disadvantaged businesses, including particularly minority owned companies.

Commission Reorganizes

WASHINGTON The reorganization of several of the FCC's bureaus became effective March 25. The agency periodically reorganizes to improve efficiency.

The Mass Media and Cable Bureaus are being folded into one Media Bureau. Former Cable Bureau Chief Ken Ferree is chief of the new entity. Former Mass Media Bureau Chief Roy Stewart is chief of the office of Broadcast License Policy within the Media Bureau.

The commission has created a new Web site on the FCC's reform efforts, www.fcc.gov/fcc_reform/.

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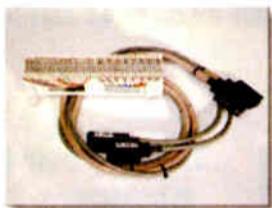
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**PHOTO
GALLERY**



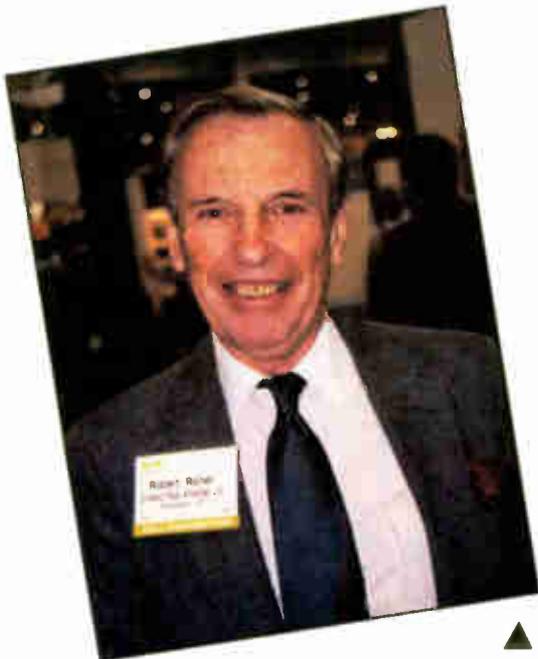
Glynn Walden of Ibiqity Digital, left, has researched IBOC DAB for more than a decade. At a press conference announcing the availability of excitors, NAB President Eddie Fritts said of the IBOC approach, 'Ibiqity has it right.'



How times have changed: CEA President Gary Shapiro, above, representing receiver manufacturers, and Fritts, representing broadcasters, were in agreement on digital radio at the press conference in support of IBOC. Shapiro called the launch a 'very, very historic occasion.'



Joe Attendee made it to the show, along with about 95,000 others — down 16 percent from last year.



Robert Richer is president of Crossed-Field Antennas Ltd., which hopes to establish the CFA for AM in the United States. He said tests continue in England as engineers seek to increase the efficiency of the antenna.

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FROM THE EDITOR

'Show Me the (DAB) Money'

by Paul J. McLane

"Where is the ROI?"

That may be the most important question asked by radio managers at the NAB convention:

"Where is the return on investment for us if we implement digital radio?"

This attitude was voiced by Bill Suffa, senior VP for capital management for Clear Channel Worldwide. He took part in a session about IBOC that I moderated.

dards body had given a thumbs-up to AM IBOC, but only for daytime hours.

Further work will be needed before NRSC can endorse it at night. It's a big technical challenge, but Struble assured the room that Ibiqity expects AM IBOC eventually to work at all hours.

Suffa is not just a bean-counter, not an outsider to our industry whose questions can be written off. He has served as a strategic developer for Jacor Communications and Clear Channel's

come soon.

It's not sufficient for supporters to say, "The world is going digital, and radio can't be left behind." Nor is it sufficient to promise far-off data revenues.

Managers will be asked to spend money on IBOC hardware, IBOC fees and IBOC promotion. True, that cost will be a tiny fraction of radio's annual revenue. But the money is still significant. Owners will want to see their return.

Make no mistake, though. This was a good convention for supporters of IBOC:

- Struble assembled an impressive group from across the industry to show support at a press conference announcing the "launch" of IBOC.
- Eddie Fritts of NAB and Gary Shapiro of CEA sat at the table and spoke up for IBOC. Fritts said Ibiqity's approach is right because it uses existing spectrum, won't obsolete existing receivers and opens new business opportunities.
- Receiver manufacturers expect to have IBOC models at next winter's CES show.

Retail chains also are getting on board.

- USA Today featured IBOC on the front of its business section during the convention.
- Three exciter manufacturers demonstrated products and said they are ready to sell and ship once the FCC says OK.
- John Dille of Federated Media, chairman of the NAB Radio Board, called IBOC "a marketer's dream," thanks to its simplicity and its seamless transition. In contrast to Suffa's caution, Dille was eager: "Get out your order book," he told the manufacturers. "I'll deal today."

IBOC DAB proponents have created an opportunity to transform the radio industry and now must carry it through.

One thing is clear from the questions being asked: Ibiqity Digital still has work to do to educate broadcasters about the basics of digital radio and why stations should spend money on it.

And I agree with Suffa that any kind of IBOC system that doesn't help *all* stations go digital throughout their broadcast day would be a disaster for IBOC (although I doubt it would be the death knell for AM he predicted). Ibiqity and the NRSC should get that little problem solved, and pronto. ●



Bob Struble of Ibiqity, left, thanks companies that exhibited IBOC transmission gear. Joining him are Scott Campbell of Nautel, Geoff Mendenhall of Harris and John Pedlow and Tim Bealor of Broadcast Electronics.

As he sat on the dais between Ibiqity Digital's Bob Struble and the NRSC's Charlie Morgan, Suffa — the top money man of the top U.S. radio group — was cautious and at times openly skeptical.

As Struble outlined IBOC's crystal-clear sound and data/revenue potential, Suffa replied again and again with hard-nosed observations.

In addition to asking where the money will come from, Suffa pointedly warned Ibiqity not to settle for a daytime-only digital system for AM. He said such a system would be "the death knell of AM."

This objection was not merely theoretical. Just two days prior, the NRSC stan-

radio division. He helped found a consulting firm; he has experience in engineering and financial analysis; he has worked for the FCC and local radio stations.

Certainly Suffa's caution could be his way of playing poker. He said Ibiqity and Clear Channel are conducting detailed talks right now about the issues of fees and costs to implement. And Clear Channel is an investor in Ibiqity.

But IBOC supporters must satisfy the Bill Suffas of our industry in the coming months for IBOC to flourish. They must make a compelling case that radio owners and managers will profit by their investment — and that the profit will



Our prize in the Readers' Choice Sweepstakes this time around is an audio signal test package from RDL containing a PT-ASG1 Audio Signal Generator and PT-AMG2 Audio Monitor/Generator. They come in a carrying case with test leads and DC power supply, and can run on battery power too.

The PT-AMG2 has functions for setting up and troubleshooting audio systems including a tone generator, LED level meter, in-phase indicator and monitor speaker. Mic and line I/O are provided with balanced and unbalanced connectors.

The PT-ASG1 contains a 700 Hz tone generator with balanced mic and line outputs on XLR and -10 dBV unbalanced on RCA. The testers can be used to set system gain mic-to-line, line-to-mic, mic-to-mic or line-to-line at pro or consumer levels. Retail value: \$564.

Our winner is Steve Denmark, president of Denemarket in Quincy, Ill. Sign up for our contest at www.rwonline.com.



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NAB: DAB and Echoes of 9/11

Exhibitors Note Attendance Drop While Visitors Hear About Terrorist Attacks, Digital Transition

by Leslie Stimson

LAS VEGAS About 95,000 people gathered in Las Vegas for NAB2002, a drop of 16 percent from 113,000 last year, according to the association.

NAB considers this a "phenomenal" turnout given how the still-lagging economy has affected other trade shows, said spokesman Dennis Wharton.

Association President and CEO Eddie Fritts was "thrilled" with the show, which he said was "successful beyond our expectations."

RTNDA

The Radio-TV News Directors Association annual convention had been rescheduled to coincide with NAB's after the cancellation of its event last fall. RTNDA@NAB drew about 1,200 people. During three conventions in 1998-2000, that event averaged about 4,000.

Traditionally, engineers and other station personnel involved with equipment purchases go to the spring NAB show to see new equipment. Impressions were mixed about how much booth traffic traveled through the exhibits.

"The 2002 NAB did not present many new products and attendance turnout was rather low, but the lack of distractions allowed plenty of time to work with vendors on problems and future projects," said Jeff Littlejohn, senior vice president of engineering services for the radio division of Clear Channel Communications. "From that standpoint, it reminded me of the fall radio show."

Julie Lockhart, director of marketing for Prophet Systems, said, "We seem to have had pretty steady traffic. ... We didn't have as much traffic as we've had in previous years, most of the people came through, we gave them demos, they picked up information, we've got a lot of good leads out of it."

Many vendors reported that they had more time to spend with "real" buyers.

"The real measure of a trade show is what sales opportunities come out of the show. We got tremendous numbers of opportunities and actually closed some business here in Vegas," said Marty Sacks, national sales director for Telos Systems.

For radio, the big news of the show was in-band, on-channel digital audio broadcasting. Ibiqity Digital Corp. considered this convention the official launch of IBOC. Harris, BE and Nautel exhibited IBOC transmitters and excitors (see page 1).

Although digital radio and TV news dominated much of the show, radio managed to eke out a few other headlines, as station managers discussed what they learned in the aftermath of the terrorist attacks.

During the show's opening address, Fritts said the attacks proved to be broadcasters' "finest hour," thrusting the industry into extra relevance and comforting a terrified populace.

"I have never been prouder to be the head of the NAB than in the days since Sept. 11," he said. "During those days of terrorism and trauma, you didn't hear the notion that broadcasting was no longer relevant. Our relevancy was obvious, and it was immediate," Fritts said.

Fritts reiterated NAB's stand on major media issues. He blasted the so-called Torricelli Amendment, named after sponsor Sen. Robert Torricelli, D-N.J., which would have mandated a lower, non-preemptible ad rate for federal candidates.



ABC News White House Correspondent John Cochran leads lawmakers in a laugh during the Congressional Breakfast.

The amendment was stripped from campaign reform legislation before it passed Congress and was signed by President George W. Bush.

Free time

Rep. Greg Walden, R-Ore., said during the convention that broadcasters must be ready for the same supporters of the special ad rates to push for free spots for political candidates.

Fritts also warned of the possible incursion of satellite radio into local markets through local programming on terrestrial repeaters. NAB has urged the FCC to prohibit satellite radio from carrying such programming.

During a breakfast session, ABC television and radio host Sam Donaldson asked FCC Chairman Michael Powell if the commission would preclude that use.

Powell said he wasn't intimately familiar with the details but said he didn't think that was the original intent of the satellite service.

"I think broadcasters don't have that much to worry about," he said.

The pair also discussed media ownership and how broadcasters will distribute their programming to the public in the future.

Donaldson asked about recent court decisions that overturned certain media ownership rules or sent them back to the FCC. Donaldson asked if the rules should be "cured" or let go.

Powell replied the rules must be cured given that the commission has lost virtually every court challenge in the last five years. He said the agency must develop empirical evidence to write rules that will stand up to a court challenge.

"You can't do any media rules in isolation," he later told reporters.

Referring to radio ownership, Powell said even though Congress set specific local limits in the Telecommunications Act of 1996, "the area is messy" when the agency reviews a proposed merger. He criticized the so-called flagging poli-

cy in which the FCC sets aside certain transactions for review because they would leave one owner controlling a certain percentage of the ad market.

The two discussed broadcast indecency, specifically the Real Slim Shady ruling in which a station initially was found to have apparent liability. The decision later was reversed.

we are forced to make."

Powell said the Real Slim Shady case shows the system can work since the commission found the station's argument compelling, which led to the reversal.

Powell said he knew all the lyrics and began singing.

The chairman urged broadcasters to think about how their programming can be distributed in the future. With society becoming more pressed for time, a viewer might watch some TV, but maybe not an entire program, he said. He or she might then leave the house and drive somewhere, but want that programming along to access it later.

Spectrum reform

During the annual Congressional Breakfast, Sen. Conrad Burns, R-Mont., said Congress will consider putting together a spectrum reform bill that would ask whether auctions are still appropriate, and would involve all spectrum, not just the frequencies used by broadcasters. He said such a policy would affect the DTV rollout and that eventually DTV equipment prices will drop.

But he said that doesn't mean small Montana towns, for example, will go digital next week.

"Give me a break. They can't afford it. We need to take a broad view of conversion."

Rep. Jim Sensenbrenner, R-Wis., drew applause with his views on the recent Copyright Arbitration Royalty Panel's ruling on the rates that broadcasters and Webcasters will pay to stream music online.

See SHOW, page 6

Powell said indecency cases "are the most difficult and dangerous decisions


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NEWS ANALYSIS

Changes at the Top at BSI

Founder Leaves Automation Company as
Cumulus Media Subsidiary Names New COO

by Randy J. Stine

EUGENE, Ore. The departure of Broadcast Software International's president and founder Ron Burley leaves the digital audio software supplier with new leadership for the first time since its launch in 1994.

Chris Kehoe, former vice president of operations for BSI, succeeds Burley and will hold the titles of chief operating officer and general manager. The 43-year-old Burley will continue to serve as a consultant to BSI through the end of this year.

Kehoe said he plans no major changes at BSI, a wholly owned subsidiary of Cumulus Media Inc. However, Cumulus officials confirmed that the broadcast group is no longer in a rush to standardize its stations on BSI automation software products.

'Amicable separation'

Burley's February exit comes two and a half years after he sold the company to Cumulus Media Inc. for \$500,000 cash and stock, according to filings with the U.S. Securities and Exchange Commission. With the price of Cumulus stock hovering near \$13 a share in late February, Burley's Cumulus shares would have been worth nearly \$2 million.

Industry observers viewed the 1999 sale as noteworthy because it involved a broadcast group buying one of its equipment suppliers. The acquisition followed a similar purchase of Prophet Systems Innovations by Capstar Broadcasting Partners, now Clear Channel Communications Inc., a year earlier.

Burley described his leaving BSI as a "very amicable separation" for both sides. He announced his intentions to his staff in December.

"When Cumulus acquired BSI, the idea was that I would oversee the transition from an independent company to that of a Cumulus subsidiary. That has been accomplished," Burley said.

"Whenever a small company is sold, the sale is never really complete while the founder is still in the picture. Therefore, it was always understood that at some point, when the time was right, I would move on," he said.

Cumulus Media Inc. Executive Vice President John Dickey said normally it's difficult for founders of a company to stay involved once it is sold.

"Ron did a terrific job for (Cumulus), but I was not surprised by his decision. As it would be for anyone, it's hard to adapt to major changes such as this. Ron is more of an entrepreneur than operator. We wish him well in his pursuits," Dickey said.

Burley said his relationship with Cumulus management was good and that Cumulus rarely involved itself in the day-to-day decision-making process at BSI.

"There were a few rough times, mostly tied to the blending of a small software business model to a larger cor-

porate media model. The size difference between the two companies was also an issue," Burley said.

Cumulus, which owns more than 240 radio stations, acquired BSI after announcing it would standardize its stations on BSI's automation software products, including BSI's core product, the WaveStation digital studio system. However, Dickey said that is no longer the plan.

"We use BSI in a few of our markets, but the rush to convert everyone to one platform is no longer as important as it was two or three years ago," Dickey said. "We don't want to create additional expense if we don't have to. If the stations already have a dependable system in place they stay with it."

The move away from standardization is a significant change in policy for the Cumulus chain. BSI officials had told Radio World in late 2000 that the conversion process would be complete within several years.

Dickey said Cumulus originally wanted to use BSI to develop software for streaming audio content of Cumulus radio stations. "We all know what has happened to the whole streaming idea," he said.

As for the unique relationship between BSI and Cumulus, Burley said the access BSI's software programmers

gained to Cumulus' broadcast engineers has proven invaluable in helping BSI design products for group-oriented broadcasting.

Kehoe

"They have provided insight into the needs of corporate radio, the changing broadcast industry and where that industry is likely headed," he said.

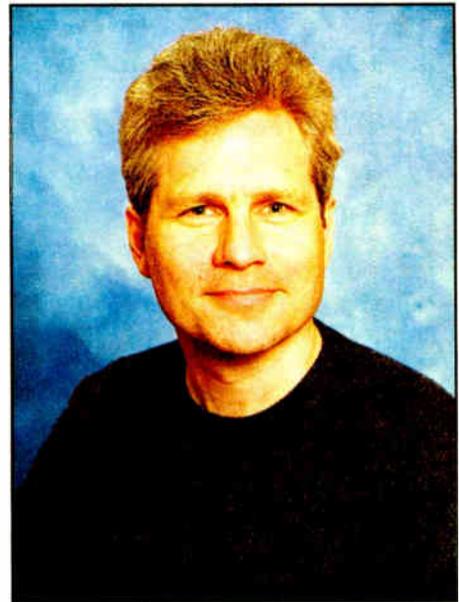
Some industry experts have said deals like Cumulus/BSI make sense because of the post-consolidation infrastructure boom in radio, specifically in the digital audio storage segment of the industry.

Other observers argue that when a major broadcast group owns an equipment supplier, other broadcast groups may shy away from doing business with them. Directors of engineering for several major groups have told Radio World in the past that they would have concerns over customer service under those circumstances.

"No one has ever expressed those concerns to us. We never felt that way. From the beginning it was understood that BSI was a separate company with Cumulus being our largest customer ... and a great resource," Burley said.

Dickey said BSI's financial condition is "solid" but similar to that of other broadcast systems suppliers right now.

"BSI is not immune from the business cycles affecting everyone else. The effects of the recession have been felt," he said. BSI has avoided any layoffs.



Ron Burley

Cumulus does not release BSI's annual sales figures.

Kehoe, who joined BSI in 1999, said he was honored to have been chosen for the top post at BSI.

"Our focus will continue to be on serving the needs, suggestions and wishes of our customers," Kehoe said.

Known for its cost-effective digital audio software, BSI recently introduced the Simian digital automation system, which replaced its WaveStation product.

The publicly traded Cumulus Media Inc. (NASDAQ:CMLS) will own and operate 243 stations in the United States once it completes pending acquisitions. The group is the second-largest broadcast group in terms of station count. The majority of Cumulus' stations are in mid-sized markets. ●

Show

► Continued from page 5

Sensenbrenner said it is "regrettable" that the U.S. Copyright Office made the decision and that the Judiciary Committee would look into it. He said the recording industry can either spend its time and money on lawyers fighting the broadcasters or it can choose to put that money into the pockets of the people who make recordings.

Rep. Greg Walden, R-Ore., predicted that the effects of radio consolidation are not over, and that some larger companies that acquired others might break up into separate groups again.

"This isn't the radio business of my father's (time). It's much more competitive," he said.

Convergence

Several speakers spoke about convergence, including AOL Time Warner CEO-designate and co-COO Richard Parsons, who urged broadcasters and cable operators to work with the computer industry.

Marc Andreessen, the new-media keynote speaker and chief executive officer of Loudcloud, cautioned attendees not to be overzealous about the convergence bandwagon.

According to Nielsen, Internet use for U.S. consumers in January 2002 totaled 2.3 billion hours online. Fifty-one percent of that time was spent using a broadband connection, which equals approximately 1 billion hours of broadband use in one month.

"We never thought that Internet and broadband penetration would reach these kinds of numbers," he said. He said broadcasters should listen to consumers and make high-demand technologies widely available, whether in digital music or the ability to download movies, and bring costs down.

How stations coped with the terrorist attacks was a consistent theme. In a station security session, panelist Leon Long, vice president of operations for The Liberty Corp. and general manager of WLOX(TV), Biloxi, Miss., said, "You have to get your entire organization involved in security."

Al Kenyon, Clear Channel Radio's senior vice president for projects and technology, said, "The key thing is to protect your

people, and that's done through planning."

His other suggestions: "Have a meeting place 300 to 500 feet away from the building." He also suggested managers have a current telephone list for key people in a place outside the building.

"Let the local emergency management people know who should be in the building. Most of all, get another set of eyes on your plant," said Kenyon. ●

Impulse Radio Introduces Datacast Server

Impulse Radio, a private firm developing data applications for in-band, on-channel digital audio broadcasting, has introduced a datacast server.

The goal is for stations with IBOC to use a portion of their spectrum to offer data services. Several companies are exploring ways for stations to make money off their data services.

The Impulse software package will allow broadcasters to create their own integrated audio and visual programming for digital radio receivers.

The package is designed to work with several digital and studio production systems. Using the datacast server, station personnel can program the data offerings for the day much as they program broadcast material.

When using IBOC, the amount of digital bits a station can devote to data varies depending on how many of those bits they choose to allocate to programming. Impulse CEO David Corts said the data offerings possible with IBOC technology provide broadcasters new potential revenue through combining audio and data content in receivers. For example, broadcasters can sell text ads or provide audio stock quotes to accompany business news.

Ibiquity Digital Corp. and ENCO Systems demonstrated the Impulse Datacast Server in the NAB convention exhibit hall.

Impulse will charge an annual license fee of roughly \$10,000 per transmitter for the software, although some group and early adopter discounts are available.

Distillers Push Broadcast Ads

WASHINGTON Shortly after NBC-TV backed off on its plan to air hard liquor ads, the Distilled Spirits Council of the United States stepped up its efforts to get broadcasters to air the ads. DISCUS decided to exhibit at NAB2002.

The organization knows that many broadcasters think liquor ads actually are illegal. That's a mindset DISCUS wants to change.

Since 1996, approximately 2,000 radio stations have aired liquor ads in 250 markets, according to the trade group. Several major radio groups either have aired such ads, or are interested, said the group, with Westwood One and Infinity the latest organizations to discuss ad campaigns with distillers.

We will continue to let people know liquor ads are responsible, tasteful and legal. There's money to be made.

— Peter Cressy

With the dot-com bust, radio revenue from the Internet has shriveled. Liquor-derived income could be a strong antidote this year. RAB President Gary Fries made such a prediction in January.

DISCUS President Peter Cressy said afternoon drive radio spots have proven effective for major liquor brands.

Although distillers air on radio, cable and some local TV stations, they also want the exposure of network TV, believing this will help them regain

the market share they've lost to beer and wine brands.

Between 1980 and 2000, beer owned about 58 percent of the alcoholic beverage market, while wine went from about 10.5 percent to 12.5 percent. During the same period, distillers saw market share drop from 36 percent to 28 percent.

"By not being on national TV, we face the perception that liquor is 'harder' than beer or wine," said Cressy.

He wants to talk to his beer and wine counterparts to discuss a self-regulated standard for responsible ads for all alcoholic beverages.

In the past, the beer and wine side has resisted such efforts for fear of facing more-stringent ad restrictions than the ones they impose on themselves voluntarily.

Of the more than \$900 million the beer industry spent on advertising in 2000, \$700 million went to TV, according to Competitive Media. Roughly \$85 million went to radio.

Of \$135 million the wine industry devoted to advertising that year, nearly \$83 million went to broadcasters.

By contrast, distilled spirit makers spent roughly \$25 million (\$20 million TV and \$4.1 million radio) in 2000 out of a total ad budget of \$377 million.

An official for NBC's Standards and Practices said that, after listening to a variety of voices on the topic, the network concluded the ads would not be appropriate "at this time."

Mothers Against Drunk Driving had sent a letter to the networks in March calling for more stringent ad guidelines for beer, wine and malt alternative products.

NBC had drafted liquor ad guidelines and had begun airing "responsibility" ads for Diageo's Smirnoff vodka and had been planning full branding efforts this spring.

"We will continue to let people know liquor ads are responsible, tasteful and legal. There's money to be made," Cressy said.

— Leslie Stimson

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NEWS WATCH

Arbitron: Delay Streaming Fees

Arbitron is calling for a five-year moratorium on royalties for streaming media. The research firm sent Congress reasons to oppose the digital rights fees recommended by a royalty panel.

"We foresee that the impact of these fees will dramatically reduce the consumer's choice of streaming content, limit the diversity of streaming 'voices' on the Internet, stifle competition among content providers and impede the growth of a popular new medium," wrote Bill Rose, vice president and general manager, Arbitron Webcast Services.

He calculated that a top New York music station would pay nearly \$15 million a year if its Internet listeners equaled its over-the-air audience — more than a quarter of what the radio station now derives from traditional ad revenue.

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DIGITAL NEWS

IBOC, Subcarriers and Channel 6

In the previous two issues, *Radio World* has excerpted comments that were submitted to the FCC about the National Radio Systems Committee report on Ibiqity Digital Corp.'s FM in-band, on-channel digital audio broadcasting system.

Station groups, commercial and noncommercial, made up the bulk of the filings, along with transmission and receiver manufacturers, trade associations and public interest groups. Most of the remarks were positive; some criticisms were lodged. This is a sampling.

"The commission should also include the use of new spectrum from the 82-88 MHz band (TV Channel 6) to enable prompt realization of the full benefits of DAB without interfering with existing analog stations. ...

"The only potential drawback to the use of Channel 6 is the fact that this spectrum might not be available in all markets in 2007 if transition to digital television is delayed. The potential drawbacks to reliance solely on IBOC are possible lower quality of service, reduced coverage and deferral of some of the benefits of DAB until after the analog systems are removed from

the band. ...

"As the FCC has recognized, IBOC systems can cause adjacent-channel interference to analog stations during the transition and result in loss of actual coverage for existing stations. Modern receivers dynamically change their internal operating parameters (mono/stereo blending, diversity antenna switching) based on high-frequency noise measurements of the recovered baseband signal. With the addition of an increased power density between 100-200 kHz from an IBOC FM DAB signal, there exists the real potential that this additional signal will cause undesired, and still unknown, performance changes to existing analog receivers. ...

Channel 6

"Both IBOC and TV Channel 6 options will cost more than the present analog service, but not as much as the cost of a completely new frequency band. A single tuner can bridge both TV Channel 6 and the adjacent FM broadcast band. ...

"We can learn from the experience of Europe and Canada in implementation of the Eureka 147 DAB system. This system has yet to enjoy widespread market acceptance because of the increased

cost of the receivers is not balanced against programming or service gains. ... Eureka 147 receivers cost several hundred dollars more than conventional receivers because of the need to accommodate an additional tuner for the L-band or VHF Band III, the additional digital decoding circuitry, and a different antenna. ...

"Both the Channel 6 and IBOC solutions will cost less than Eureka 147. Both IBOC and Channel 6 will require the same fundamental building blocks for decoding the digital signals, such as analog/digital converters, digital demodulators, de-interleaving circuitry, audio decoders, clock circuitry, and control circuitry.

"Both would use the current FM antennas and neither would need a separate tuner, although both would require some modifications to the current analog tuners. Both Channel 6 and IBOC should thus cost less than Eureka 147, but more than current AM/FM analog radios. If TV Channel 6 is added to the DAB/FM band, some small additional cost over the IBOC receiver may be needed in order to expand the range of the tuner to cover the entire band 82-108 MHz."

Visteon Automotive Systems

"Today there are many subsidiary services on subcarriers which occupy the FM broadcast band — a band which was awarded for free as a public trust. Some, including reading services for the blind, are important and worthy. Other subsidiary services are strictly for-profit enterprises, such as data carriers and pager services. Until now, the commission has not actively regulated the use of these frequencies, so long as they have met certain reasonable technical parameters. ...

"We ... understand and appreciate the restraint that the commission has shown in the past regarding subcarrier content. We believe, however, that this policy has outlived its usefulness.

"In the near future, subcarriers may become nearly as important economically as the main carrier of the radio station. With the implementation of more sophisticated radio services, the utilization of the lucrative SCAs may hold the keys to the future business models of radio, perhaps creating interactive opportunities for listeners or other new features for radio.

"In all likelihood, many of these implementations will be crass revenue generators, including services that permit a listener to directly purchase a recording that is being broadcast. IBOC is, in fact, the demon spawn of the vague subcarrier policy."

Pete Tridish, staffer
Prometheus Radio Project

"The commission has ... begun to seek comment on 'whether the 6 Megahertz at 82-88 MHz, currently used for TV Channel 6, could be reallocated to DAB service at the end of the DTV transition... (and) whether this spectrum could be reallocated without adversely affecting the broadcast television service.'

"The short answer is 'no.' In light of the commission's prior findings and the reliance of Freedom and other television broadcasters on the rulings of the commission that Channel 6 will be available for DTV, any use of the 82-88 MHz band for DAB would adversely affect the broadcast television service.

"If the commission were to reallocate Channel 6 for DAB, the DTV strategy of Freedom and other Channel 6 licensees will be significantly disrupted and Channel 6 television licensees would bear a disproportionate share of the cost of DTV implementation."

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DIGITAL NEWS

DAB Around the World

The Eureka-147 technology of digital radio is making inroads in several countries, according to the World DAB Forum.

In India, six digital stations could serve New Delhi by the end of the year. All India Radio plans to launch services in the capital.

Commercial radio broadcasters in Australia have the go-ahead to begin testing consumer response to digital content and assess comparative spectrum efficiency of L-band and VHF. The Australian Broadcasting Authority has okayed the radio industry's application for temporary access to band III VHF spectrum in Sydney.

Australian receivers

"We will establish a number of consumer panels, with a large number of receivers," said Joan Warner, CEO of the trade association, the Federation of Australian Broadcasters. "We hope to have several hundred in the country by mid-year."

In Paris, citizens may soon hear up to 50 digital radio stations. The French government has awarded nine multiplexes, each broadcasting around six stations, to a mix of public and commercial broadcasters. Digital radio in Paris has been restricted to three multiplexes since 1997. These three are being replaced.

Korea began DAB pilot testing in February. After a five-month trial, the government expects to decide whether to adopt Eureka-147 as the standard with the hope of offering digital radio services next year.

And what happens when digital radio prices are slashed? They sell, at least they do in the U.K. Radio Broadcaster Digital One and manufacturer VideoLogic worked on a December promotion that involved making 300 subsidized, portable digital radios and pricing them at 99 pounds, which is about \$142.

The companies say consumers stood in line to buy them at eight locations and more than 6,000 registered to buy through the Internet. The radios sold out in one hour.

But at NAB2002, the president of the company promoting in-band, on-channel DAB said the Eureka approach was an "abject failure." Bob Struble said only 50,000 or so receivers are in use worldwide.

— by Leslie Stimson

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GUEST COMMENTARY

BBC: Shortwave Needs Differ by Nation

The BBC World Service Says It's Not Abandoning Shortwave in Countries That Depend Upon It, But Must Respond to Changes in Listening

by Mark Byford

The author is BBC World Service director. This is in response to a Sept. 26 Guest Commentary from John Figliozzi of the Coalition to Save the BBC World Service, a group protesting the service's decision to end shortwave broadcasts to North America, Australia and New Zealand.

BBC World Service is the best-known and most-respected voice in international broadcasting, bringing great credit to Britain. It has achieved its biggest audience ever: 153 million listeners across the world each week.

Reorganization

This world record-breaking success is due, in part, to the World Service recognizing that it must adapt and modernize to meet changing audience listening patterns across the world.

Far from neglecting shortwave, we

are actually investing multi-millions of pounds in this delivery method in key areas of the world. We are upgrading our shortwave transmitters in Oman, Cyprus and Singapore, to reach the Persian Gulf and South Asia, the Middle East and East Asia respectively.

The transmitter upgrade will improve audibility to those countries where shortwave remains the primary delivery method for audiences for some years to come.

Our decision to cut or reduce direct shortwave transmissions in English to North America, Australia and New Zealand means that our primary method of delivery for the future in these most-developed areas will be through accessing our award-winning Internet site, available 24 hours a day, and through the numerous re-broadcasting partnerships with stations that air part of our output on high-quality FM.

We took the decision with care and consideration. We are not cutting back

on the number of countries to which the World Service has been transmitting. We are changing the delivery methods in response to rapidly changing audience use.

In the United States, the large majority of our listeners now access us through public radio stations that air our material and via the Internet. About 2.3 million people now listen to our programming on FM and the audience is growing.

Just over 1 million listen on shortwave but there is also an overlap in listening such that only 300,000 listen solely via shortwave — 168 million people are now connected to the Internet in the United States.

Internet traffic

A recent survey showed that 60 percent of our Internet traffic to www.bbc.co.uk/worldservice comes from America. Moreover, we have evidence that some indirect shortwave transmissions are still available across the United States.

In Australia, BBC World Service listenership on shortwave has declined severely over the last decade, from 1.7



Mark Byford

shortwave rationalization to re-invest in FM expansion across the world.

The World Service enters the 21st century in a confident mood as the world's leading international radio broadcaster with a record audience performance. At the same time, we rec-

The savings made on shortwave reductions will help support FM expansion and Internet capability.

million to just over 100,000 listeners. Our primary access today is through our syndication partnerships on FM stations. However, there is still some direct shortwave available to Australia, New Zealand and the Pacific Islands.

The approximately \$737,000 per year savings being made on shortwave reductions are significant and will help to support further FM expansion across the world and the development of our Internet capability.

We are now aired on FM in some form in 121 capital cities of the world. We have set an ambitious target of being present in 135 capital cities — 70 percent of the world total — by 2004.

Traffic growth

Today, all 43 BBC World Service language services are now present as audio services on our Internet site, which has achieved a very significant growth in traffic — 62 percent in the past year. We are building up the depth and range of the site that was recently judged the best radio Web site in the world at the prestigious Webby Awards.

We are clear that shortwave will still remain the dominant delivery method by which the majority of our 153 million listeners access the World Service across the world. At the same time, however, we must respond to changing audience needs and listening patterns in different markets in terms of delivery and greater audibility, particularly in the developed world. We need to release money wherever possible from

ognize that we must develop our delivery and our multi-media capability speedily in order to serve target audiences as effectively in the digital age.

Reach the author via e-mail at: mark.byford@bbc.co.uk.

RW welcomes other points of view. 🌐

NEWSWATCH

Goldman From ABC to First

DALLAS First Broadcasting has hired Bert Goldman as executive vice president.

Goldman is among the industry's more prominent corporate engineers. He was vice president of engineering for ABC's Radio Division and has worked at Shamrock Broadcasting, Patterson Broadcasting and Nationwide Communications. He is a member of the NAB Spectrum Integrity Task Force and is involved with the NRSC in evaluating IBOC.

Also hired: Chris McMurray, former vice president and Houston market manager for Cox Radio and AMFM Radio. She becomes vice president of station acquisitions and will be responsible for acquiring and operating selected stations and clusters in emerging markets. She also worked for Nationwide.

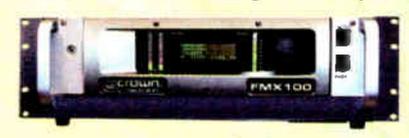
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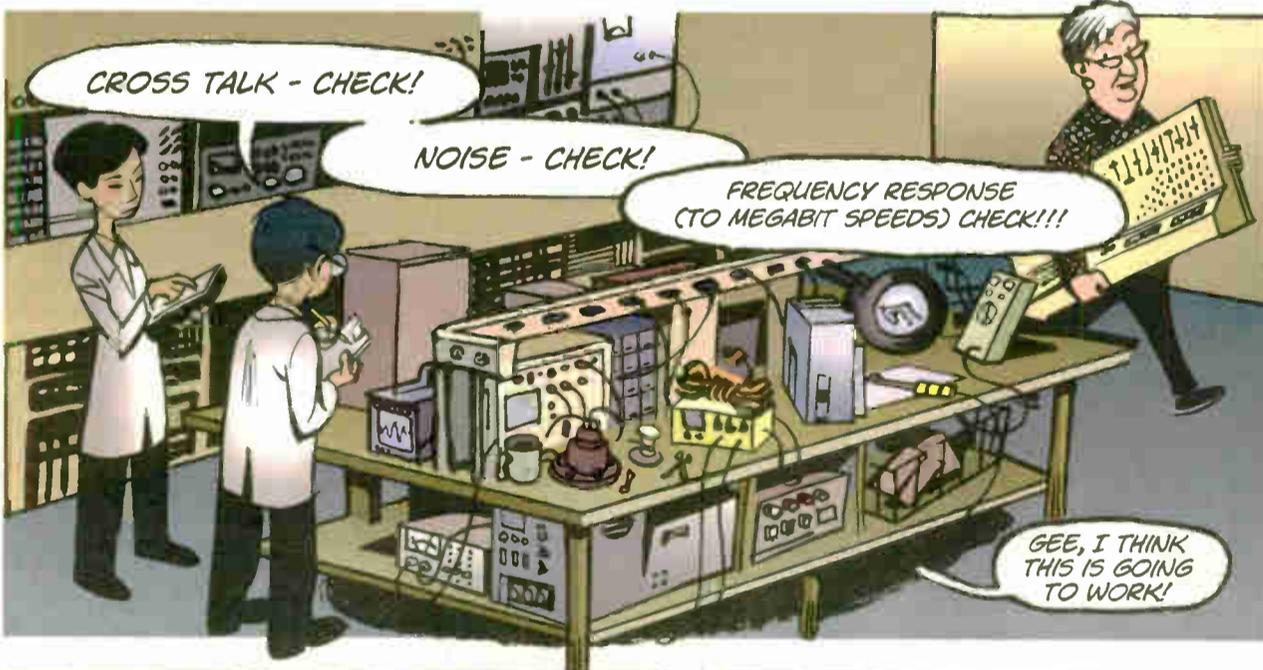
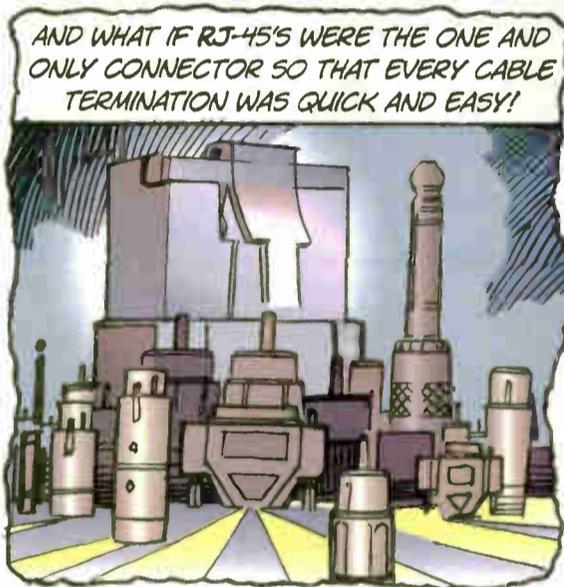
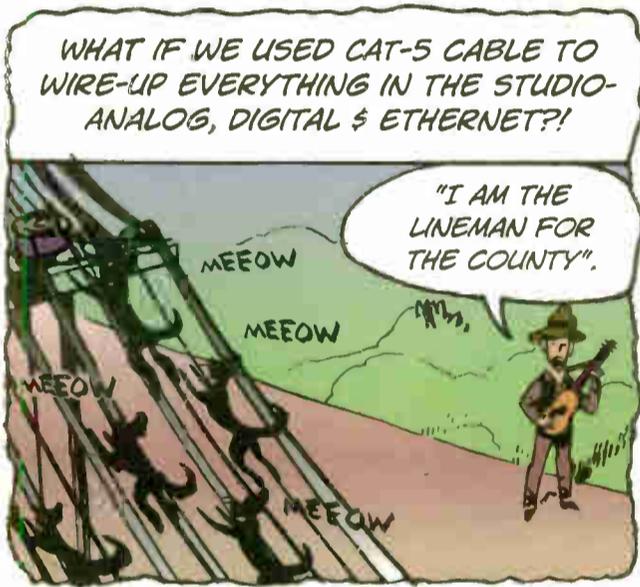
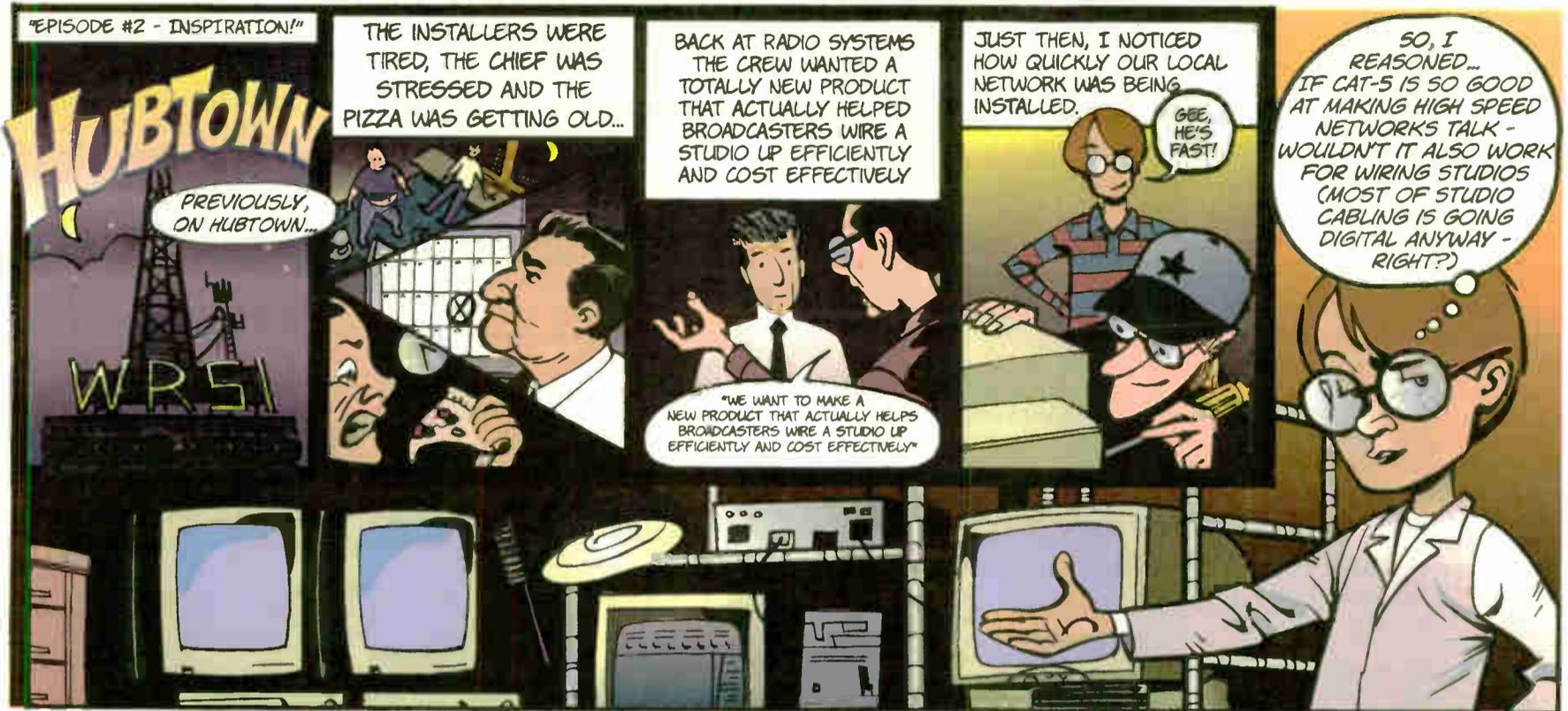
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IBOC

► Continued from page 1 transition this year.

The question of IBOC fees for broadcasters rankled with some, however. Meanwhile, AM station engineers and owners were disappointed that a standards-setting body has so far endorsed Ibiqity's AM IBOC system for daytime use only. This revelation caused some AM attendees to wonder if they will ever see the full benefits of digital broadcasting on their band.

On the exhibit floor, Nautel, Harris and Broadcast Electronics exhibited IBOC transmitters and exciters for sale; managers said serious buyer prospects visited their booths. Suppliers could not give firm shipment dates, however, because the FCC has not yet given its blessing to IBOC or issued type certification to equipment.

BE was hopeful it could ship product by this summer.

Harris is hoping for an expedited certification of the FM standard, said Dale Mowry, vice president of transmission systems.

"We're getting quality interactions. People are asking the right questions," he said during the convention.

Manufacturers received many queries about AM IBOC. Attendees heard the news that the National Radio Systems Committee had, at the start of the show, endorsed only daytime use of Ibiqity's IBOC system for AM stations.

Additional testing is needed before the NRSC can comment further on the nighttime performance and compatibility of AM IBOC.

"It's not what we wanted to do," said an NRSC source. "With the data in hand, it's the best we can do. It would be reckless to do otherwise."

None if by night

The NRSC has concerns about the potential interference to first- and second-adjacent channels and about how the system would affect stations heard on skywaves at night.

Ibiqity's AM IBOC system "will allow AM broadcasters to provide listeners with two-channel stereo audio rivaling existing analog FM stereo in quality," the standards-setting committee write after several months of reviewing test results.

The NRSC also noted in its report, approved by the membership on April 6, that IBOC will make it possible for AM stations to provide data services, and that this technology puts AM broadcasters "on an efficient path to an all-digital service."

The NRSC, jointly sponsored by the National Association of Broadcasters and the Consumer Electronics Association, recommended that its staff submit the NRSC report promptly to the FCC for review.

As it did with Ibiqity's FM system evaluation, the NRSC said the technology is complex and tradeoffs are required. Some listeners tuning to weaker adjacent-channel stations might experience interference under some circumstances, primarily those outside the stations' FCC protected contour service areas.

But overall, the NRSC believes IBOC will improve the audio quality of AM stations dramatically.

The NRSC has asked Ibiqity to suggest criteria for nighttime tests. The NRSC would then develop a protocol for such tests. Those would include testing IBOC's effect on high-powered AM clear channel stations operating on skywaves at night.

Given the variable and statistical nature of skywave propagation conditions, such tests are difficult and time-consuming, which is why they were not included in the original AM test protocol.

More tests

Ibiqity President and CEO Robert Struble said the company was pleased with the endorsement while the IBOC



NAB Radio Board President John Dille of Federated Media said he was ready to spend money on IBOC. 'Get out your order book, I'll deal today.'

developer continues to look at nighttime issues and hoped to be ready to discuss those with the subgroup working on the NRSC test procedures by the end of April.

Asked whether the daytime-only endorsement could inhibit the planned transition of a substantial number of stations in six targeted markets by the end of the year, both Struble and an NRSC spokesman said no.

Struble predicted the additional tests could be completed by the end of this summer. Ibiqity did conduct nighttime tests of groundwave service and said that, due to interference, the digital system provided a more restrictive nighttime service area (RW April 10, page 12).

He said Ibiqity would conduct a combination of tests, including computer modeling and testing on 50-kW clear-channel stations that use skywaves.

Real-world testing of AM IBOC's performance at night is important to many AM station owners. Several attendees wondered why the NRSC didn't obtain more nighttime performance data before putting out its report, saying it would have made sense to delay a decision on AM until that was done. (Ibiqity did conduct groundwave tests at night. RW April 10, Page 12.)

NRSC officials said they wanted to move AM IBOC along in an orderly fashion and that splitting the day/night tests seemed a good way to do that.

Several manufacturers said privately they believe Ibiqity's AM system will work at night. One said AM station owners have told him they might as well sell their stations now if that's not the case.

One AM owner from upstate New York said, "The concept of having a digital signal during the daytime only is bizarre."

Ibiqity said nighttime interference problems largely disappear once the AM system goes all-digital. But no one is sure how long stations will transmit both analog and digital signals in the transition phase, or indeed if stations will ever turn off their analog signals entirely.

Several AM station sources, both managers and engineers, said many AM stations power down as early as 4:30 p.m. in winter, right in the middle of afternoon drive, due to long-standing nighttime interference protections. To remain analog at that time, they said, is not preferable, especially if they're trying to present themselves to advertisers as a digital station.



"It's crazy. AM is where the biggest improvement is ... or would have been," said one manufacturer. He said big radio groups are telling him they want to see a return on their investment within 5 years or they won't make the capital outlay for IBOC equipment.

Clear Channel Senior Vice President of Capital Management Bill Suffa echoed that kind of sentiment in a panel discussion. He said a daytime-only IBOC system "would be the death knell of AM." Several attendees applauded.

NRSC Chairman Charles Morgan disagreed, but does anticipate that AM stations trying to make the digital transition "may be forced to follow FM by several years."

Money matters

Suffa and Morgan agreed stations now must think about the costs of implementing IBOC, both equipment prices and the fees Ibiqity plans to charge broadcasters for using the technology.

That's especially important, said Suffa, because the first 100 or so stations expected to go digital this year will do so before IBOC receivers will be in the marketplace. Although Ibiqity's receiver partners plan to have product for sale to retailers at the Consumer Electronics Show in January, those radios won't get into consumers hands until the second and third quarters of 2003.

The fees that Ibiqity is speaking to radio groups about would be 15 times a station's annual FCC regulatory fee (RW, April 10, page 1). They are licensing fees allowing stations to use the IBOC technology that is packaged as part of their new equipment.

Morgan called the fees "an impractical approach" that Ibiqity should rethink.

Suffa asked when stations would see

a return on their investment to go digital. Acknowledging that Clear Channel is an investor in Ibiqity, he said he wasn't sure this is the time to make the transition until it's clear whether there will be consumer demand for IBOC radios — expected to cost about \$50 more than analog models.

Suffa asked whether it made sense for Ibiqity to get some digital stations on the air and delay the fees for early adopters.

Struble said the suggestion has been made in talks with broadcasters about the fees. He said he "wouldn't be surprised to see negotiations go in that direction." This appeared to be a slight softening of Ibiqity's earlier stance.

When asked by Radio World to clarify this point, Struble said there may be "enticements" for early adopters, but would not give specifics of whether that meant a fee delay, reduction or something else. He cited on-going negotiations with broadcasters.

Ibiqity executives would not comment on whether any broadcasters had yet signed the "memorandum of understanding" with Ibiqity about the licensing fees.

The company has tried to set fees as low as it can, Struble said, adding that the capital cost of the hardware dominates what broadcasters will spend on IBOC.

Eventually Ibiqity is expected to recover the bulk of its costs through its take on the volume of receivers sold.

Ibiqity has spent \$100 million and likely will spend about \$150 million total in order to get the technology in the marketplace, he said.

"We've got to get something back," said Struble. He also said Ibiqity worked hard not to overburden any one industry sector, among them broadcasters, RF manufacturers, receiver manufacturers, component manufacturers and other interested parties.

Launch

As IBOC technology is licensed to more companies, more will pay Ibiqity for the right to use its intellectual property. Two manufacturing sources said the licensed transmitter manufacturers each paid Ibiqity \$200,000 for the right to make IBOC exciters. Neither Ibiqity nor the licensed manufacturers would comment, saying their agreement is proprietary.

Ibiqity, NAB and the Consumer Electronics Association made a big splash to "launch" IBOC at this show.

"Get out your order book. I'll deal today," said John Dille, president of both the NAB Radio Board and Federated Media to manufacturers on the day the exhibit floor opened.

Ibiqity estimated the conversion cost for a typical station at \$75,000. Most of that would go to transmission equipment manufacturers. A small slice, roughly \$3,000 in this example, would go to Ibiqity as a software licensing fee.

NAB President/CEO Eddie Fritts said IBOC technology would not obsolete analog radios. The fact that stations will transmit both analog and digital signals at the start of the transition ensures an orderly transition, he said, one that can be made at the pace of consumers.

"We know the world is going digital. For radio to sit back and not have an avenue to step forward would be a tragedy," said Fritts.

See IBOC, page 14 ►

Rave Reviews!

"Excellent Product" — Doug Walker, Clear Channel, Cincinnati

"Telos has taken two great products [the Zephyr and the Zephyr Express] and made them better. They listened to the customer." — Raul Velez KNBR, KFOG, Susquehanna Broadcasting of San Francisco

"Telos asked us what we wanted and they put it in there... you can't ask for anything more than that."
— Paul Burt, Clear Channel, New Orleans

"It's even easier to use than the original Zephyr."
— Michael Black, WEOS, Geneva, New York (NPR affiliate station)

"The most popular ISDN digital transceiver in the country has a fresh new look... Zephyr Xstream, a slick, updated version of [the] familiar Zephyr."
— Steve Kirsch, Silver Lake Audio, New York

Telos
www.zephyr.com



DIGITAL NEWS

Loan Terms Changed

Sirius and Lehman Brothers have renegotiated their term loan agreement to give Sirius more flexibility to focus on the launch. The December 2002 subscriber and cash flow covenants have been eliminated. The new covenant quarterly requirements begin early next year at lower thresholds than stipulated in the original agreement.

In return, Sirius has agreed to adjust the principal repayment schedule on the loan and reduce the strike price of its 2.1 million warrants to \$15 per share from \$29 per share. Sirius will repay an incremental \$15 million in 2002 and \$25 million in 2003; the amounts due in 2005 will decrease accordingly.

Subsequent to an equity offering on Jan. 3, which grossed approximately \$158 million, Sirius had a cash balance of more than \$400 million in March, which the company expects to last into the second quarter of 2003.

Sirius Loss in '01

The company also reported a fourth quarter 2001 operating loss of \$51.8 million, up from \$38.2 million for the same period in 2000. For 2001, the company reported a net loss of \$72.7 million, up from \$44 million in the same period in 2000.

For the year, Sirius reported an oper-

ating loss of \$168.5 million, compared with \$125.6 million the previous year. The net loss for the 12 months reached \$235.8 million, up from \$134.7 million in 2000.

Sirius reported no revenue for Q4 or for the year 2001.

Scelfo said its cash flow "burn rate" is about \$15 million per month as it transitions from a development company to one with a product to sell. He said it has budgeted about \$10 million a year in capital expenses to maintain the terrestrial repeater network.

Satellite Radios for VW, Nissan, Infiniti

Satellite radios will be available in some 2003 Nissan and Infiniti division vehicles beginning later this year. They include the Infiniti Q45 performance luxury sedan, the Infiniti G35, the Infiniti I35 luxury sedan along with the Nissan Pathfinder sport-utility vehicle and the Nissan Murano crossover SUV.

Nissan is partnering with XM Satellite Radio and Sirius Satellite Radio to provide the radio services, and Clarion Corp. of America will provide the radio receivers.

Volkswagen of America, which also encompasses Audi of America, plan to offer customers satellite radio in the future. VW signed distribution agreements with Sirius Satellite Radio and XM Satellite Radio. Volkswagen and Audi are expected to detail specific vehicle installation plans and timing.

XM: Finances OK After Stock Plunge

XM Satellite Radio reacted to several recent stories after an auditor had issued a negative opinion based on wording in an XM filing with the SEC.

XM said the annual report included a standard phrase for companies that do not have 12 months of funding, noting the company's ability to "continue as a going concern" depends on continued fundraising. That statement from auditor KPMG LLP had caused XM's stock to drop 13 percent on NASDAQ, to close at \$13 on March 19.

XM stated, "The story and particularly its headline prompted other stories, leaving the impression that there was a new and troubling financial development at XM, causing a drop in the stock. In fact, the auditor's opinion contained in this year's 10K is identical to those that have appeared in every XM 10K since it went public in 1999."

XM points to its launch in 2001, and states it raised \$382 million in financing, and acquired approximately 28,000 subscribers ending Dec. 31.

The annual report states that XM had \$533,000 in 2001 revenues, \$246,000 of it from subscriber fees, and \$295,000 in advertising less \$43,000 in sales commissions. Operating costs were \$101.5 million in 2001, compared to \$31 million in 2000.

Company officials said they were confident they would hit their end-of-March target of 70,000 subscribers.

— by Leslie Stimson

IBOC

► Continued from page 12

Fritts said NRSC's endorsement was a good step and pledged NAB's support at the FCC in the hopes of getting the agency to adopt IBOC as radio's digital standard.

"It's been a long haul," said Consumer Electronics Association President/CEO Gary Shapiro, who noted that he and Fritts haven't always sat on the same table on this issue, a reference to CEA's early support of Eureka-147, and later for another technology that would also have used new spectrum.

Support

Select receiver manufacturers are building IBOC radios for launch at the CES show this January, and Ibiqity has garnered support of major retailers.

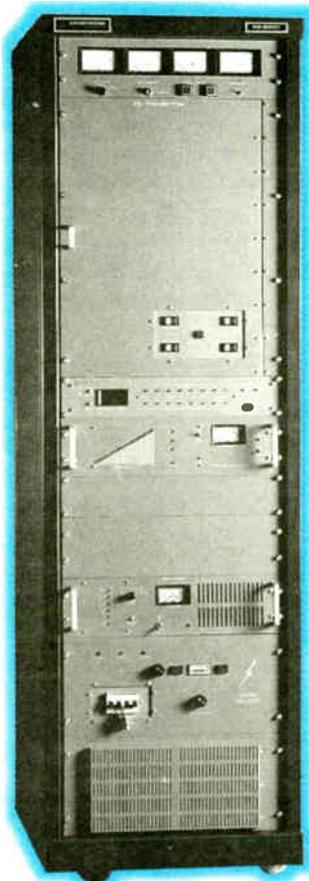
"We believe retailers involved with Ibiqity have an opportunity to participate in a great new product category," said Shapiro.

Ibiqity recently added Clarion to the list of receiver manufacturers that will license its technology to make IBOC radios. That list includes Alpine, Kenwood, Harmon Kardon and Visteon.

Kenwood Senior Vice President Bob Law said Kenwood would introduce home and auto IBOC radios at CES.

Ultimate Electronics President/COO David Workman said retailers would work with radio groups to promote digital radio. ●

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Sirius Moves Launch Forward

Sirius Satellite Radio is nudging up its nationwide launch date by a month, to July 1. Sirius has radios in approximately 200 storefronts now and plans to expand that to 3,500 retail floors by the end of June, Sirius President and CEO Joe Clayton told analysts in March.

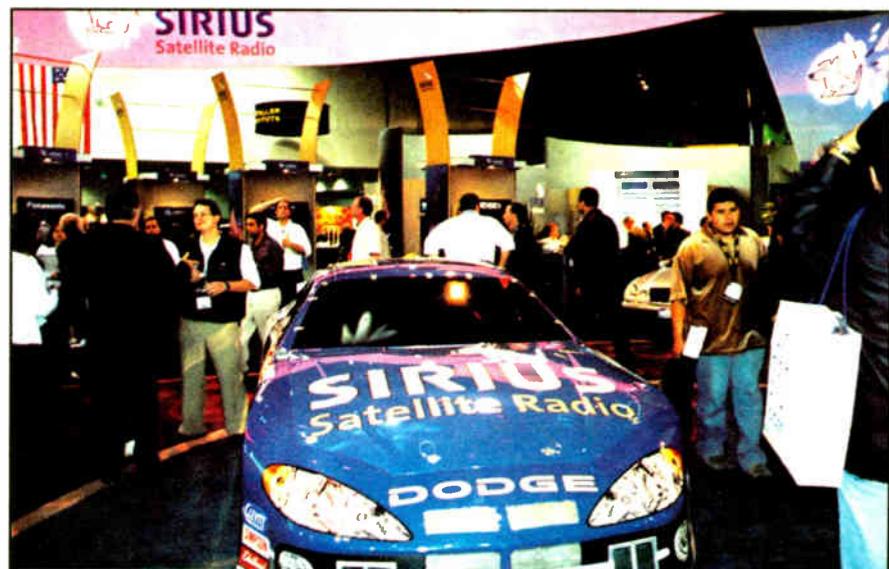
Clayton acknowledged some Kenwood and Clarion receiver availability shortages now but expects those companies to ramp up production to have 40,000 to 50,000 units in the pipeline to distribute to retailers to coincide with the national rollout.

Panasonic units should be available by July and the Jensen Plug and Play is expected to be available late in the year. Sirius could not say when the Crutchfield catalog would have its units nationwide.

Sirius launched in four markets on Feb. 14 and expects to have 100,000 to 200,000 subscribers by the end of the year, gaining most of those in the second half of the year.

Sirius Chief Financial Officer John Scelfo said there is no end date on the Special Temporary Authority allowing Sirius to operate its terrestrial repeater network and he expects the STA to remain in effect until the FCC adopts final repeater rules.

— Leslie Stimson



Sirius is using this Dodge equipped with a Sirius radio to demonstrate its service to consumer electronic retailers as it launches in different markets.

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Paul Schafer, left, receives the Radio Engineering Achievement Award from NAB's Lynn Claudy.



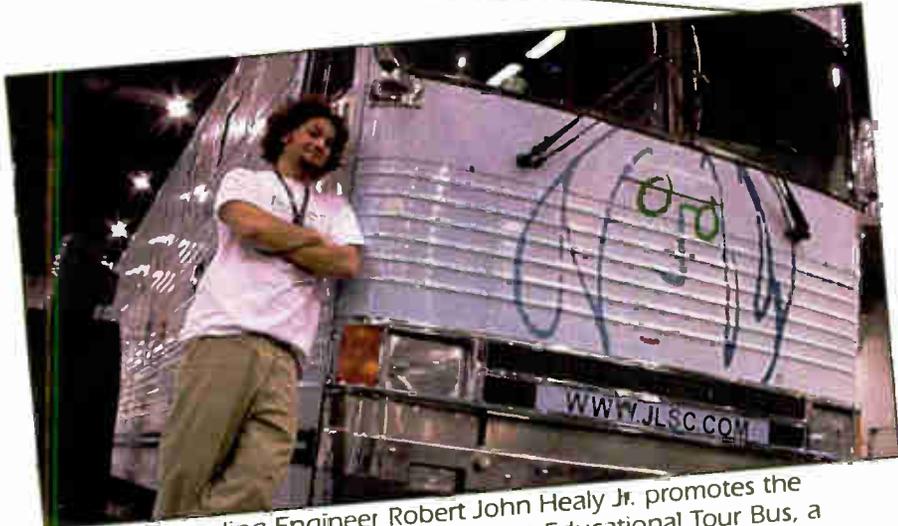
PHOTO GALLERY



Greater Media's new three-station, 11-studio Detroit facility will include equipment from Klotz Digital America, which will supply a Vadis AudioMedia Platform including 23 Vadis 880s and 11 Vadis D.C. II digital consoles. From left: Chris Crump and Thomas Klotz of Klotz Digital; Milford Smith of Greater Media; John Carey of Klotz.



Terry Baun of Criterion Broadcast Services presented the SBE Broadcast Networking Tutorial.



Recording Engineer Robert John Healy Jr. promotes the John Lennon Songwriting Contest Educational Tour Bus, a mobile studio that educates audiences about songwriting, recording technologies and video production. Info: www.jlsc.com.



IMAS Founder Steve Dana, left, lends a hand to Hank Landsberg as Henry Engineering celebrates its 20th year.

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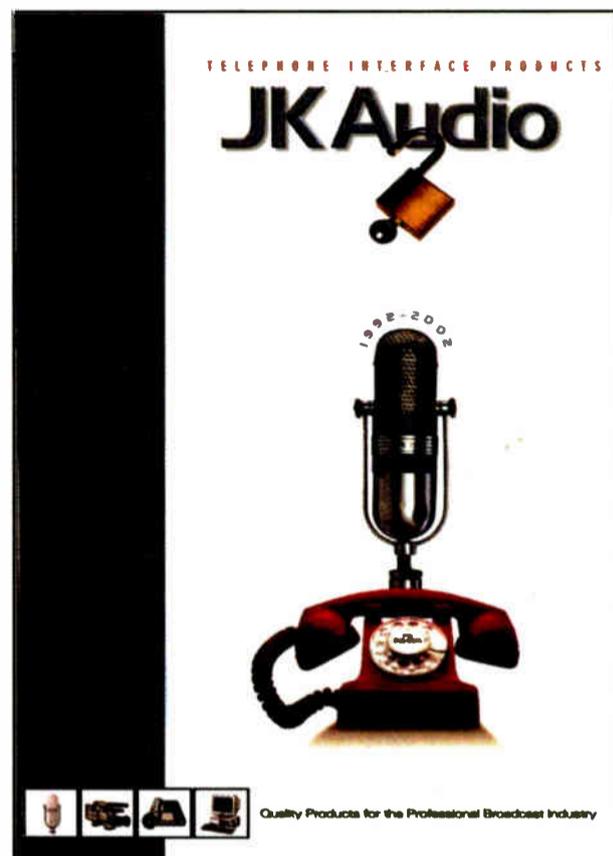
JK Audio, Jensen Release Catalogs

If you are the type who collects catalogs to make your job easier or to keep your lower desk drawer full, here are two new ones from JK Audio and Jensen.

JK Audio makes audio equipment for phone use, and the 18-page catalog covers its 20 products. New equipment includes the ComPak telephone interface tool, the Daptor Two wireless telephone interface and the CellTap for recording cellphone conversations.

Jensen, a tool maker and distributor, offers a 132-page catalog covering tools and cable, telephone and electrical test equipment. The company promises a 30-day guarantee on all products and a lifetime guarantee on its own hand tools.

For more information contact JK Audio in Illinois at (815) 786-2929 or visit www.jkaudio.com. Contact Jensen in Arizona at (800) 426-1194 or visit www.jensentools.com.



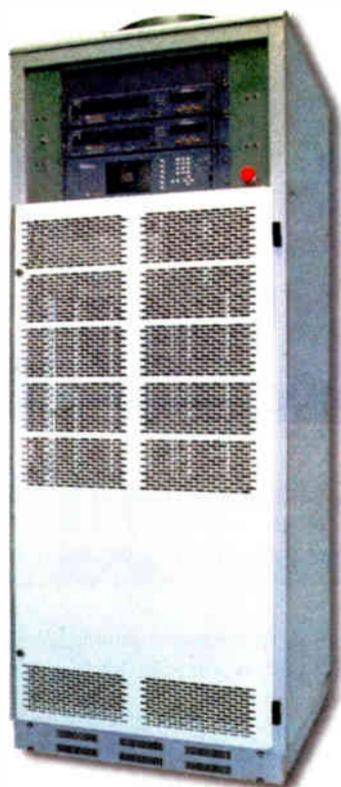
ECRESO Launches TCP/IP FM Transmitters

French supplier ECRESO RFTS Broadcast is out with a new line of 5 and 10 kW FM solid-state transmitters that take advantage of the power of Internet communication.

The Neptune system uses a 20-watt FM exciter called Helios, a power amplifier, IPA, couplers and a control unit that manages and monitors the system.

The exciter's LCD display allows an overview of functional parameters including frequencies, forward power, VSWR and deviation. It can be accessed and monitored using its RS-232 connector or optional plug-in cards for remote control, remote monitoring, telemetry, TCP/IP and distant monitoring and control.

The central unit enables access to the modules via a graphical 1/4 VGA display, keyboard and menus and informs the user of detected failures, types and localization.



The IPA and PA are controlled and monitored by the central unit using a CAN bus. Any failure is displayed, and the alarm launches a relay and/or sends an e-mail.

The 5 kW transmitter can be upgraded to 10 kW with the addition of PA modules and a coupler.

For information, visit www.ecreso.com or contact Sophie Lion Poulain via e-mail to lion@ecreso.com or call 011-33-556-675454.

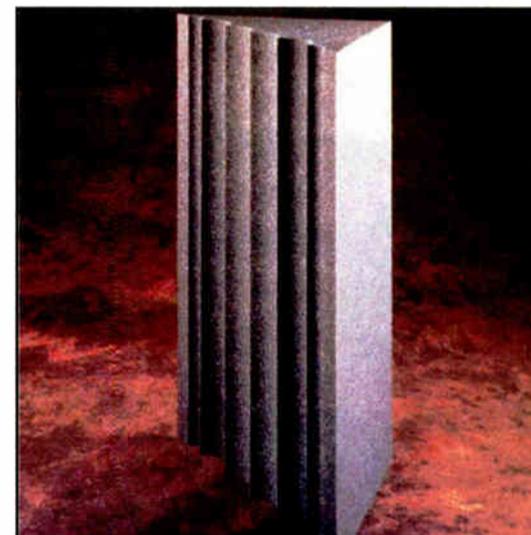
illbruck Releases Corner Traps

illbruck inc. now offers Sonex Corner Traps to absorb low-frequency soundwaves. They are designed to create clearer sound in recording studios and other environments.

The triangular traps are made from polyurethane foam and stand 24 inches high and 12 inches deep. They help catch the low-frequency standing waves that acoustic wall panels alone can't control.

The traps provide 12 sabins of absorption below 500 Hz and have fluted edges for better performance. They can be installed with hook and loop fasteners or permanent adhesive.

For more information contact illbruck at (800) 662-0032 or visit www.illbruck-sonex.com.



VoxPro PC Is Networked

VoxPro now can be networked.

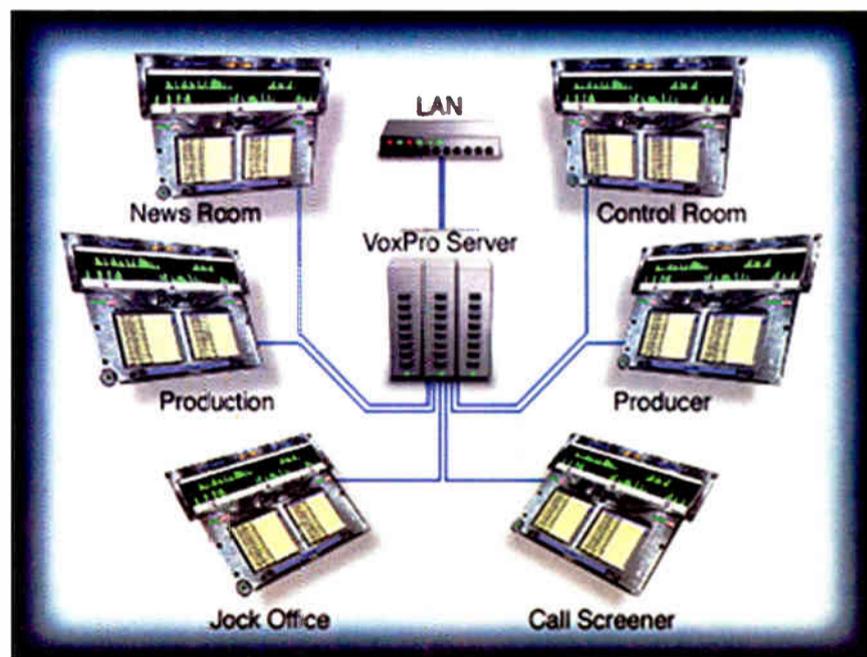
Audion Laboratories, which makes the popular digital audio phone editor, displayed a networked system at NAB2002.

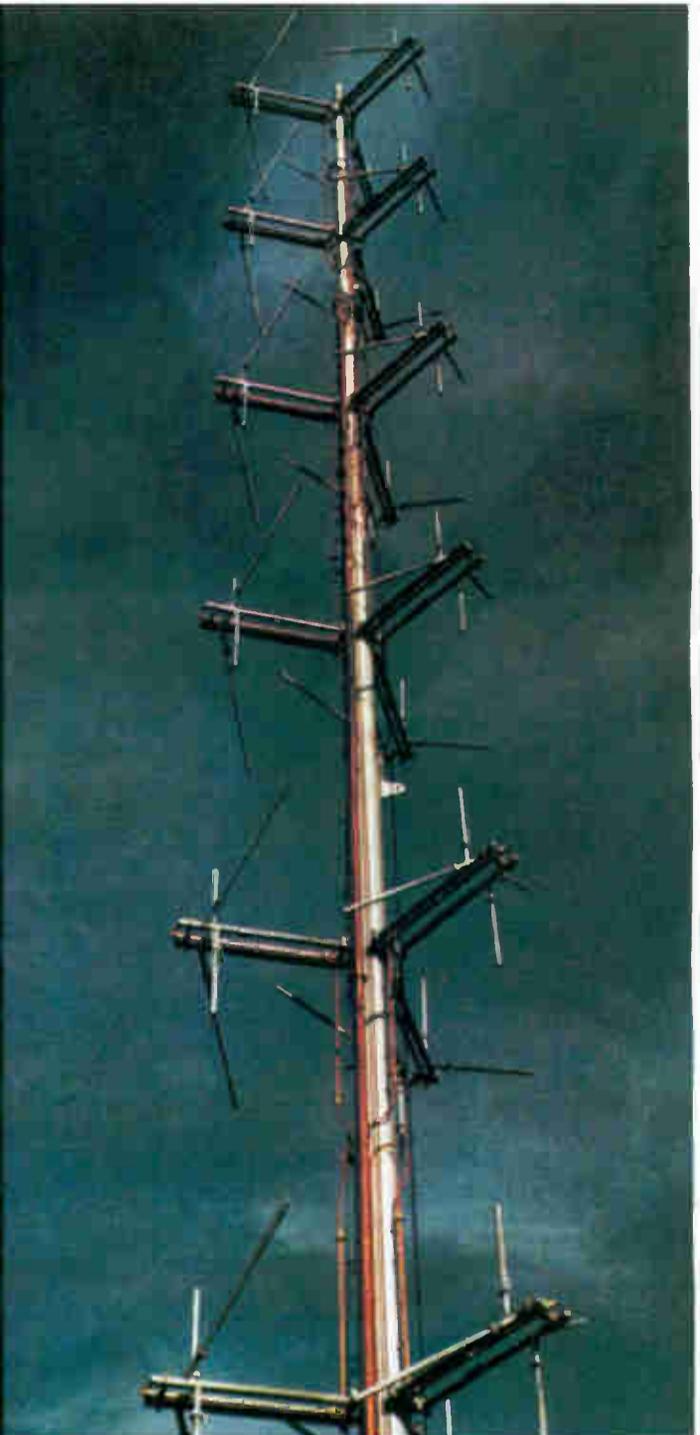
VoxPro PC workstations can be linked via an NT, Novell or peer-to-peer network.

Users can access folders and files within a work group in addition to the files they create individually. Changes made by group members are visible to members of the group working at other VoxPro PC stations on the network.

With the Network Plug-In, administrators can manage the amount of hard-disk space used by individual users and create password-protected user space and group folders where users can create, edit and share recordings.

For information or an online demo, contact the company in Washington state at (206) 842-5202 or visit www.audionlabs.com.





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World Radio History



German Radio Drama on Stage

by Michael Lawton

BERLIN Four hundred people in a theater, lights dimmed, on stage just two loudspeakers — the audience listens attentively to a radio play.

Later, they will discuss it with the director and author. After that, they will listen to another one.

This is Radio Drama Week at the Akademie der Künste arts institute in Berlin.

Every evening for five days, two radio plays are aired, giving all 10 German public radio authorities that produce radio drama the opportunity to showcase their best work. A jury drawn from the public will choose the winner.

Unique opportunity

Last fall saw the 15th annual such week, an opportunity for those in the business to discuss their art and for the public to meet the creators.

In morning workshops, approximately 50 people listened to and discussed classic plays from the past. Afternoons saw lectures by the creators of these classics and, in the evenings, large audiences listened to the competition entries. Digidesign offered workshops on how to use Pro Tools.

There were competitions for the best

play broadcast in the last year and for the best unbroadcast play produced by a freelancer. Every day, a local newspaper, which cosponsored the week, reviewed events of the previous day.

Radio Drama Week started as a meeting of specialists but has become a popular public event, reflecting new interest here in cultural, speech-oriented radio. Not only have the public radio culture channels stabilized their listening figures, they are winning new audiences.

Wolfgang Schiffer, head of speech programming on Westdeutsche Rundfunk cultural channel WDR3, said WDR airs 60 radio play performances a year from theaters in its broadcast area.

Schiffer is about to produce Shakespeare's "Midsummer Night's Dream" with incidental music composed by Mendelssohn as a live production with orchestra and audience.

"It fits in with the new event culture," he said.

This interest in radio dramas has been taken up commercially, with new companies specializing in publishing recorded books and plays. The radio stations themselves are publishing and selling more.

On the WDR youth channel, Tuesday evening is devoted to experimental radio drama.

German radio is trying to catch listeners

even younger, with children's drama. The first day of the drama week was dedicated to children, with workshops in which they could create their own radio plays.

Children's radio plays are varied: from an eight-part version of "The Hobbit" by J.R.R. Tolkien to detective stories and "documentary dramas" about the lives of real children.

German radio probably is the largest producer of radio plays in the world.

German radio probably is the largest producer of radio plays in the world. Each public station produces its own, as well as rebroadcasting those of the others.

Each year, 700 new plays are produced. Including repeats, WDR alone broadcasts between seven and 12 radio plays a week.

Traditional approach

From the evidence of the 10 plays entered for the competition, radio drama in Germany is keeping up with society in subject matter and in style. Most dealt with death but approached the subject in a variety of ways — sometimes light-heartedly, sometimes agonizingly.

In "Geist," based on the American stage-play "Wit" by Margaret Edson and produced for WDR by Claudia Johanna Leist, a specialist in sonnets about death by John Donne must cope with the indignities of cancer treatment and has to develop a new understanding of herself in the face of real death.

It was an emotional performance by Nicole Heesters, backed up by a satirical portrayal of U.S. hospital practices.

Popular drama

"Norway.Today," by Norbert Schaeffer and produced for DeutschlandRadio, told of two young people who meet in an Internet suicide chat room and decide to commit suicide together. Their meeting and their last hours at the edge of a Norwegian fjord were portrayed with lightness and humor.

The prize for the best play of the year went to "Nothing Hurts" by Falk Richter, produced by Antje Vowinkel for Südwestrundfunk.

It told the story of two women who search for the latest kick to cover their inner emptiness. They decide to join themselves in death by organizing a spectacular car crash.

Despite the fact that public stations are suffering financial cutbacks and radio drama is the most expensive form of radio to produce, Schiffer said he cannot imagine that radio drama will be cut back.

"It is true that production times are being reduced," he said, "but radio drama has become so popular that the stations cannot get rid of it — it would be dreadful public relations."

He said radio drama is one of the things that differentiates German broadcasters from private stations.

Michael Lawton, a free-lance broadcast journalist, reports on the industry for Radio World from Cologne, Germany.



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MARKET PLACE

AEQ USA Opens New HQ in Florida

Supplier AEQ Broadcast International has opened a new headquarters near Fort Lauderdale, Fla., saying it hopes to improve its activities in the U.S. market.

General Manager Gerardo Vargas stated that the company has an expansion plan to double its business here during the year 2002, after its "fundamental contribution" to the Salt Lake City Olympic Games.



Among its products aimed at American radio and TV users are the Eagle ISDN codec, Swing portable codec, Impact digital audio matrix and Caddy AD/DA Multiple Converter.

For information, contact the company in Florida at (954) 581-7999 or send e-mail to aeqamerica@aol.com.

SBE NEWS

People Skills Rank at the Top

Radio World offers this space to the Society of Broadcast Engineers as a service to the industry.

by Thomas P. Weber, CPBE, CBNT

What are the two most important skills you need to do your job well?

I'd say they are knowledge of how to get equipment to work well for you, and knowledge of how to make people work well for you.

People skills actually are the more important of the two. These two most important skills are applicable equally to all engineers, whether they work alone or in teams, whether they are regular staff members, supervisors or directors of engineering overseeing dozens of people.

Your people skills are more important to your success than your equipment skills.

Because of what engineers are and what we do, it is often relatively easy to convince the budget-makers that we need some specialized training on equipment. When the GM knows that you can quickly diagnose and restart the traffic computers or the commercial and programming content servers, it gives him or her confidence that the stations can operate smoothly and that goals can be achieved.

Just try to convince the GM, though, that you need to develop your skills in handling people, and you're probably in for a put-down.

The truth is that all of the equipment in the world can operate perfectly, but if you don't relate well to all of the other station stakeholders, you will be perceived as a poor engineer, and your station managers' ability to do what they want will be severely compromised.

Your people skills ultimately are more important to the success of you and the station than are your equipment skills.

Management need

Larry Oaks, director of engineering for LIN TV Special Projects, understands this.

"I have found over the last few years an increased need for management-related skills within technical staffs," Oaks said. "A higher level of importance has been placed on those of us in technical areas of responsibility, and there is an increased need to work closer with other managers to improve our company's performance."

"The increased amount of change and consolidation also increases the need for these management skills."

How about some real-world examples?

Do you recognize and compensate for the differences in motivations and overall natures among the following types of people? There's the part-time overnight weekend announcer or photographer who just doesn't seem to be able to get through his shifts without yanking a cord right out of its plug; the regional sales manager who needs you to help figure out a new store-and-forward system to help keep regional control of completely local spots; the client who needs you to help plan and set up a remote without

disrupting their business more than you promote it.

Don't forget the high-priced talent whose off-air monitor just died again; even the audience member who needs help with interference problems.

Course offerings

No doubt about it. You have a multitude of people with whom you interact. Do you note and implement the difference between managing down, sideways and up?

If you feel that you could use an introduction, a thorough grasp, an advanced



immersion or even just a refresher in the skills that let you recognize all of the different people you deal with and how to

See TRAINING, page 22 ▶

NOW, a digital exciter that does what all digital exciters should do.

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Training

► Continued from page 21

make all your interactions be more effective, you ought to attend one of the SBE's Leader-Skills Seminars in Indianapolis this summer.

Richard "Dick" Cupka, Sr., president of Cupka Corp. of Lafayette, Ind., has taught broadcast engineers for more than 30 years in cooperation with either NAB or SBE. They are better engineers because of his training, because he helped them become better people managers.

Course I, held June 5-7, is "Leadership — The Framework of People Skills." It covers the function and nature of your leadership role; how

to build stronger teams and effective internal cooperativeness; the complex differences of people; and discovery of

Course II, Aug. 7-9, picks up where Course I leaves off. In fact, those interested in Course II, "Leadership —

Mastering people skills is just as important to broadcast engineers as being tech-savvy.

your "natural" style of leading and how to nurture a "developed" style to help you adjust to different people in various situations.

Expanding Your People Skills," must sign up for Course I or have attended one of the previous Leader-Skills programs, which date back to 1965.

Expand Your Skills

For the sixth consecutive year, the Society of Broadcast Engineers is sponsoring Leader-Skills training in cooperation with instructor Richard "Dick" Cupka, Sr., president of Cupka Corp.

The courses are designed for broadcast engineers who have or aspire to have management responsibilities.

June 5-7, 2002

Course I: "Leadership — The Framework of People Skills"

August 7-9, 2002

Course II: "Leadership — Expanding Your People Skills"

Both courses will be at the St. Vincent Marten House Hotel and Conference Center in Indianapolis. Registration for each course is \$475, which includes three days of programming, seminar materials, completion certificate and classroom refreshments. Course participants are responsible for transportation, meals and lodging.

To register, contact Angel Bates at the SBE National Office at abates@sbe.org or at (317) 846-9000. Class space is limited to 18 participants per course.

Course II explores individual behavior in groups and the dynamics of interaction between groups; the complex motivations of people and how to deal with them; how to handle disciplinary processes; and where the emphasis should be in a leader's ultimate responsibility over people and activities.

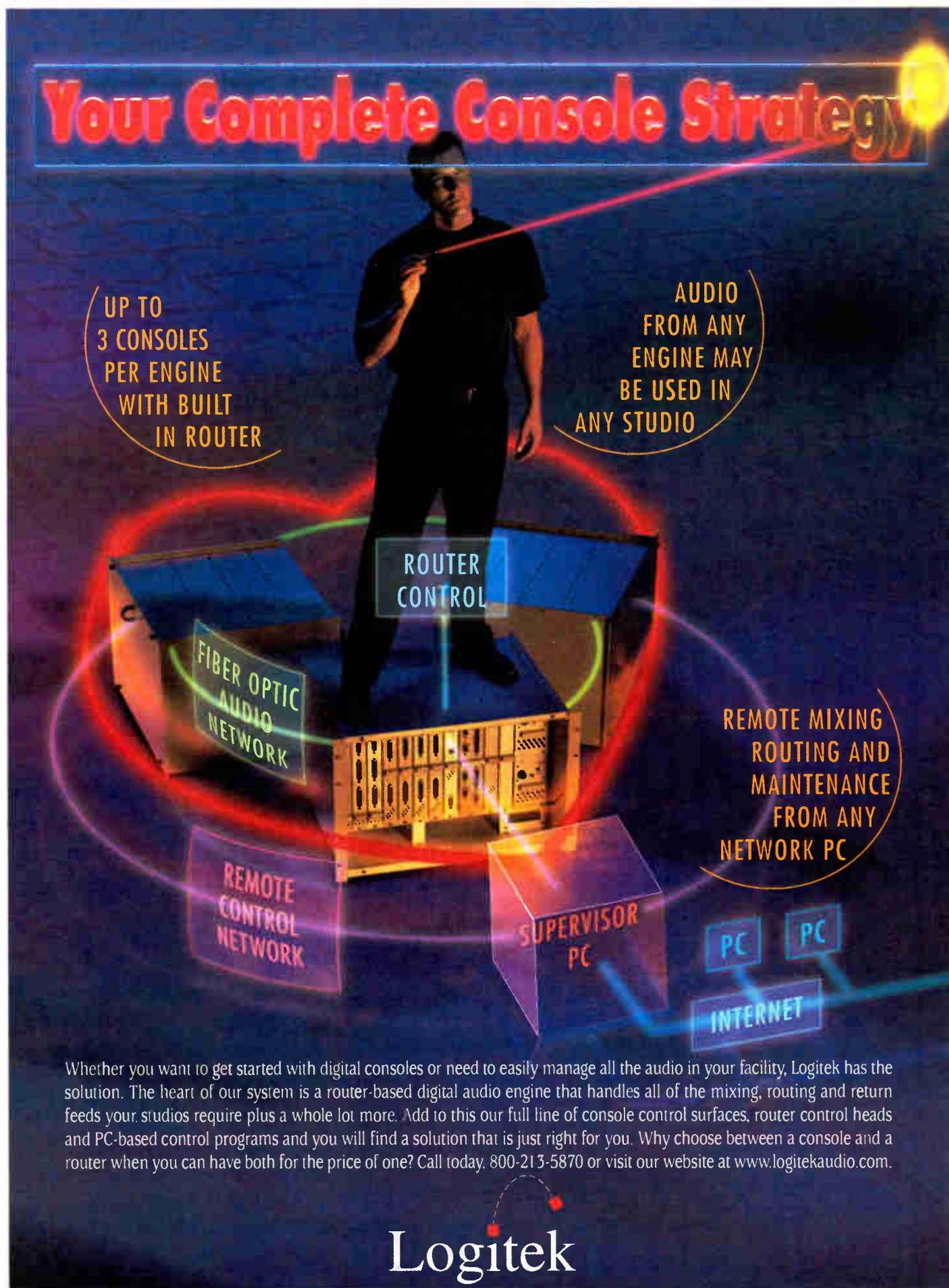
Registration for either course is \$475 for three days of instruction, and includes course materials. Hotel costs in economical Indianapolis are a reasonable \$82 per night at our partner hotel, and other choices are a close drive. In fact, Indy is within a day's drive of a great deal of the country, which may help you keep transportation costs low.

Here are some other benefits to consider: The courses qualify for SBE Re-Certification credits. And I'm no accountant, but you should talk to yours, because the IRS lets you itemize educational expenses that make you better at your present job, and this may qualify.

Ask someone who knows. Training and motivation for salespeople and other managers routinely costs many times this amount. With the engineer-to-salesperson ratio what it is at most stations, you could make the case that people skills for engineers is a far better choice for stations, both per capita and as an overall total expense.

Need more convincing? Oaks, himself a 1986 graduate of the program, has found his Leader-Skills training useful throughout his career. His advice: "I would encourage anyone being placed into a management or supervisory role to attend the SBE seminar to hone these critical talents."

The author is engineering maintenance supervisor of WISH(TV) Channel 8 in Indianapolis and a 1983 Leader-Skills graduate. 



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Logitek



Radio World, May 8, 2002

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

Digital Cameras Are a Big Help

by John Bisset

Let's start the column with a laugh. Actually, Fig. 1 won't be funny if someone gets shocked. But the warning symbol on the electrical box to the right speaks volumes. It only takes a couple of minutes to do things right. Take the time, you'll sleep better at night!

★ ★ ★

Joe Schloss, chief of KICD(AM-FM) and KLLT(FM) in Spencer, Iowa, has a suggestion to keep for that rainy day — you know, when the gray cloud just seems to park over your head.

When a piece of 50-ohm rigid transmission line inner conductor fails, and all you have is a piece that is too short, remember this temporary fix. Plumbing supply houses sell what is known as a 1-inch sweat coupler. It fits nicely inside of the copper inner conductor.

Flux the connection and silver solder. Don't use soft solder!

Once you're soldered the connection, file the edges smooth and install. Joe explains that the line impedance is set by the distance from the outside of the inner conductor to the inside of the outer conductor. By making the splice on the inside of the inner conductor, it affects the line impedance less.

★ ★ ★

Damian Centraf is the chief engineer for Herald Broadcasting's WSHB Shortwave station in Pineland, S.C. He suggests you add a digital camera to your "must buy" list.

Damian uses his as a troubleshooting

tool. It not only works great for documenting troubles, but also displaying where wires go, or for e-mailing pictures to vendors for replacement parts. Even cheap digital cameras can be useful, and the prices keep falling.

can catalog pictures and documents with titles you recognize. The process also lets you keep track of fixes. If you have repeatable problems, the logging can save a lot of time.

For group DOEs or market chiefs, a

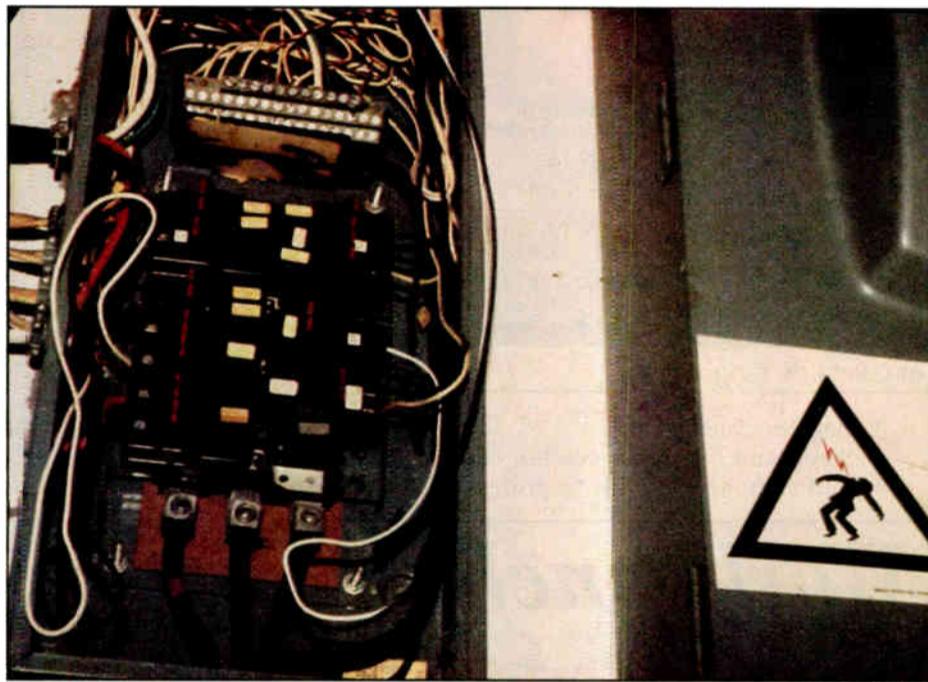


Fig. 1: Zap! The symbol at right says it all.

Damian has used his camera to capture an image sent to a tech support person in the middle of the night, to help convey a problem. After the camera, Damian places a scanner high on his list.

He has scanned important documents into his computer, saved them on a CD-R, and can carry his technical library along with his laptop. If you know how to use your directory tree structure, you

digital picture gallery of each radio station's equipment and layout can speed troubleshooting by phone. You can be looking at the picture of the equipment while you talk your operator through a diagnosing process.

(Editor Paul McLane adds this thought: Digital photos make great companions to the tips you send to *Workbench*. Make sure the resolution is at least 300 dots per inch, which

typically translates to a file size of 250 to 500 KB.)

★ ★ ★

Remember the Wollensak reel-to-reel recorder I mentioned in the Jan. 16 issue?

The students at Chestertown High School in Chestertown, Ind., got quite a chuckle. They have 14 Wollensaks in use, with another dozen as back-ups.

The students in Brent Barber's "Introduction to Radio and Video Production" class use them to record practice PSAs and newscasts. The machines are more than 40 years old, and just like the Energizer Bunny, keep going and going and going.

If you've got a Wollensak or two in your store room, send it Brent's way. Think of the tax deduction.

By the way, just so we don't think Brent's living in the past, he encourages *Workbench* readers to take a virtual tour to see that the rest of the station's equipment isn't as old as the Wollensaks. Visit www.duneland.k12.in.us/chs/wdso/tour1.html

Isn't it great to hear about old equipment being used like this? And who knows, maybe some future engineers will emerge from Brent's classes.

★ ★ ★

Dwight Morgan is the CE for Maranatha Broadcasting in Grand Junction, Colo. Dwight adds a caution to engineers planning tower painting this spring and summer.

Tower painters should never paint anything below the top of the AM tower base insulator.

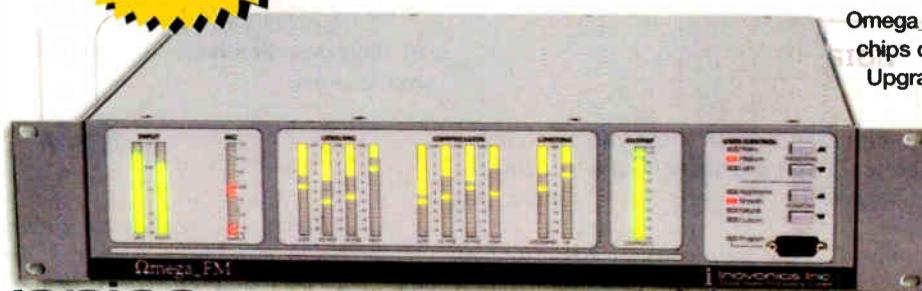
We showed a picture a few months back in which the static arc gap balls had been painted red. Dwight points

See WORKBENCH, page 24 ▶

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Voz Cristiana Reaches Out

Parent Company Christian Vision Uses Varied Channels to Reach Believers and Seekers

by Kenneth D. MacHarg

CALERA DE TANGO, Chile A relatively new radio signal is reaching out across the Americas: Voz Cristiana.



The Voz Cristiana Building in Calera de Tango, Chile

Using a mammoth shortwave facility built by the former Chilean dictator Augusto Pinochet, the station is a newcomer to the shortwave spectrum, but it is also appearing on local stations in the region thanks to its satellite service.

The shortwave outlet has been broadcasting only in Spanish, but is rolling out a Portuguese-language service for Brazil this year. In addition, Voz Cristiana programming is heard on 55 local AM and FM stations in Latin America.

The parent company of the station, Christian Vision, also operates a shortwave radio station, Christian Voice, in Zambia and is developing a large international broadcasting facility in Australia to reach all of Asia and the Pacific.

Global outreach

"Businessman Bob Edmiston started Christian Vision in the United Kingdom in 1988," said Director of Operations Terry Bennett.

"Despite success in the secular world, Bob had a desire to use the gifts God had given him to introduce people to Jesus, especially in areas where the gospel needed to be heard." The organization is funded by profits from Edmiston's business activities.

The result has been the development of the Christian Vision network of radio stations and satellite affiliates carrying Christian programming.

"Africa was the first target, with its vast population and the largely English-speaking audience," said Bennett. "Latin America and Spanish were next. With English and Spanish being among the most widely spoken languages in the world, it makes the broadcasting audience immense.

"Add to this Mandarin, and a large percentage of the population of the world is catered to."

"We are serving a combination of people," said Juan Mark Gallardo, regional manager for Voz Cristiana. "We reach non-Christians who are seekers at the same time that we are helping Christians

sional style of broadcasting that includes music, news, sports, a total blessing without preaching at them."

Using a blend of Bible-based teaching and contemporary Christian music, Christian Voice programs tend sound like many local radio stations.

"Other international broadcasters switch from one language to another to provide for as many different people as possible," said Bennett. "Christian

Vision broadcasts in one language and tries as much as possible to relate to the local audience."

Bennett said station programming is driven by the talent; shows are hosted 24 hours a day.

Favored format

"This is our favored format, and we believe that it works alongside the other styles of Christian radio," he said.

The daily program schedule includes a breakfast program, youth-oriented shows, a men's release, and several programs for

See VOZ CRISTIANA, page 28 ▶



The Voz Cristiana Transmitters

to deepen their faith."

Gallardo said the station reaches out to lapsed churchgoers with "a profes-

Workbench

▶ Continued from page 23

out that the static drain should be galvanized, and with no sharp points. In the case of a low tower concrete pier, the air gap could be compromised if grass is allowed to grow around the tower base.

With that in mind, Dwight suggests an application of weed killer around the base of the tower and inside the tower fence, to keep vegetation minimized.

Dwight cautions that if the tower is being painted with paint-gloves, check to make sure that any tower weep holes aren't left clogged with paint. If you are unfamiliar with the tower crew doing the painting, tell them you will be climbing the tower to inspect the job after they are through, and before final payment is issued.

Try the Brady ID Pal if you need to create lots of professional labels.

If you can borrow a climbing belt, to show you mean business, so much the better. Paying a third party to actually climb the tower and inspect the painting is, of course, the best solution.

By the way, a couple of years ago, a reader suggested in this column that you use a certain company's aviation orange and white paint. It sounded like a great idea. The paint distributor's representatives would visit your site, inspect the tower paint, even recommend a painting contractor. How

could you lose? A number of stations used this free service.

A problem developed among some stations months later when the paint used on the towers started to fade, and fast. This required a complete repainting, in which the company agreed to replace the paint but not cover the labor to correct the problem.

The cost of the paint was miniscule, compared to the overall labor expense. The result was that many stations paid twice for the same job.

Shame on them for not stepping up to the plate. Broadcast engineers (and homeowners, for that matter) have long memories.

This instance brings to mind the need to check the fine print in any painting contract, as well as any warranty. It's probably a good idea to find out where your painting contractor will be getting their paint, too.

★ ★ ★

Looking to make your labeling more professional? Mitch Fine, sales manager for Herman Electronics, is touting a low-priced labeling device, the Brady ID Pal.

It's a hand-held labeler that prints on four materials: nylon, cloth, vinyl black-on-white, polyester clear and polyester white. Most labelers were designed for office use, but the ID Pal is more heavy-duty and uses no ink.

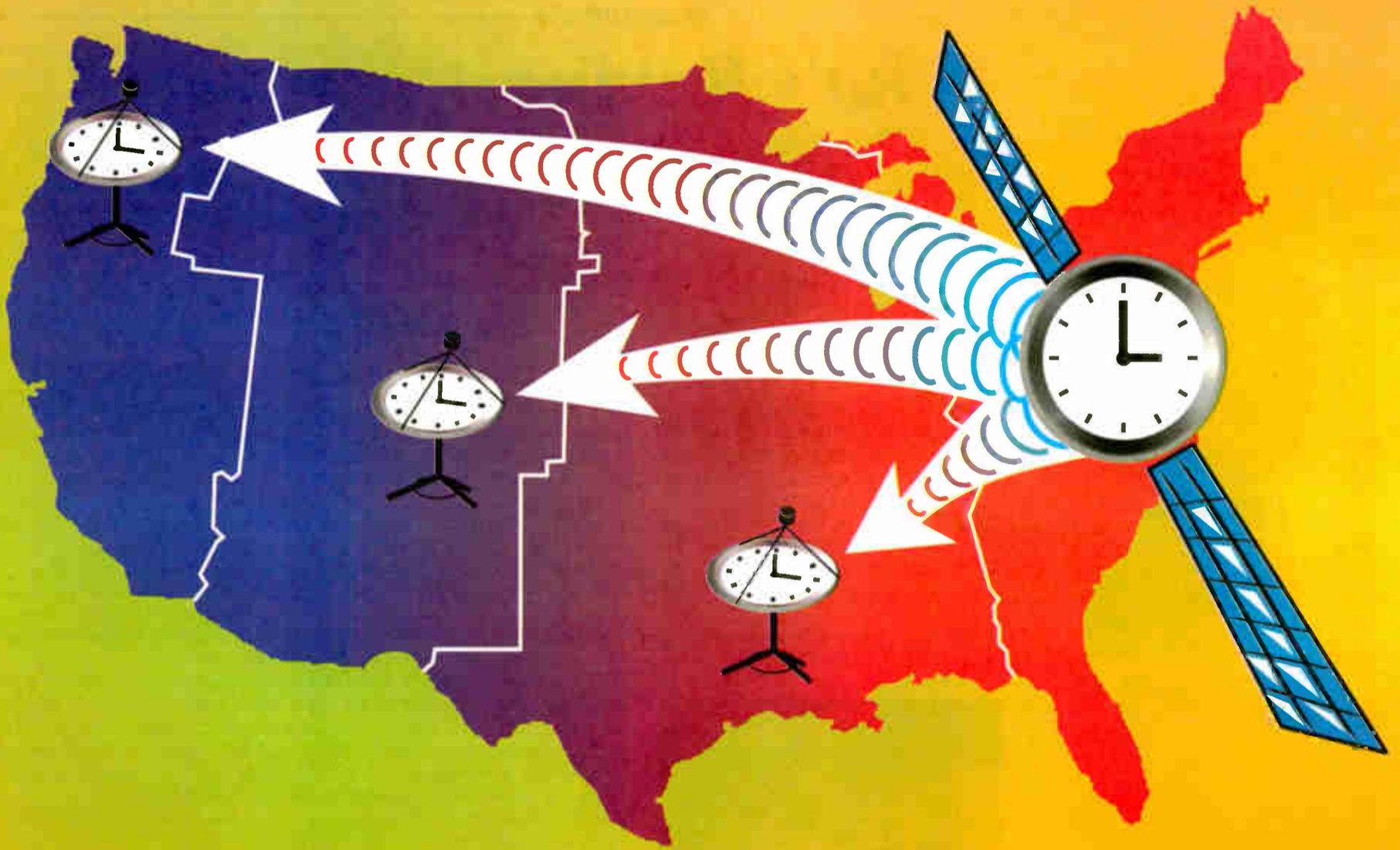
Printing is done using a thermal process, so if the label gets wet, there's no smearing of the printed image. Herman Electronics has the Brady ID Pal priced at \$139. It has a recharger, but also runs on six AA batteries.

The labeler will yield about 3,500 labels with a fresh set of batteries. For more information, go to www.hermanelectronics.com.

★ ★ ★

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) 323-8011.

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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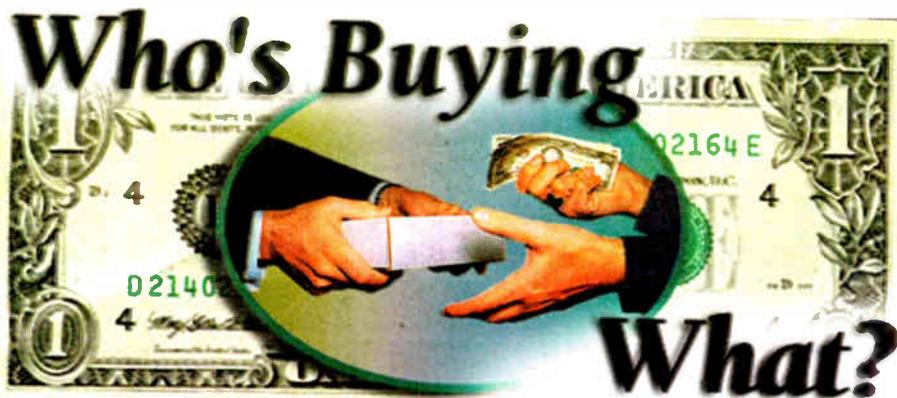
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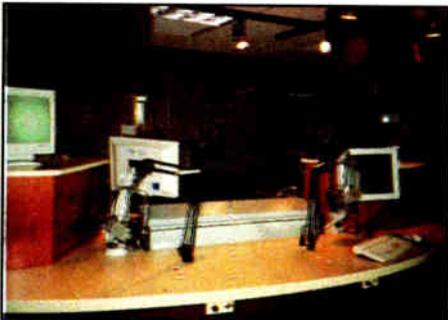
Radio World



RDA Systems Inc. completed an integration project for **Hispanic Broadcasting Corp.** that consisted of the design, wiring and installation of a five-station, 12-studio facility in Los Angeles.

The facility, on the 25th of a new Glendale office building, houses a 30-rack Technical Operations Center, four control rooms, one newsroom and seven production rooms.

Stations involved were FM stations KLVE, KRCD, KRCV and KSCA plus KTNQ(AM).



RDA Systems Inc. completed a project for Hispanic Broadcasting in Los Angeles.

Solid-surface studio furniture for this project was provided by **Mager Systems**. Control rooms are using **Harris Digital AirWave** consoles. A combination of **Mackie 8*32** consoles and **Harris Pacific BMX III** consoles were installed in the remaining 12 studios.

Among the new equipment in the TOC are **ATI** digital distribution amps, **Audioarts 8400** analog DAs and a **SAS 64000** audio router. ...

At the Salt Lake City Olympics, **Sennheiser** had 80 channels of high-end wireless with **NBC Sports** and another 100 or so channels with international broadcasters. The company provided technical assistance to broadcasters on site. **Uwe Satler**, technical director for **Sennheiser USA**, and **Klaus Willemsen** from **Sennheiser Germany** were present to assist in frequency coordination, configuration and trouble-shooting. ...

At the Super Bowl, **James Stoffo** of **Professional Wireless** of Orlando, Fla., used 10 **Sennheiser SKM 5000** microphone/transmitters and two **Sennheiser EM 1046** eight-channel receiver racks for pre-game and halftime entertainment. His equipment joined 1,500 other occupied frequencies on Super Bowl Sunday. Three hundred were other wireless mics in the same band as his SKM 5000s.

"My spectrum analyzer looked like an upside-down comb," Stoffo told **Sennheiser**. "There were so many frequencies being used, I barely had a hole to fit a wireless." ...

CFTR(AM), a Toronto all-news radio station owned by **Rogers Media**, installed **Burli's** newsroom computer system. The station's 50 editors, anchors and reporters use **Burli** to produce 170 hours of live

news each week from a broadcast center downtown and in three city bureaus.

Burli said Canada's five 24-hour news radio stations now use its system to produce their broadcasts. ...

Wheatstone delivered an **SP-8** audio console to **Marshall Space Flight Center's** TV support contractor, **Computer Sciences Corp.**, for use at the facility in Huntsville, Ala.

Marshall transmits activities on **NASA TV** and provides video to the media and educational programming to teachers and the public. The **SP-8** will be the main audio board for center broadcasts and routing audio for internal productions. ...

Computer Concepts Corp. will primarily use **AudioScience** audio cards in its radio station automation systems.

The automation supplier said it will initially use the **AudioScience ASI6114** PCI-bus sound cards in **Maestro 3.2** on-air digital systems. ...



James Stoffo of Professional Wireless and Staff With Sennheiser Wireless Rigs for Super Bowl Entertainment

WAY-FM Media Group in Nashville is using the new **Omnia-4.5fm** processor for its flagship Nashville FM station. **Omnia** also sold its **Omnia-6fm** to **Rádio JB-FM** in Rio de Janeiro and **Rádio 89-FM** in São Paulo, and **Omnia-3fm** processors to **Macaé's Rádio Nova 95-FM** and **Rio's Rádio CIDADE**.

This winter's Super Bowl broadcast was sent to **ESPN Radio** via **ABC's WMVP(AM)** Chicago using new **Telos Zephyr Xstream ISDN** Tranceivers.

Abroad, **Milan, Italy's DJ-TV** processes a satellite music channel with **Omnia-6**. **Virgin Radio** in the United Kingdom is an **Xstream** user. ...

Sound design and music company **Endless Noise** handled music composition, mixing and sound design work for a series of **Hennessy VSOP** radio spots produced for **Kirshenbaum Bond & Partners**. The mixes were mastered at LA's **The Village** recording studios.

On the programming side, **AP Radio** signed about 80 new affiliates over a four-month period in late 2001 and early 2002.

Among them: **Salem's WAVA(FM)** in Washington; two **Mid Atlantic Radio Network** stations in **Fredericksburg, Va.**; **Jefferson Pilot** Denver stations **KJCD(FM)**, **KYGO(FM)** and **KCKK(AM)**; **Clear Channel's KMXP(FM)** in Phoenix; **Cox's WWKA(FM)** in Orlando and **WFYV(FM)** in Jacksonville; three **Jodesha Broadcasting** stations; three **LBSJ Broadcasting** stations in Austin, Texas; and **Cool Radio's KSNO(FM)**, in **Snowmass Village, Colo.** ...

Westwood One and **MarketWatch.com Inc.** renewed their agreement for the production and distribution of **The MarketWatch.com Radio Network**.

Under the three-year deal, **MarketWatch.com** will continue to provide programming for **The MarketWatch.com Radio Network**, which airs on approximately 200 radio stations. ...

Jones Radio Networks said its national overnight country show, "**John Hendricks Overnight**," is heard in 50 radio markets. ... **Jones** also said its evening country show, "**Lia**," can be

heard on **WWKA(AM)** in Orlando. ...

NBG Radio Network signed a contract with **Brickman Concerts Inc.** to provide sales representation and affiliate clearance for the nationally syndicated radio program "**Your Weekend with Jim Brickman**." ...

"*Who's Buying What*" is printed as a service to our readers who are interested in how their peers choose equipment and services. Information is provided by suppliers.

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Voz Cristiana

► Continued from page 24

women, including "La Mujer De Hoy" ("The Woman of Today"), hosted by Norma Pinzón from studios in Miami.

Pinzón was an actress and radio presenter in Colombia and Miami before joining Voz Cristiana when it went on the air three years ago.

That people are responding is evident to Gallardo and his team. "We are receiving about 500 letters a month here, mostly in response to our shortwave broadcasts and the streaming audio on the Internet," he said.

"The local stations that carry our programs also receive response from listeners." The Voz Cristiana Web site is www.vozcristiana.com.

The Voz Cristiana transmission site is at Calera de Tango, about 35 kilometers to the southwest of Santiago de Chile.

"There are eight Harris SW-100 short-

"Christian Vision acquired the site in 1996, and brought up the facilities with services to Latin America, launching officially in 1998," he said.

One of the Florida stations can be heard throughout the southeastern United States at night.

wave transmitters (100 kW) from the 1970s, previously belonging to Radio Nacional de Chile," said Andrew Flynn, chief engineer for Christian Vision.

The site has three TCI 527 directional log-periodic arrays; four TCI 611 four-by-four curtains, two of which are slewable; and a home-built, two-by-one dual-

band bidirectional dipole with slew.

"The log-periodics and home-built antenna are used for our services to Latin America, but it is intended that in the future the curtains will be used for additional services towards Africa and Europe, as well as to Brazil," Flynn said.

At the original Christian Vision shortwave site in Zambia, the organization uses a single Continental 418-E 100 kW transmitter, manufactured in 1994, which is used with a TCI 615 omni-log antenna for English-language services to central and southern Africa.

Down under

"Last year Christian Vision acquired the former Radio Australia facility on the Cox Peninsula near Darwin," Northern Territory, Australia, Flynn said.

The Cox site includes a 300 kW Thomson 2320 transmitter, two 250 kW Thomson 2326s and three 250 kW Collins 821As, as well as seven TCI 611 slewable curtain antennas pointing in an arc across Asia.

"This facility is currently in a ramp-up phase with tentative transmissions taking place to targets throughout Asia. Christian Voice Australia will commence with English services to targets in Asia, with services in Hindi and Mandarin to follow," he said.

While Christian Vision continues to spend considerable energy on its growing number of international shortwave outlets, Gallardo is excited about the increasing presence of Voz Cristiana on local radio stations throughout the Americas, including the United States.

"We are on 55 stations in Central and South America now, and adding more every week," said Gallardo. The station can be heard on local broadcasters in Argentina, Bolivia, Perú, Colombia, Paraguay, the Dominican Republic, Guatemala, Panamá and Venezuela. In addition, Voz Cristiana has added an affiliate in North Carolina and two stations in Miami.

One of the Florida stations, Radio Luz, 1700 kHz, can be heard well throughout the southeastern United States at night.

Many resources

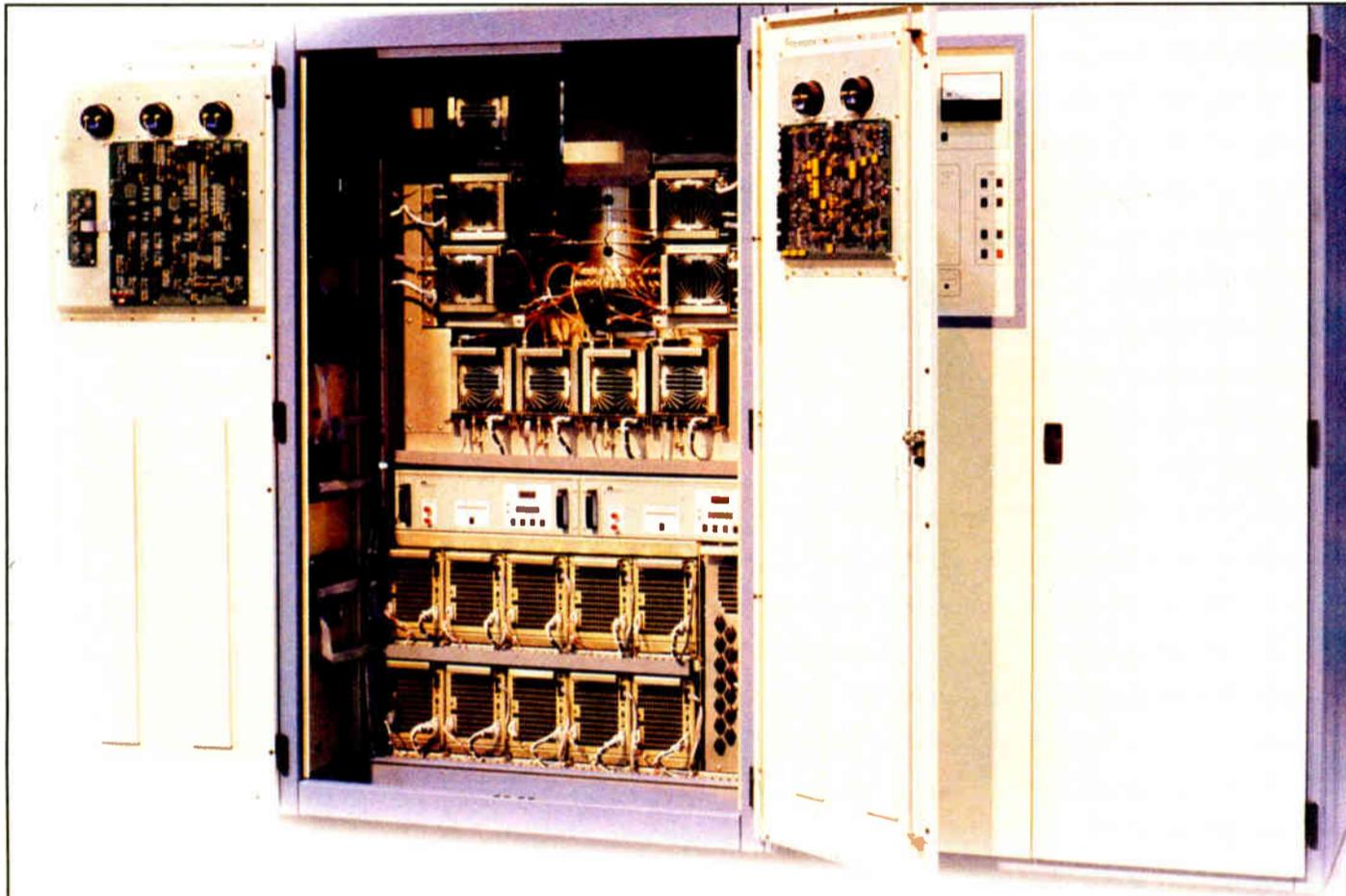
"Miami is an international city," Gallardo said. "For us, there are many resources, including people, who come here from many countries and many Christian leaders who pass through and are available for interviews."

As the Spanish-speaking population continues to grow in the United States, Gallardo is hoping to sign new affiliates across the country.

"Voz Cristiana provides 24-hour radio programming especially for radio stations that want to add a variety of styles and segments to their existing outreach," he said. "We try to be as versatile as we can so that any radio station can use hours at a time or just a short segment of only a few minutes."

The service is free to nonprofit organizations. Commercial stations are charged a monthly fee depending on their monthly revenue and how much of the service they use.

Voz Cristiana offers eight minutes an hour for local commercial or program insertion. With a C-band satellite dish of no less than 2.4 meters and the purchase of a ComStream decoder, any station in the satellite footprint can receive Voz Cristiana signal. 



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FIRST PERSON

Waiting for LPFMs in Ohio

by Daniel Slentz

It was with great anticipation that I followed the FCC's rulemaking for low-power FM. It was also no surprise that big broadcasters tried to stop LPFM dead in its tracks.

As a former commercial broadcaster and staff at one of Ohio's largest PBS TV and radio operations, I certainly could understand concerns for overcrowding, but I sensed that their true concern was about losing audience to yet another station. Two of my old friends are commercial radio broadcasters in Ohio, so I sympathized with this viewpoint.

When the FCC finally began to accept applications, I started to look for non-profit organizations that could target a niche or fill a void. Realizing that there was a growing Hispanic group within my home town of Dover, Ohio, I felt that a station run by Dover Alliance Church could target that group as well as a younger demographic with contemporary Christian music and positive messages.

Separately, I also found an enormous void in radio coverage in my current home, Newcomerstown, about 20 miles south of Dover.

Open window

Once the window for Ohio opened, prior to the third-adjacent-channel rule change, I communicated the LPFM idea to our church pastor and the superintendent of the schools. Both greeted the idea with enthusiasm.

At Dover Alliance Church we applied and waited. We found that another church, in Sugarcreek, had applied for the same frequency.

It bothered me that a church about seven miles from Dover would apply for a frequency in that town. Although it wasn't prohibited by FCC rules, this demonstrated that the rules didn't necessary support a true "local" radio station with local interests.

I could see and understand the other group wanting to target Dover, as it is

part of a larger "twin-city" community along with New Philadelphia. The cities together have a population of about 40,000 while Sugarcreek much smaller.

LPFM started to remind me of the farce of LPTV. With low-power television, it was my understanding that underserved communities were to get stations; in fact the FCC licensed them to Cleveland, Columbus and cities like Kent that were already getting clear signals from major ADI TV areas.

The Newcomerstown Village Schools were an even better fit for LPFM. Here's a community of 3,000 with poor signal coverage and a lot of quiet FM space; the few nearby stations have little to no news, support or advertising in or for Newcomerstown.

Because the school was in the middle of a major request to keep local tax funding in place, the idea of a radio station was a little frightening from the aspect of tax-dollar support. But the superintendent, principal of the high school and guidance councilor (their "grant wiz" and A/V media guru) were excited about the possibilities of a local, school-operated station.

Here was a great opportunity for future communicators, speakers, engineers, even lowly DJs to gain valuable experience, which our county vocational school can't even supply, and a way to benefit the community.

Waiting

I did all the engineering, for which I give the FCC great credit in creating online tools to do the job right. I met all the deadlines; I was thorough in my research and cost estimates for both non-profit groups.

Then I waited. Naturally the third-adjacent rule came up *after* all this was done. To say the least, I was disappointed. The rule is important, but I sure wish it had happened before a single application went to Washington.

The rule wiped out any hopes for Dover getting a frequency. Newcomerstown still

had three good alternate frequencies. Unfortunately I had gone with one of the original eight that appeared to clash with the third-adjacent rule.

I continued to wait for a second window of opportunity to modify our original application but hoped that the FCC would find my frequency choice to be acceptable under the current rules.

The news came! On March 28, notice by the FCC was given that everything was in order and our construction permit granted. Everyone at the school was overjoyed (and I was a little surprised).

More trips to the FCC's Web site and calls to their Washington offices were in order. After a little work and some great customer service by the FCC staff, we applied for call letters. Again the FCC's site proved useful.

At the time of this writing I'm waiting on confirmation of acceptance of the call letters WNHS(LP) for Newcomerstown High School. I've begun contacting Broadcaster's General Store and BSW to get equipment prices, and had opportunities to see most of the gear at the NAB convention in April.

We're looking at equipment costs of about \$28,000 for a "top-notch" LPFM system. My preliminary choices are a Shively three-bay circular antenna with de-icers fed by Andrews 7/8-inch cable. The transmitter would be a Crown FMX100 pre-processed with an Orban Optimod 2200.

Studio gear would include an Audioarts board, EV RE-20 mics, Pioneer dual DJ CD player and additional audio support and automation by Broadcast Software International's Simian system. I'm still nailing down our modulation monitor, EAS gear and transmitter remote control systems.

With the exception of the tower and antenna installation, I'll be heading up the wiring of the transmitter chain and studio. I will recruit every young electronics guru I can find in the school to help terminate connections.

The school already had determined the

exact antenna site and studio location. The teaching staff has addressed the teaching process and started thinking about how to open opportunities to other people within the community to become local broadcasters.

The school guidance councilor (aka "Grant Whiz") has already secured about a quarter of the necessary capital and has many more places to turn for support.

There's a lot of excitement about our little community LPFM station and it continues to grow.

The author is audio/visual services manager for the Longaberger Co., the world's top handmade basket-maker. Its corporate office is in a giant seven-story basket. The company has in-house broadcast services including leaky-FM cable signals.

He also has worked for Armed Forces Radio and Television and for several radio and TV organizations. Reach him at dslentz@longaberger.com.

You
Read
It
Here ...



Fifteen Years Ago

"After more than a year, action on the FCC's Notice of Proposed Rulemaking to allow noncommercial FM translators to be fed by satellite or land-based microwave is still pending, with no timetable for action.

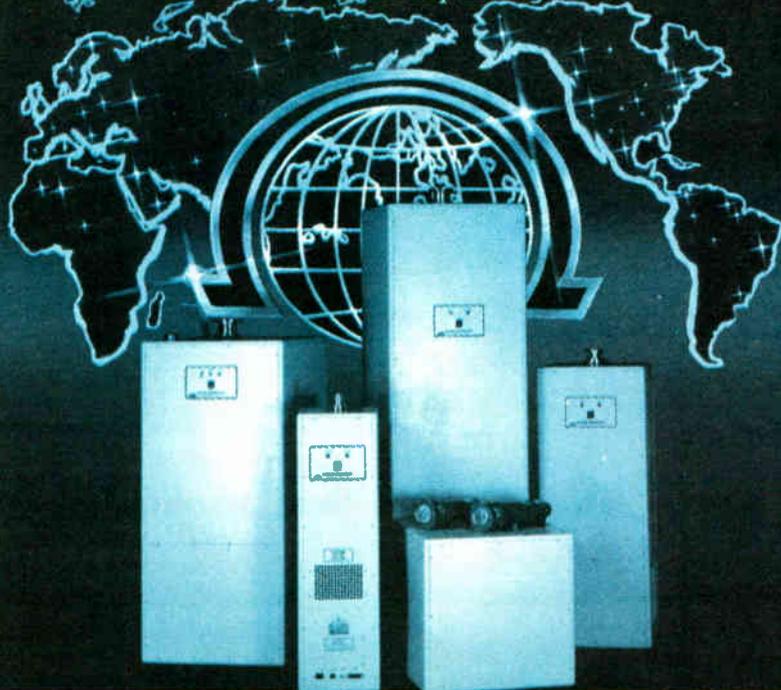
"The rule change plan was released by the FCC in April 1986, in response to several previous requests from Chicago's Moody Bible Institute.

"Many broadcast groups, including the NAB and National Public Radio, oppose the translator feed proposal. Complaints ranged from 'objectionable' interference on Channel 6 to the possibility of a 'de facto' network of translators."

*News Item
June 1, 1987*

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TECH TIPS

Hands-On FM Antenna Repair

by Mark Persons

More radio broadcast engineers are carrying RF spectrum analyzers these days. Analyzers are no longer the domain of television engineers and laboratories.

My analyzer is an IFR A7550 which, I understand, is no longer in production. It is, however, the favorite of my friends who do radio engineering.

June of 1988 is when I mustered up the courage and about \$10,000 to purchase the unit. Once I learned how to run it, the spectrum analyzer quickly became one of the most used pieces of test equipment I own.

On the bridge

A friend, Jim Stanley, clued me in on return loss bridges. These marvelous three-port devices can literally paint a VSWR picture on the spectrum analyzer's display.

**Sure enough,
the crew opened that
one line section and
found a burned-out
center conductor.**

To run one, connect the spectrum analyzer's tracking generator to one port, the spectrum analyzer's input to another port and an antenna or some other load to the sample port. When the sample port sees a 50-ohm load with no reactance, the "return loss" is high, causing the displayed signal to be low on the screen. Conversely, when the load is an open or short, the displayed signal is higher up on the screen.

You actually use a short circuit as a reference. All readings are taken in dB below this level. When looking at an antenna that is well-matched at the center frequency, you see a dip in the response at the center of the screen and the trace rises on both ends. It is the Voltage Standing Wave Ratio, or VSWR, response curves that you see in antenna specification sheets.

Using the return loss bridge, you easily can tune antennas and instantly see the change in the quality of the match at the frequency of interest and at the surrounding frequencies. It is the kind of tool that everyone wanted years ago when the technology wasn't there to produce one.

I recently performed troubleshooting on a 10-bay ERI FM rototiller antenna using my spectrum analyzer and return loss bridge. The transmitter was putting 20 kW into the transmission line and 1 kW was reflected. This represents a return loss of 13 dB.

The VSWR was 1.6:1. Normal reflect-

ed power, in this installation, is 100 watts or 33 dB of return loss for a VSWR of 1.05:1. The spectrum analyzer and return loss bridge verified the wattmeter and VSWR measurements.

A tower crew did a visual inspection of the antenna and it revealed nothing. There wasn't even an air leak.

The spectrum analyzer and return loss bridge puts less than 1 watt of RF energy into the antenna, so it was safe for a tower climber to be near the antenna during testing. I had one tower climber put his hands on the bottom bay of the antenna and saw the return loss change. He

climbed up and did the same on the next bay up and so on until the eighth bay, where there was no change when he touched the bay.

Savings

The same was true of the ninth and tenth bays. If only one bay showed no change, then I would have suspected that particular bay. In this case, the problem pointed to the inter-bay line between bays 7 and 8.

Sure enough, the crew opened that one line section and found a burned-out center conductor. It probably happened from

a lightning strike.

They lowered the line to the ground, where I repaired the center conductor and cleaned the section. They had it reinstalled in short order and the antenna was back to normal.

This measurement method took the guesswork out of the troubleshooting. It saved the client \$1,000 or more in tower climber costs and a half-day or more of off air time.

As it turned out, the station was off the air for only a few hours for the complete troubleshooting and repair.

Mark Persons, WØMH, is certified by the Society of Broadcast Engineers as a Professional Broadcast Engineer with more than 30 years experience. He has written numerous articles for Radio World over the years. His Web site is www.mwpersons.com.

Broadcast Electronics has developed a new IBOC signal generator that eliminates the need for a second exciter in many IBOC FM upgrades.

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'JazzSet' Explores High-Res Audio

by Paul J. McLane

This month, the NPR program "JazzSet With Dee Dee Bridgewater" will feature a recording of the Count Basie Orchestra at the 1,380-seat University of Michigan Power Center in Ann Arbor. The program will be aired by 140 stations to approximately 200,000 listeners.

Recording Engineer Mike Pappas performed two mixes: a stereo mix for broadcast on "JazzSet" and a six-channel surround mix to demonstrate high-resolution Sony Direct Stream Digital, or DSD, recording technology. The stereo recording also used DSD.

The performance was part of a tribute to Duke Ellington hosted by the university's jazz program. It marked the first time Ellington's "Night Creature" has been captured digitally with full orchestration.

Radio World spoke with Pappas about this project, which involved unusual use of digital technology for a radio application. Pappas also is chief engineer at KUVU(FM) in Denver.

RW: You recorded this both in conventional stereo and in Surround using Direct Stream Digital. Why?

Pappas: The conventional stereo mix is the primary focus. The six-channel Surround aspect was a technology demonstration. It's my feeling that we broadcasters had better be looking at future technologies if we are going to effectively compete in the marketplace.

I read that people were buying the new high-resolution formats — DVD-A and SACD — primarily for the Surround aspect. The high-res aspect placed third in the buying decision. So we broadcasters had better start getting a clue about this technology, even if there currently isn't a broadcast delivery technology. Do you want to be caught off guard? I don't.

Direct Stream Digital is the Sony high-res format. It is a single-bit Delta Sigma system that samples at 64 times the compact disk sample frequency of 44.1 kHz. Its sample frequency is 2.8 MHz and it offers 100+ kHz bandwidth and a signal-to-noise ratio of greater than 115 dB.

The problem with single-bit systems in the past has been noise. Sony, in cooperation with Philips, developed a method of using noise-shaping to place the noise artifacts that occur outside of the audio band.

DSD solves all of the problems that PCM has. It does this by skipping the decimation process that PCM digital uses. In virtually all PCM converters, the audio is sampled as single-bit. From there it is run through a decimation filter with assigns an absolute value to it. The decimation process is where things go wrong in PCM.

Problems of PCMs include inverted distortion — distortion increases at lower levels which is just the opposite way we hear things — as well as twos conversion, when you go from a one with as many zeros as you have bits, to zero with as many ones as you have bits. When this switch happens — and it happens thousands of times every second — it generates all kind of glitches and contaminates the power supplies inside of the converter chips, and it gets into everything — and the fact that any time you have levels that are less than full-scale, your resolution decreases.

Even with the "high-res" digital formats, you still need brick wall anti-aliasing filters, and the DVD-A format's 96

kHz/24 bit sampling rate only gets you a 48 kHz bandwidth and not much better than 110 dB signal-to-noise ratio. And PCM converter technology is not making great strides to meet the promise of 24-bit's 144 dB signal-to-noise.

hybrid version that is fully backward-compatible with almost 1 billion existing legacy CD players.

Also, since it samples at an even multiple of the existing CD format, we can use the Sony-developed Super Bit Mapping tech-



University of Michigan's 'JazzSet,' featuring the Count Basie Orchestra, was recorded for broadcast on 140 NPR stations and as an experimental six-channel Surround mix.

On the DSD front, we get around all of these problems by just wanting to know: "Is the signal going up or down — Delta Sigma — compared to the previous sample?" Very simple and very music-friendly.

DSD has a consumer delivery format called Super Audio Compact Disk, or SACD, which, unlike DVD-A, offers a

nology to take the DSD and convert it to 44.1 kHz at either 16 or 24 bits without having to do math tricks. All of the EMM Labs converters we use have this SBM output available for use with our DAT machines and digital plant. Any way you try to slice it, the DVD-A 96 kHz sampling frequency doesn't evenly divide into 44.1 kHz.

GUEST COMMENTARY

DAB Needs a Killer Application

While the United States radio industry considers IBOC digital radio, terrestrial DAB is already a reality in some countries. But even though the technology as used abroad may provide improved sound quality, consumer acceptance is lagging.

Sylvie Scolan, DAB product manager for Harris Broadcast Europe, argues that some features beyond audio quality might be the boost DAB needs to break through in those markets.

by Sylvie Scolan

It is the classic chicken-and-egg situation.

Low sales of digital radio receivers mean manufacturers are reluctant to invest in further research and development, and there is no incentive to develop a low-cost chipset, so prices remain high. And while prices remain high, consumers will not buy digital radio receivers, so volumes remain low.

At the equivalent of \$400 to \$500, the DAB receiver is 10 times the price of its analog FM equivalent. So how can consumers be persuaded to buy? And how, in turn, will broadcasters recover their investment in digital radio infrastructure through new services and revenue streams?

New workgroup

DAB is ideally suited to added-value functionality because it is, in essence, a broadcast datastream with a single carrier — the DAB frame — of 1,715 kbps. Within that bandwidth, it is up to the broadcaster how to allocate data — at rates from as low as 8 kbps up to 384 kbps.

Some of the data will be added functionality to make the radio channel more attractive — displaying the name of the music and performer, for instance, or even a picture of the album cover — but some will be independent data unrelated to conventional radio.

Already there are experimental distance-learning services,

which at times use the whole capacity for data transfer to the student. In several countries, including the United Kingdom, Canada and Sweden, IP streaming services are broadcast and a new workgroup was recently established to develop standards for this area.

The most obvious and direct way of using the additional data capacity is to give the listener a distinctly better experience than the equivalent analog radio.

Program guides

The Association of Digital Radio Enhanced Platforms and Technologies, or ADEPT, is developing tools and functionality in this arena.

Just as digital television needs an electronic program guide to help the viewer find the required program, so too DAB can support an EPG, suggests the ADEPT project. The EPG carries a description of the content of each program, so the user can plan to listen to or to record a particular program.

EPGs are being transmitted in the United Kingdom and Germany, and at this writing WorldDAB is close to agreeing on a final specification for such services.

ADEPT also is working on what it calls Broadcast Manager Storage, or BMS. This will allow the receiver to be customized to the requirements of the individual user, from establishing a favorite channel list to automatic recording.

Panasonic already is implementing the necessary hooks for this in the VAPI DAB hardware platform.

In many ways, an extension of BMS is the TopNews "audio anytime" service, which broadcasts MP3 files in a data channel to be stored in the receiver. Typically, these will be short items, such as weather forecasts, news headlines or sport scores.

The user will set up his or her specific requirements — only local weather, for example, or just cricket reports — and can hear

See DAB, page 34 ►



Now why did we go to all of the hassle recording this in DSD? Simply because it sounds better than PCM even when run through an FM chain with its 15 kHz bandwidth limitation. It even makes better-sounding 44.1 than using stock PCM converters.

RW: Who paid for the cost of the special digital gear to do this?

Pappas: I own all of the special gear necessary. In fact, KUVU and I have been recording all of our live performances in DSD since 1999.

RW: Why should Radio World readers be interested in this experiment? Expand on your comments about the possibilities for high-resolution recording.

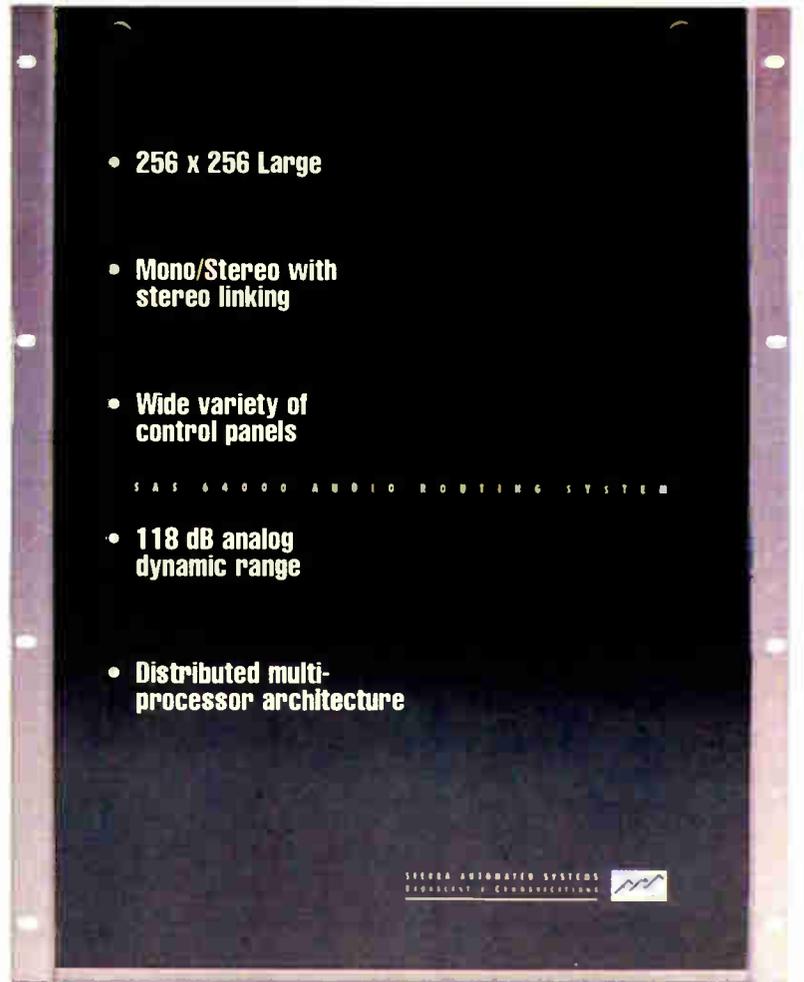
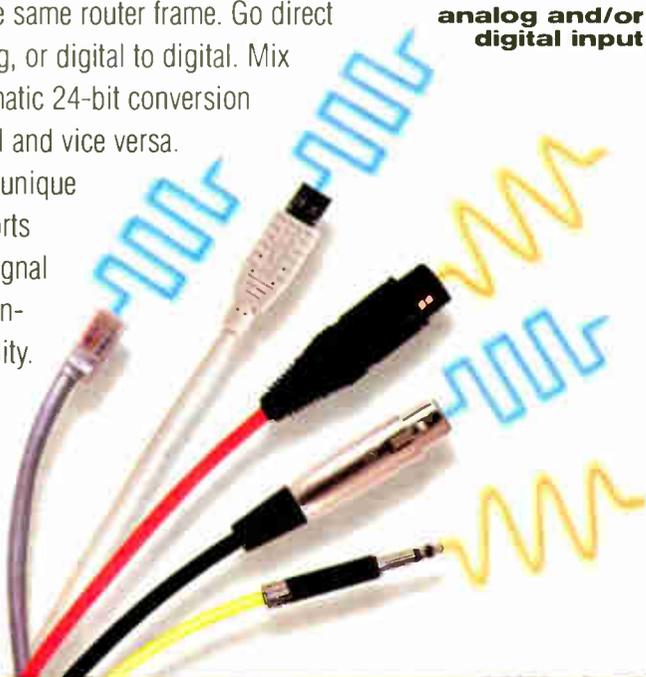
Pappas: This remote will be shipped to NPR affiliates nationwide. "JazzSet" is one of the hottest jazz programs that NPR distributes. They have a huge commitment

See HIGH-RES, page 34 ►

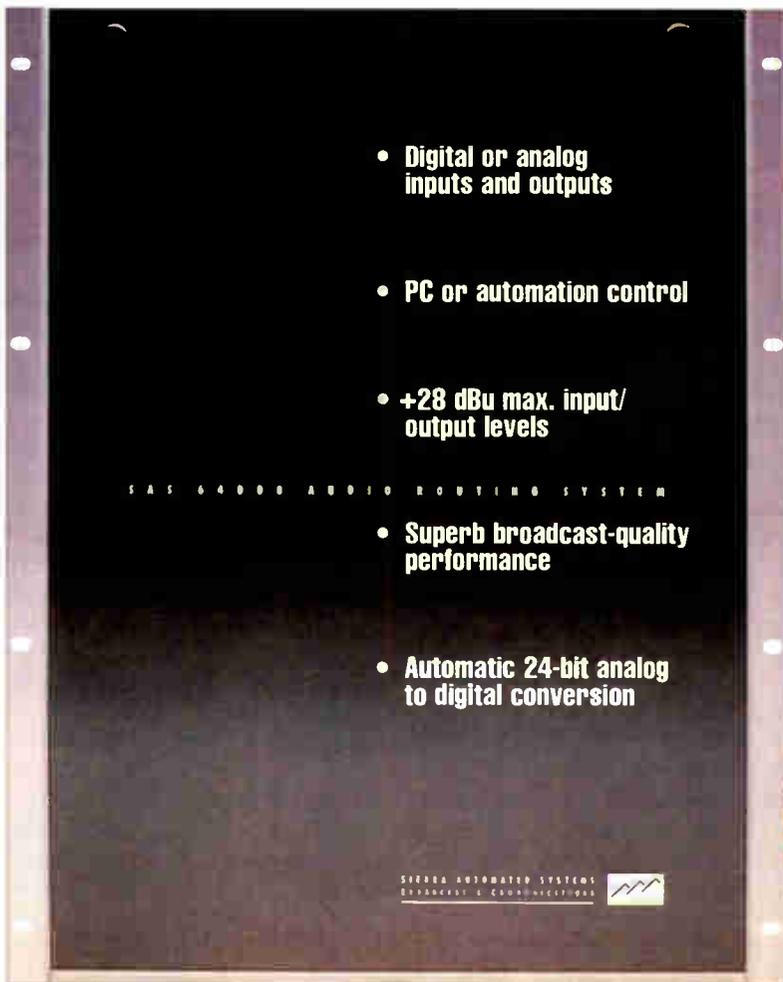
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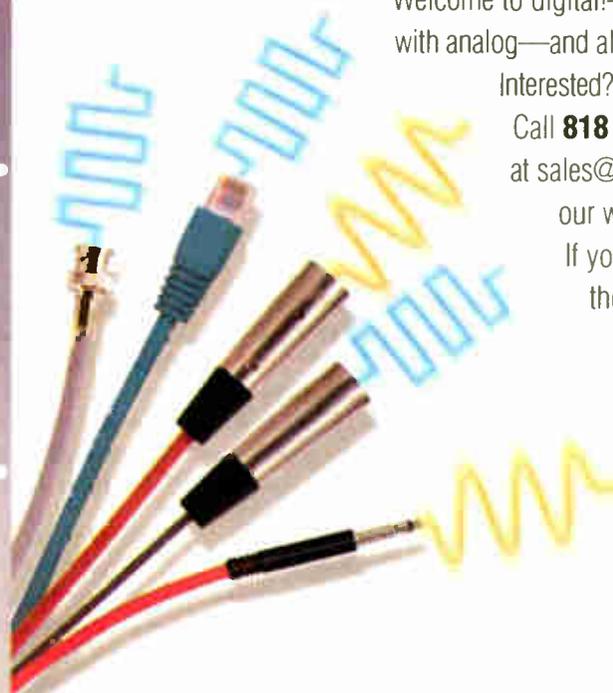
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High-Res

► Continued from page 32

to making the best recordings possible, and they spent a lot of time and effort to send me out and make this recording for them.

Second, we need to look at high-res formats as broadcasters. IBOC is just around the corner and I personally would like a vault of high-res sessions to feed our listeners when we put it on the air — and at KUVO we are working with Nautel to beta-test their IBOC exciter when it becomes available.

We need to be able to compete for listeners not just from other broadcasters but other delivery formats. The sat guys, XM and Sirius, are pushing the better-quality aspect, of their product very hard, and we terrestrial guys had better have an answer. I think it's high-res and IBOC.

Third, Surround may become the future of broadcast. Who is to say it won't? If consumers demand it, someone will figure out a way to deliver it and we broadcasters had better have a clue about it.

Also, the manufactures always give you press folks all of these great propaganda releases about their latest wiz-bang products but they don't show you how people are using them. Here is a great example of lots of cutting-edge gear in action.

RW: Talk about the equipment used and how you accomplished the project technically.

Pappas: The heart of this project is the Genex Research GX-8500 multi format recorder. The Genex is the "Vegimatic" of digital recorders. It will record any digital format extant: 44.1, 48, 88.2, 96, 176.4, 192 at up to 24 bits and DSD. It records to hard disks or MO disks and records eight channels at a time. The machine is solid and reliable

We are using EMM Labs/Ed Meitner converters to take analog signals from the mics and convert it into DSD. Ed's converters are really great-sounding and he understands what happens at the point where analog becomes bits like no one I have ever met.

Of course the most important part of any recording chain is the microphones. For this project I used a wide variety of Neumann and Sennheiser microphones.

So how did we put this all together?

The conventional stereo mix was created from a matched pair of Neumann SKM-140 condenser mics. Highlight mics from Neumann and Sennheiser were used to "help" players that may need a little extra support. A Neumann stereo dummy head mic named Fritz was used to provide the "audience."

For the Surround's Left/Center/Right channel, we used Sennheiser MKH-800 50 kHz multi pattern microphones. For Height, we used the Neumann M-150 tube mic; for Rear

Fritz Plays a Role

After the "JazzSet" recording, Sennheiser and Neumann issued a press release detailing the use of their microphones in the project.

The manufacturer said Pappas captured the stereo recording with a coincident stereo pair of miniature Neumann SKM 140s augmented by a number of highlight microphones. Important instruments were treated with small-diaphragm Neumann KM 184s, large-diaphragm Neumann TLM 103s, omni-directional Sennheiser MKH 20s or pressure-gradient Sennheiser MKH 40s depending on the situation.

Instrumental soloists received a Neumann U 87Ai, and vocalists received a Neumann KMS 105 live vocal condenser.

To record the University of Michigan Symphony, Pappas arranged a pair of Neumann KM 84s in ORTF. "It's like a 1950's film noir soundtrack," Pappas told Sennheiser. "You can see the black-and-white film stock and shots of mysterious cars driving down wet streets — it's exactly what I mixed it for."

Pappas captured the audience and room ambience using the Neumann KU 100. Known as "Fritz," the KU 100 is Neumann's binaural dummy head, which typically captures three-dimensional information for reproduction in headphones. Pappas placed Fritz nine rows back and 25 feet in the air, facing the head towards the back wall to attenuate the direct sound from the stage and to accentuate the reverb.

The surround mix used three extended-frequency Sennheiser MKH 800s for the left, center and right channels. A Neumann M 150 at 25 feet served as a height microphone, and Fritz's outputs were routed to the rear channels.

The dimensional characteristic of the Fritz-captured reverb impressed the engineers.

"I played it for a bunch of colleagues at KUVO," Pappas told Sennheiser. "When it was over, I had to scrape their jaws up off the floor and put them back in their heads."



Mike Pappas works the recording board.

Left/Right, we split the feed from the Neumann stereo dummy head mic. (See sidebar.)

All mics were preamplified on stage using Grace Design 801R remote-controlled microphone preamps. The amplified Surround mics went directly into the EMM Labs converters.

The stereo mix was mixed on a Mackie 8*Bus mixer and then converted to DSD. All of the microphone cables were custom-built by Cardas Audio Ltd. I used DAS Monitors in the control room and intercom by Telex/RTS to talk to my soloist spotters and stage techs.

RW: Now that the project is complete, what did you learn that might be of use to radio engineers on similar projects in the future?

Pappas: All of the hours I spent and hundreds of e-mails that were sent to all of the parties at the preplanning stage of this project really paid off. When you are a thousand miles from your plant, you have to make sure you have covered yourself for any contingency imaginable.

I think I could have done open-heart surgery with all of the gear that I brought along as extra. Having a "game plan" as to how you are going to get your gear there in one piece (thanks, FedEx) and making sure you have everything you need is a good place to start.

It also pays to check out the local radio station and see if they are willing to help keep a fellow broadcaster out of trouble. I was fortunate to be able to tap into the University of Michigan radio station WEMU staff for assistance. Linda Yohn, James Cornish and Nik Thompson from WEMU graciously pitched in and helped out with this project from the planning stages to loading up the van at the end of the show.

Christopher Konovaliv, the audio coordinator at the U of M, heard about the Basie session from Dennis Wilson, professor at the School of Music, and showed up to help out. He proved to be invaluable when I ran into a glitch and need some help that was outside of my area of expertise.

Coordinating with the staff at the U of M Power Center made the load in and setup smooth. I had the house PA system input list in an Excel spreadsheet two weeks before the event. I was able to work with the front-of-house mixer, Roger Arnett, to determine what mics we were going to share and what their assignments were going to be in the snakes and splitters. This saved hours of time that we didn't have on site.

I try to enroll the equipment manufacturers in these types of projects. For example, Rob Treloar at Sennheiser/Neumann suggested I try the Neumann stereo dummy head microphone for the audience pickup and arranging to get me one to use. I can't tell you how glad I am that I followed his suggestion, the mic sounded great.

All of my critical gear vendors knew what I was doing, why it was important and what the dates were. This is a real confidence-booster when you are in a "only one shot at getting it right" situation.

DAB

► Continued from page 32

the latest information instantly on demand.

This is likely to be a subscription service, giving the broadcaster a new revenue stream for relatively little extra effort, as the information will be prepared for normal broadcasts anyway. This facility is already implemented in the Woodstock DAB receiver from Blaupunkt.

Radio is an ideal medium for travel information, not least because it can be readily received on the move: a driver needs to know before getting stuck in a traffic jam. Automated switching to traffic reports is one of the most appreciated functions of RDS in analog radio.

Two services are proposed for DAB: the Traffic Message Channel (TMC) and the Transport Protocol Experts Group (TPEG) formats. The technical difference between them is that TMC is a low-bitrate service, carried in the fast information channel, whereas TPEG is carried in the Transport Data Channel, giving it significantly more bandwidth.

TMC is designed to give headline information for highways and main roads. In conjunction with a GSM receiver or a navigation system, it will warn the driver of trouble ahead on a motorway journey.

Commercial proposition

Because of its greater data capacity, TPEG can provide information in more detail, covering more roads. It can also interact closely with in-car satellite navigation systems, proposing an alternative route around the trouble spots.

TPEG could be extended to other modes of transport, covering buses and trains for instance, giving the user accurate advice on the best means of transport as well as the best route.

TMC is defined within the DAB platform and is on the air in France and Germany under the service name Diamond.

The final specifications of TPEG are being undertaken by the European Broadcast Union (EBU) as the same technology is applicable to DVB, but TPEG services are on air in the United Kingdom, Sweden and Germany.

TPEG is an excellent commercial proposition for the broadcaster, who could be expected to charge a healthy subscription to drivers who want to reduce journey times and the frustration of being stuck in traffic.

These are just some of the services that can be added to DAB to make it more immediately attractive to consumers, raising additional revenues for broadcasters.

Everyone involved, from broadcasters to consumer electronics companies, needs to maintain the pressure to develop an innovative and attractive DAB service, which is much more than just digital radio.

Sylvie Scolan is DAB product manager for Harris Broadcast Europe.

For information on TPEG, visit www.tpeg.org. Information on ADEPT is at www.adept.eu.com.

Information on other DAB applications is available at www.worlddab.org.

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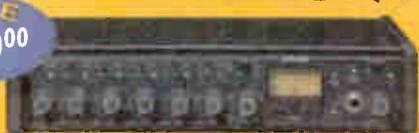
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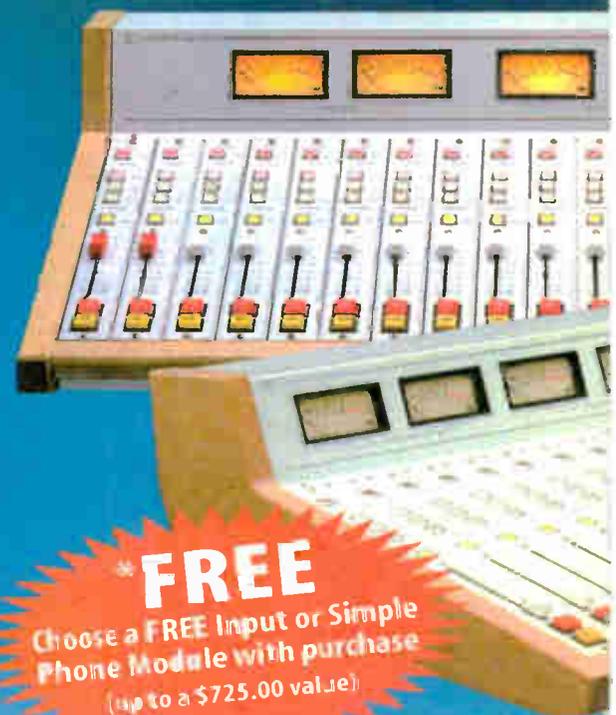
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MANAGEMENT CORNER

How to Prove Effectiveness Of Ad Copy

by Vincent M. Ditingo

Why did radio face such an uphill battle in 2001? The answer lies not only in a sluggish advertising economy, but in the inability of many radio sales managers to substantiate the effectiveness of radio ad copy recall, especially when compared to television.

Certainly, the disappearance of dot-coms, consolidation in other industries and fluctuations in consumer confidence contributed to a fairly unstable advertising landscape during the past 18 months.

Lack of research

According to many radio salespeople, however, there still was a lack of specific marketing research information, particularly as it relates to the structure and creativity of ad copy and its ultimate effect on listeners.

Study results reveal that radio ads are capable of achieving significant recall even when listeners are distracted.

For example, do radio ads lead to the recall of copy points and brand names among consumers?

Because advertisers measure research value for service industries such as radio by results, a more detailed and organized documentation of radio's proven track record for moving product needs to be presented to the advertising community.

That task is the mission of the new Radio Advertising Effectiveness Laboratory.

The RAEL, a joint effort between the Radio Advertising Bureau and Arbitron, with funding from several radio companies including Interep, recently published the findings of its first major project, a compendium of some 50 existing studies of radio's effectiveness as an ad medium.

See AD COPY, page 46 ▶

Safety First Is Good Business

by Ken R.

Some accidents are more serious than others.

If someone slips on the ice in your station parking lot and twists an ankle, it is usually a minor problem.

But if an employee or even a contract engineer falls off your tower or is electrocuted at your station, it triggers a long line of unpleasant consequences beyond the human suffering.

There are potential fines, time-consuming and expensive lawsuits and the possibility of additional targeted inspections from the Occupational Safety and Health Administration.

Anticipate danger

Mark Perriello is director of safety and health for Viacom Inc., which owns more than 180 radio stations and 34 TV stations including CBS/Infinity. It is his job to anticipate dangerous situations at the company's facilities.

"If you look at the Bureau of Labor statistics for all industries in 1999, about 6.5 percent of the population at work had some type of injury," Perriello said. "Radio is not as risky as construction sites, but it's probably a 5 on a scale of 10."

Perriello cited electricity as one of the biggest safety concerns in broadcast and believes strongly that people should be trained for the specific voltages they will be working with.



A crew from WTTG(TV), Washington ran its van mast into a 230,000-volt circuit line in 2000. The mast transferred 115,000 volts to the ground, lifted rocks and shattered the sidewalk and curbing within seconds. The photographer had a camera on his shoulder, tethered to the truck with multiconductor cable. It exploded. He has not returned to work two years later due to his injuries.

For example, he said, many think it's safe to work on an electrical system if the power is shut off. But turning off the power is not sufficient.

"They are wrong because anyone could walk into that maintenance area and turn it on by accident," he said.

Safety measures such as "lockout/tagout" devices are available to ensure working engineer's safety at the station.

"This means power is shut down and

a lock is put onto the breaker or switch so someone can't turn it on accidentally while the engineer is working."

Other areas

Perriello also studies areas not designed for human occupancy. This can include wiring trenches, equipment closets or spaces under floorboards and between walls.

"In those cases, OSHA has a 'confined' See OSHA, page 42 ▶



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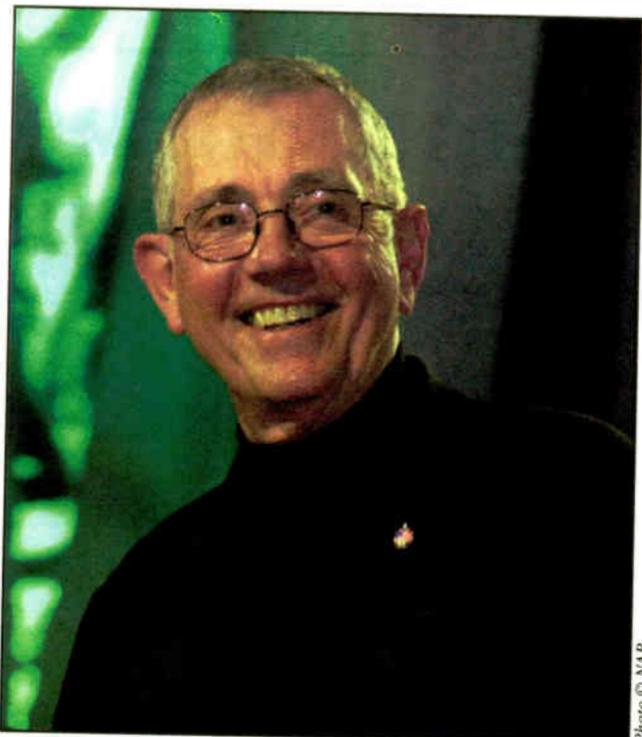
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PHOTO GALLERY



Crystal Radio Award Winners. Top, from left: John Davison, KABC(AM), Los Angeles; Cal Hall, WJON(AM), St. Cloud, Minn.; Bob Breck, KNCO(AM), Grass Valley, Calif.; Bruce Agler, KWJJ(FM), Portland, Ore. Bottom: Bill McElveen, WTCB(FM), Columbia, S.C.; Sandy Collins, WLQT(FM), Dayton, Ohio; Donna Renae, KIRO(AM), Seattle; Susan Nguyen, KPAM(AM), Portland, Ore.; Drew Horowitz, WTMX(FM), Chicago. Also honored was KUDL(FM), Kansas City.



Keith Reinhard of DDB Worldwide Communications Group spoke about taste and decency in advertising. While critical of those who would regulate them, he said radio airs much that he's embarrassed to share with his teenagers.



In the AETA Audio booth, talk host Bob Enyart conducts a spirited debate with Harrison Chastang, news director of KPOO(FM) in San Francisco.



Sam Donaldson, Lowry Mays, Michael Powell and Eddie Fritts



Attendees rest before hitting the expanded LVCC show floor.

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OSHA

► Continued from page 39
space' standard," he said. "Before someone goes into that area, he or she must test the air, ventilate the area and again, make sure no power can be turned on in that space while someone is in there."

While it is impossible to anticipate every contingency, OSHA has developed preparedness procedures for most weather, fire and medical situations. These rules do not have to be part of the station public inspection file, but employees should be familiar with them.

Control issues

"What do you do in these cases?" said Perriello. "Who is in control? Which critical employees will stay on the air at the station and which will vacate? And how do you keep the remaining people safe and out of the way of emergency workers?"

Perriello said about 80 percent of the safety rules that apply to radio stations could also apply to any business. It's the other 20 percent that are so important.

"At a radio station, one might encounter lead solder, isopropyl alcohol or paint," Perriello said. "There could be flammable materials such as acetone near where a spark of static could start a fire. And people also need to know the possible reproductive dangers of inhaling any chemicals."

While safety laws vary slightly among states, most jurisdictions have a "right to know" law, according to Perriello, which means employees must be told how hazardous or reactive materials workplace materials may be.

"It is up to the employer to collect the names of these substances, identify them and receive and disseminate information from suppliers," he said.

If someone has to make an emergency trip to the hospital, it is helpful to know what he or she was exposed to.

"People buy things like lubricants or paint, use a portion and store the rest," Perriello said. "This can not only be a hazard but a disposal problem as well. Those Styrofoam signs from a remote broadcast will release soot and carbon

monoxide when burned, for example."

Fire suppression is a big item in any facility; radio, though, faces the additional danger of people falling from towers and other structures.

Perriello said many people are guilty of thinking that accidents only happen to others.

"A guy will say, 'I've been working on towers for 10 years and I haven't fallen yet.' How dumb is that?" said Perriello.

"If you're asking someone to climb higher than six feet, even if he or she is not one of your employees, that person must follow OSHA guidelines, because if it occurs on station property, the owner could be held accountable," said Perriello.

"Last year in North Carolina, six or eight people died falling from towers, and now the state has initiated a standard that could be adopted throughout the country for tower work," he said.

Tower of power

While Perriello is concerned with the arena of radio station safety, Mark Bell, president of Safety Awareness/Certification Associates, concentrates on electronic newsgathering equipment — specifically ENG trucks with telescoping masts.

"The OSHA codes are built on testimony of witnesses' to accidents and autopsy reports. The codes that are in place are good and it's really more a matter of making stations train all their employees better," Bell said.

"Electrocution is a very cruel, vicious thing to happen to anyone. The consequences of making one wrong move can change lives dramatically in milliseconds."

Height is not the only factor to consider.

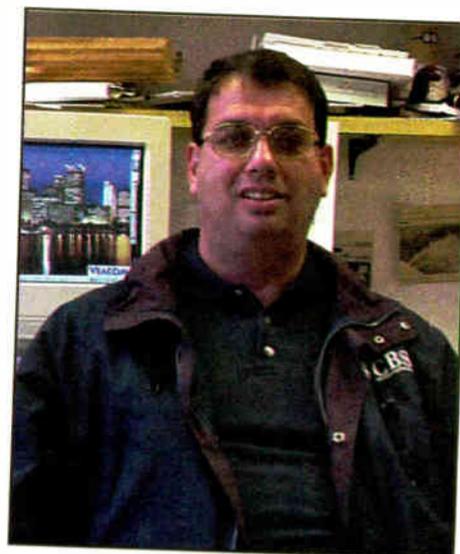
"It's the mast height radius perimeter. If a mast is 40 feet high, the liability area includes the whole area where that tower could fall. It's the station's

liability, and perhaps the operator's liability."

Bell believes OSHA uses monetary fines as a way of controlling behavior. "Their job is to keep increasing the



Mark Bell conducts a small group safety awareness seminar.



Mark Perriello is director of safety and health for Viacom Inc.

training manual and give it to everyone, having them sign a document saying they read it."

Another factor of which stations should be aware is how OSHA looks at consolidation in the radio industry.

"Let's say your company has stations in multiple markets and a workplace accident occurs in one city," Perriello said. "If the accident happens



The AV Panel of the WTTG Van After Power Line Contact

Bell said many manufacturers do an excellent job of preparing educational materials. He named Will-Burt as one company active in this area.

"But for some reason, all of the people responsible for operating those vehicles don't always get this information," Bell said. "Stations should take the manufacturer's materials, use them to prepare a comprehensive

in another city, OSHA could look at it as a 'repeat' incident for your company. Even if the manager in the second city is unaware of the first incident, he could be liable for repeat inspections and larger fines," said Perriello.

Ken R. is a former broadcaster whose only on-the-job disaster was when he aired a record that the owner's wife hated. 🌐

Resources

NAB offers the ninth edition of "The NAB Engineering Handbook" on its Web site, www.nab.org. It has sections devoted to electrical shock, tower safety, OSHA rules and disaster management. The site also offers several "lockout/tagout" safety signs for purchase.

At www.sbe.org, the SBE provides radio-relevant safety links including Bell's site, www.engsafety.com. Another SBE link is to www.lightningsafety.com, the National Lightning Safety Institute site.

The National Association of Tower Erectors, at www.natehome.com, is a nonprofit trade group that provides specialized tower safety standards and works to prevent price collusion among its 500 members. NATE is dedicated to tower loss control.

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Daily Radio Feature Encourages Prayer for America

"American Inspirations" is a new radio program that encourages listeners to pray for the president and the nation.

The daily one-minute feature, which highlights the role played by people of faith in the founding and building of the United States, airs on approximately 1,000 stations.

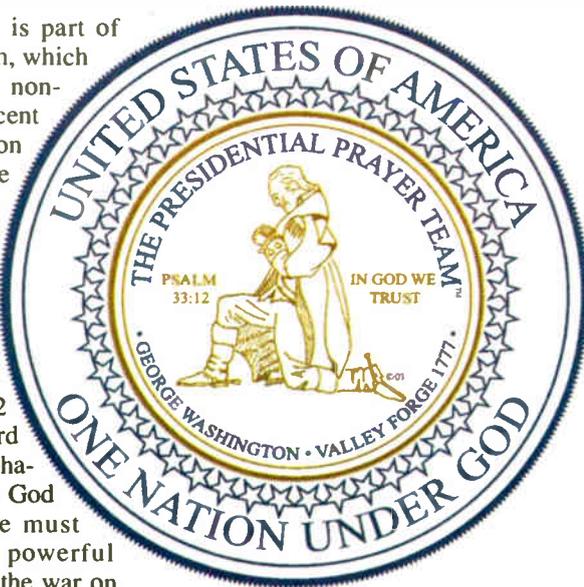
"American Inspirations" is part of The Presidential Prayer Team, which is described as a nonprofit, non-partisan effort to enlist 1 percent of the population (2.8 million people) to pray daily for the president and the nation's leaders.

In conjunction with the radio program, The Presidential Prayer Team announced that President George W. Bush was chosen as the recipient of the 2002 American Inspirations Award due to his "unwavering emphasis on prayer and reliance on God for the heavy decisions he must make in the world's most powerful office" after Sept. 11 and as the war on

terrorism continues.

The program is available on CD.

For more information on the "American Inspirations" radio program, call (520) 797-7173 in Arizona or visit www.presidentialprayerteam.org/media.asp.



RadioVoodoo Lets Listeners React

Listeners who call your station are most likely to be among P-1 listeners, according to Arbitron.

But many stations are unable to answer those calls, losing a potentially valuable link to their audiences.

With a phone line and Web access, RadioVoodoo ensures radio stations that each listener's request, song query or comment is addressed.

The interactive phone service allows stations to track callers, including demographic information and daypart via searchable database, and to see trends in song performance as well as

how a station playlist's popularity varies by daypart.

With RadioVoodoo, when calls aren't answered within six rings, listeners are greeted in the voice of your station and offered five options: Press 1 to request a song, 2 to leave a recording, 3 for what's playing, 4 for the weather and 5 for the traffic report.

RadioVoodoo clients include Radio One's KKBT(FM) in Los Angeles and Infinity stations WBCN(FM) in Boston and WHFS(FM) in Washington.

Jones Radio Networks will market Radio-Voodoo exclusively.

For more information contact

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Massachusetts at (413) 458-1201 or visit

the company Web site at www.radiovoodoo.com.



'Steppin' Out' Is True Reality Radio

The recovery community has a new radio resource. "Steppin' Out" is marketed as a 12-step show targeted toward people struggling with recovery from addictions through a 12-step program.

Hosted by industry veteran Tom Zarecki, the program is available two hours weekly on a 100-percent barter basis via CD or MP3 Internet delivery.



Tom Zarecki hosts 'Steppin' Out.'

"Steppin' Out" features pre-screened guests from the recovery community addressing issues from drug and alcohol addiction to gambling. It became nationally syndicated in January and airs on several major-market stations in Los Angeles, New York, Las Vegas and Nashville, Tenn.

For more information contact Denise McIntee in New York at (845) 359-3299 or e-mail info@powerfulradio.com.

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Radio Trailblazer: Hal Jackson

by Peter King

Quick: How many octogenarians can you name who are not only still active in broadcasting but also still regularly on-air? Paul Harvey? Naah, he's only 70-something. Dick Clark? Same thing!

WTIC(AM)'s Bob Steele? Absolutely — the Hartford legend still stakes over the airwaves once a month.

But how about weekly?

At Inner City Broadcasting's WBSL(FM), black radio pioneer Hal Jackson, at the ripe young age of 86, continues to host his "Sunday Classics" show on the famous urban station.

Jackson has been a part of the New York radio landscape for more than five decades as a personality, promoter, programmer and broadcast executive.

He was there

Jackson and co-author James Haskins have written the long-time broadcaster's memoirs in "The House That Jack Built," named after the program he hosted for many years.

While parts of the book may leave you wanting, there's plenty to savor and digest. Jackson's memoir reads like a real life version of "Forrest Gump."

The best stories are Jackson's continual efforts to break down racial barriers in and out of broadcasting. He was present at many of the landmark events of the 1950s and '60s (Martin Luther King's "I Have A Dream Speech," the Selma-Montgomery march in Alabama) and hung out with the leaders of the civil rights movement (King, Jackson, Abernathy).

He was, apparently, in the right place at the right time to meet the role model for George Gershwin's Porgy, baseball legends Babe Ruth and Jackie Robinson, black educator Mary McLeod Bethune, President Harry Truman and scores more of the rich and famous.

During the '50s, he hired struggling actor Telly Savalas and child model (and future Commerce Secretary) Ron Brown as go-fers in New York, to run errands and pull records for his show. And the list goes on.

His first radio gig came during the 1930s at WINX(AM), but not without a struggle. Jackson approached the station manager about running a brokered black sports show, "The Bronze Review," which Jackson would sell and host.

The manager, Jackson said, told him "No n—— will ever go on this radio station."

Jackson got around the roadblock by purchasing the time through an agency, never mentioning the color of the host or guests to the station.

Although he promoted "The Bronze Review" widely through black-owned businesses, churches and other channels, Jackson said no one at WINX caught on. By the time he and his guest showed up 15 minutes before the 11 p.m. airtime, he said, there was no choice but to let him go on the air.

Jackson's first full-time radio job came later, at WOOK(AM) in Washington, D.C. It would not be an understatement to say that Jackson was the radio station; he was on the air from sunrise to sunset, and sold advertising during his lunch



break. All for the princely sum of 50 bucks a week.

Jackson made a name for himself on WOOK and other stations in the D.C.-Baltimore area, sometimes working three shifts on three (non-competing) stations daily to make ends meet.

By 1949, he hit the big time, when he was offered \$300 a week to go to New York's WLIB(AM). Although he would briefly return to Washington, by 1951, he was back in New York to stay, this time at legendary station WMCA(AM).

Appreciated

This time would be different. WMCA had a bigger signal than WLIB. He writes that owner Nathan Strauss wanted him to return to the city "not as a black personality, but as a personality, period."

"He didn't expect me to adopt the persona of black emcees ... nor did he expect the jazzy delivery that went along with (that role)."

"He let me keep my dignity and ... believed that I would appeal equally to black and white listeners."

Interestingly, Jackson writes that Strauss had done his own market research on black listeners — this was in 1951, mind you — and found that New York-area blacks spent well over \$1 billion annually as their incomes and living standards increased.

In other words, Strauss was one of the first mainstream broadcasters to desegregate radio at a time when that was an unpopular move.

Also not popular in those days: blacks on TV. Except for roles like Eddie Anderson's "Rochester" on "The Jack

Benny Show," blacks were almost nonexistent.

Jackson had become a popular radio personality, in part, he said, because many listeners and broadcast executives didn't realize he was black.

That didn't happen until he was recruited for his own kids show on TV, "Uncle Hal's Kiddie Show," on New York's WPIX. A groundbreaking show, the audience was totally integrated.

During the 1950s, he hired struggling actor Telly Savalas and child model (and future Commerce Secretary) Ron Brown as go-fers.

While it would last only six months, the show broke down yet another color barrier and allowed Jackson future television opportunities.

As he did in D.C., Jackson pulled a radio hat-trick in the Big Apple during the early 1950s, working on the air at WMCA(AM) and WNJR(AM) in Newark, N.J. and hosting a nightly jazz show live from the famed "Birdland" nightclub on the ABC Radio Network.

In addition, he promoted scores of events, including the first rock 'n' roll show at Carnegie Hall. In those days, promoting R&B shows to white audiences was also an unpopular cause.

But as happens with many successful people, the commitments took their toll on his personal life, ending several marriages and for a time, creating distance between Jackson and his children.

Jackson tells of his involvement in the 1950s payola scandal, and how false accusations forced him to start over. He tells of union activism and subsequent union-busting as a manager/owner, fundraising and community service efforts on behalf of scores of causes and his career as a sports and rock 'n' roll promoter.

Early on, you get the feeling he would have thrown it all away for the chance to become the first black play-by-play announcer in baseball's major leagues. He had announced Negro League games on a public address system and Howard University sports on the radio in Washington during the '30s.

Early radio promos

Some of the book's best features are the reproductions of promotional materials and articles featuring Jackson during the early parts of his career.

They include posters of his various concerts ("WLIB Stars Get Around! Hal Jackson Brings Rock and Roll to Carnegie Hall featuring Bo Diddley, Etta James, Bill Doggett, Joe Turner, tickets \$2.50 to \$4.75!") sporting events ("Thrilling Play by Play description by Harold Jackson, Howard University vs. Virginia Union,") ad fliers ("Coca Cola is in the air with a bigger advertising schedule than ever on Hal Jackson's popular 'House that Jack Built' every day on WLIB") and news clippings ("Harold Jackson Returning to D.C.").

Disappointing is that only 26 pages are devoted to 1968 and beyond. Jackson and co-author Haskins zip through the shift of AM to FM and the struggles and successes of Inner City Broadcasting, where Jackson serves as group chairman along with his WBSL hosting duties.

Inner City's WBSL became one of the most successful and profitable stations in New York; one would think its rise would merit more than a handful of paragraphs.

Nor do we hear much about Inner City's success and struggles in other cities. Those stories might have provided

interesting and useful information for the next generation of urban broadcasters.

There are some minor mistakes, including some incorrectly captioned pictures and some misspellings, but overall, "The House That Jack Built" is an educational, sometimes heartbreaking, often heartwarming story about the rise of one of radio's groundbreaking broadcasters.

"The House That Jack Built" is published by Harper Collins Publishing, with a list price of \$26.

Peter King is an Orlando based correspondent for CBS News Radio. Contact him at pkingnews@aol.com.

Experience. Stability. Vision. *And Max Turner.*

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Then, just two years ago, as Engineering Manager of three Indianapolis stations, Max had the opportunity to fulfill a lifelong dream.

"My dream," he says, "a total rebuild of the facilities... a chance to design the studios the way we always wanted, with state-of-the-art equipment."

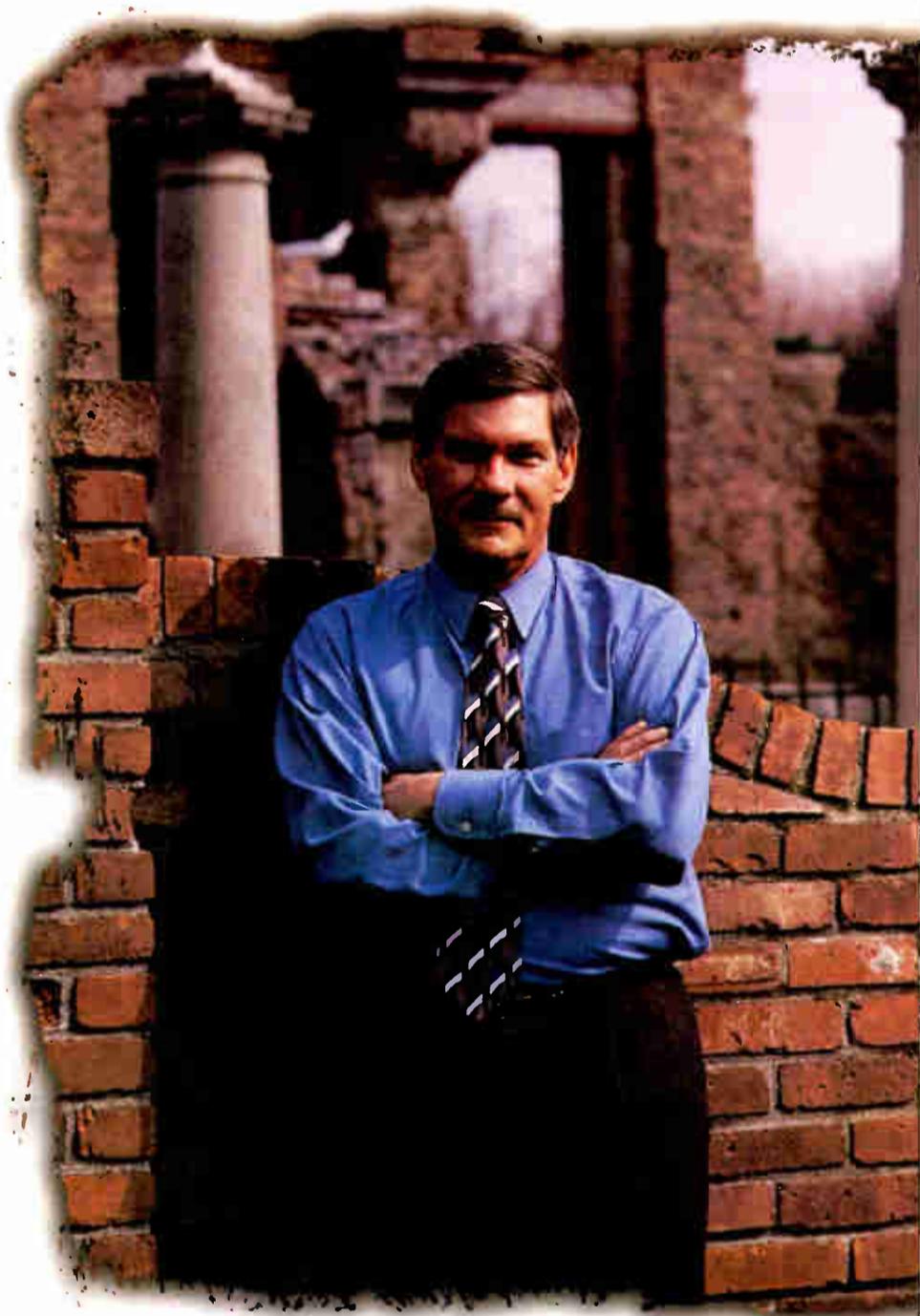
As he took the stations from records and carts to a touch-screen digital operation, Max enjoyed total support from the corporate office. In his words, "Susquehanna has the

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Ad Copy

► Continued from page 39

The collection of studies, mostly culled from the last two decades, comes with details of methodology and major findings based largely on brand recall. They are taken from key radio marketing studies conducted in the United States as well as other countries including Canada, Germany and Great Britain.

Ad length

Important findings that emerged in more than one study show that the effectiveness of radio ads (as measured by recall) is highest when the ad is longer — 60 seconds vs. 30 seconds, for example — contains frequent brand mentions and has relatively few different ideas.

Other study results from the compendium reveal that radio ads are capable of achieving significant recall even when listeners are distracted and that the best radio ads can be as potent as the average television ad.

percent to 38.4 percent of all respondents).

The test was conducted via telephone among 600 radio listeners and 600 TV listeners on their ability to recall ads that aired the previous day.

Also of interest in the radio-vs.-TV

respondents.

The authors concluded that an ad campaign combining radio and TV is nearly twice as effective in creating ad recall as TV alone.

The release of this comprehensive research package goes a long way to statistically counter common objections by advertisers and agencies for using radio even as a secondary medium for their messages.

"Advertisers have increased their focus on return on investment, and are now demanding higher accountability from their agencies and media partners," stated Owen Charlebois, president of Arbitron U.S. Media Services.

Charlebois and RAB President Gary Fries are co-chairmen of RAEL.

According to Arbitron and RAB, several new studies are planned for coming months. A RAEL research committee will include agency and advertising representatives along with executives from the radio industry. Research findings, past and future, are being posted on www.radioadlab.com.

Uptick

Meanwhile, after a down year, radio entered 2002 on a positive note by posting a 1-percent increase in total advertising revenue in January as compared to the previous January.

To that end, it appears more radio salespeople have been applying "outside-of-the-box" non-traditional business tactics. This includes such methods as increasing per-inquiry and per-order advertising in which stations receive a percentage of each order.

But when it comes to the impact of advertising, the proof remains in the pudding or, in radio's case, in the effectiveness of ad copy.

The task of communicating radio's deep successes in brand as well as in general overall recall to all levels of advertising management should be the responsibility of every local and national sales manager, from New York to San Diego and from Tampa to Seattle.

To borrow a line from Alexander Pope's "An Essay on Criticism," circa 1711: "A little learning is a dangerous thing: drink deep or taste not the Pierian spring."

Vincent M. Ditingo is an assistant professor of communication arts and coordinator of the radio program at the New York Institute of Technology. Contact him via e-mail to vditingo@aol.com.

STATION SERVICES

Premiere, TWI Create Sports News Radio

A joint venture between TWI and Premiere Radio Networks has created Sports News Radio.

SNR is touted as a global sports news service for stations that will provide affiliates access to breaking sports stories. SNR is available on the Web to subscribing stations.

The service offers a minimum of eight audio clips a day on breaking sports features plus a 1-minute daily sports bulletin.

TWI will produce SNR content while Premiere Radio Networks is slated to market the service.

For more information call Premiere in California at (818) 461-5400.

RadioAd Effectiveness Lab

For instance, a 1997 Canadian radio study conducted by the Radio Marketing Bureau of Canada and detailed in the compendium, reveals that aided recall for radio advertising achieved 83 percent of TV's rate of aided advertising recall (32

percent to 38.4 percent of all respondents). The test was conducted via telephone among 600 radio listeners and 600 TV listeners on their ability to recall ads that aired the previous day. Also of interest in the radio-vs.-TV

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TIPS AND TRICKS

Take Care of Hearing Health

by Blažo Guzina

Audio professionals in general and sound recording engineers in particular are aware that hearing is the most precious tool they use in their everyday activities.

The sensitivity of the human ear is much greater than that of the eye. The audio frequency spectrum covers a range of more than 10 octaves while the

ratio for intensity levels.

Dynamic range — the difference in dBs between the loudest and the quietest sound intensity that the ear normally can detect — is spread between the threshold of hearing and the threshold of feeling (120 dB at 1 kHz).

That means the human ear provides a subtle yet very robust mechanism capable of responding to sound pressures at a ratio of 1 million to 1.

Pascal (Pa). This sound pressure is superimposed on the ambient atmospheric pressure, which is of the order of 100,000 Pa, or 1 bar, while the ear can withstand and respond to sounds of pressure amplitudes in excess of 100 Pa.

The healthy ear is not only an extremely sensitive microphone but, together with the brain, a real-time frequency analyzer capable of fine discrimination between tones.

The sense of hearing could, therefore, be regarded as the most complicated and efficient of receivers, comprising a complex and sophisticated system of acoustic, mechanical, biochemical, hydraulic and electrical engineering.

The upper limit of sound-pressure level to which a human ear responds without discomfort, tickle or pain usually is called the threshold of feeling and, though it is chosen arbitrarily, it is most often considered as a level of 120 dB over the threshold of audibility (0 dB at 1 kHz).

Approaching danger

This does not mean that higher sound-pressure levels cannot exist. Unfortunately, they can, and this is a reason we also speak about a threshold of pain, corresponding to a sound-pressure level greater than 130 dB.

Human hearing can cope with peaks of sound so loud as to produce pain, but it can also detect the quietest of sounds, which must originally have served as a warning of approaching danger.

Because hearing loss can occur not only with age but also overexposure to loud sounds, audio professionals should educate themselves in hearing conservation.

Let us first examine the aging effect. Healthy young people can hear sounds

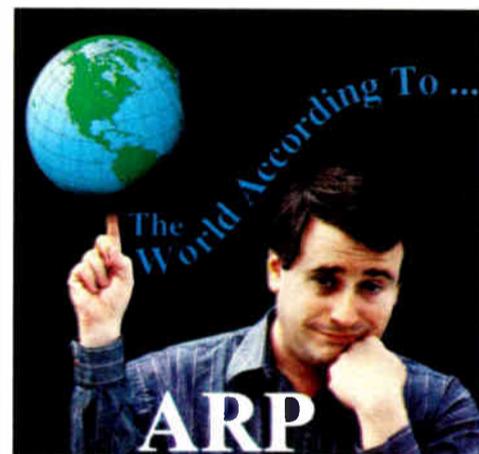
See HEARING, page 52 ▶

Shecky's Back: Oh Joy, Oh Rapture

by Alan R. Peterson

Due to circumstances beyond our control, The World According to ARP reluctantly announces the return of Shecky Peterson.

Shecky represents my dark side, the shadowy, smarmy, washed-up Vegas-style comic that annually emerges from my id, shortly after an NAB convention.



He is easily envisioned: think of every cliché lounge comic or crooner in history, real or imagined. Then place him in the classic pose, sidled up next to a chipped Baldwin baby grand, tie loosened over a frilly blue "tux" shirt, mic in one hand and a watered-down gimlet in the other. That's the guy.

Shecky frequently offers up one convention groaner after another, some with a sparkle of truth or an observation that some of us would not have noticed.

Bounce a gold spotlight off that gray-ing pate, add a self-triggered rimshot on

See SHECKY, page 53 ▶

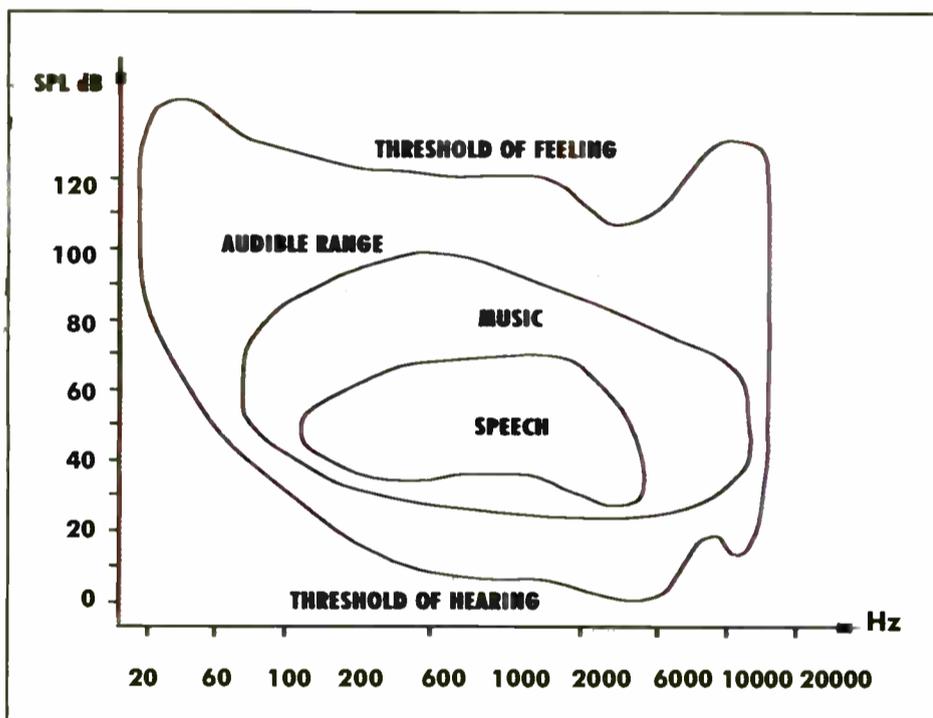


Fig. 1: Audible Range of Frequencies and Sound Pressure Levels With Approximate Regions for Music and Speech

visible light frequency spectrum covers less than one octave.

The ratio of highest-to-lowest audible frequency a human can hear is 1,000:1. By contrast, the ratio of highest-to-lowest light frequency visible to humans is barely 2:1. Even more convincing is the

The sound pressure variations produced by vibrations of a sound source in the air are very small compared with the static atmospheric pressure.

The slightest sound that an average and healthy young adult can hear corresponds to a sound pressure of 0.00002



(Too bad you can't scroll...)

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PRODUCT EVALUATION

MZ-B100 Offers Improved Design

by Daniel A. Robinson

Since introducing the MiniDisc format in the early 1990s, Sony has been busy year after year redesigning and shrinking the size of its various recorders and players.

We have gone from the first MD, a battle tank called the MZ-1 (with its huge NiCad battery, optical line in and out capabilities, backlit LCD and direct entry keys), to MDLP and NetMD machines operating on a single AA.

My first Sony

My first MD recorder was the MZ-R3. I followed the development of the technology and by 1995 felt confident enough to purchase an R3 while on a stopover in Hong Kong.

I immediately began using it as my main portable recording device as I reported for the Voice of America in Southeast Asia (although doing direct phone feeds from portable MDs is quite another matter).

The MZ-R3 operated on two internal AA batteries — regular alkaline or rechargeable — along with an LIP-12 lithium in an external case attached to the left side of the unit.

To recharge the LIP-12 batteries, however, required a separate AC unit, capable of charging two batteries simultaneously and also capable, with the addition of a separate cord, of running the MZ-R3 on AC power.

I start with the description of the MZ-R3 to preface my review of the new Sony MZ-B100 because I believe the early Sony recorders — particularly MZ-1, R2, R3, R50 — had features that users of MD dearly wish had been retained.

But I focus here on two of the most important aspects of portable operation — reaction time of the mechanism to commands and the time required for Data Save/TOC Edit.

My MZ-R3, with which I still have with no plans to part, has extremely quick reaction times in FF/RR, as well as the super fast mode with the Pause button depressed. This makes editing a joy. Within a half second or so of pressing a button, the machine engages.

After recording or editing changes, upon pressing Stop, the TOC Edit process is no longer than 2 seconds. The same is true on my companion MZ-B3 (which I acquired new via the Internet).

While I am no expert in MD motor design or power consumption issues, I can only assume that the price we have paid for miniaturization is longer TOC edit times and maddeningly slower FF/RR. Sony's revision of its splendid MZ-B3, a solidly built field performer, was the MZ-B50.

Those of us who either purchased the B50 or who were able to test them immediately noticed the problems — TOC edit times of 10 seconds or more, and frustratingly slow FF/RR. There were ergonomic issues as well.

The B50 was somewhat uncomfortable to hold in the palm of the hand — far too boxy. The volume control, placed on the right side of the machine, nonetheless was difficult to access with one finger, an issue linked to the overall size of the unit as well as the



thumbwheel itself.

The LCD window on the B50 also had a cheap appearance; the clear plastic seemed to have been plunked down on the face of the machine — on my unit, it took little time for dust particles to make their way into the display, an issue that has been raised of late in MD discussion groups on the Internet.

The B50 also suffered from loud motor noise. This could be heard clearly on the recording being made. If the actuality (sound) wanted was in the first 15 or so seconds after activating Record, chances are you would hear the whirring of the motor as it accelerated to “cruise” speed.

So, with the B50 the main problems were the long TOC edit times, slow FF/RR engage and the loud motor.

Design issues

Onto the B100. Let me begin with a positive. Sony gets high marks for its design of this unit. Its ergonomics are a joy to behold. It has a light bluish silver color, and the first thing I noticed was the curved design of the machine's top half.

The overall size has been reduced from the B50. The stereo mics have been moved in from the top edge of the machine, as the LCD itself was relocated to near the very top of the unit. As well, the Easy Search buttons, formerly two long silver sliver buttons at the bottom of the LCD on the B50, have been rounded on the B100 and moved up below the LCD. These also double as cursor locators when in labeling mode.

The track mark button has, with apparent considerable forethought, been placed at the bottom right of the machine just near the side volume control wheel. This is excellent — when holding the machine it is very easy to move the thumb across the range of button options, from Stop on the left to track mark and record mode on the right.

The small LEDs for REC and VOR

have been relocated — they are now above each other over the still thankfully large REC button. FF/RR has been turned into a single toggle, and thin at that. And while I am on the size reduction, the small vertical buttons under the LCD, including Enter, Play Mode and Display, are also quite small.

On the B50, the Erase button on the right side of the machine is a round silver button. This has been changed on the B100 to a red rectangular one — a most welcome change since it has a very different feel.

Two important aspects of portable operation are reaction time of the mechanism to commands and the time required for Data Save/TOC Edit.

Similarly, on the left of the machine, the Bass control is a gray rectangular button. As for inputs, the B100 retains the single jack for analog and optical, next to the microphone jack. The mic sensitivity control is on the left side of the B100, a simple two-position slide switch.

Shifting between record modes on the B100 is accomplished via a button to the right of the VOR LED. Sony has placed the record Sync button on the right side of the machine.

It is not yet clear if the MZ-B100 was designed after the MZ-B50, possibly in reaction to the flaws of that machine. I have my doubts about that because the B100 rolled out in Japan quite quickly after the B50.

Perhaps the two designs were put into production almost concurrently. It also seems that Sony's main objective with the B100 was to add MDLP capability.

Regardless, Sony deserves praise for the look of the B100. It has a wonderful, sleek appearance and is easy on the palm. The Stop, Play, Pause and REC buttons, along with the track mark button, are located in an indent that is part of a bump that includes the FF/RR toggle bar and the record mode selector.

The speaker is in the depression leading to the nicely designed LCD, which is framed (unlike that of the B50, which seemed merely to be a LCD slab glued to metal) in an attractive dark gray.

On the very front of the B100 are the Mic/Remote plug, the Eject slide switch and the Hold button. Eject also has been redesigned. The disc now jumps out upon eject activation, a nice touch.

As for the remote, it is terrible, overly simplistic and seems to have undergone absolutely no redesign from the B50. Ergonomically, it is a flop. It is uncomfortable to use because of its flatness and small size, and it is extremely difficult to activate the controls on its thin edge.

While on general complaints about construction, let me add this. Sony, please give us back the little black ribbon in the battery compartment ribbon which aids extraction of the AA or other battery types.

Improved response time

Returning to the key issues of the B50 and the question of what Sony has done to improve with the B100, it appears that Sony has improved the response time of the FF/RR. You can expect a 3- to 4-second delay on hitting FF or RR. It is clear that the delay is caused by the need for the motor to spin up.

Hitting FF or RR for about 1 second or a bit more, releasing, then immediately hitting FF or RR again, results in an instantaneous response. As I have had only a Japanese language manual while assessing the B100, I am not sure

whether Sony includes this advice in the section dealing with FF/RR, but if they do not, they should.

On the issue of TOC read times, I am sorry to report that there seems to be no little or no improvement. Tests yield TOC/Data Save times of up to 13 seconds. The only explanation that comes to mind is the power/voltage tradeoff.

A test with an MZ-R50 yields a 6 second TOC/Data Save time. Again, my old MZ-R3/B3s are in the 1- to 2-second range.

This is most frustrating. For a journalist, it is important to be able to go quickly from recording material to editing. Having to wait 13 seconds is a time-waster.

But here's where it gets interesting. When the B100 performs a Data Save and TOC Edit, rather than only a TOC Edit, read times are much longer. This

See *SONY*, page 51 ►

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World Radio History



Photo by John Casey

David Beesley, Ian Jones and Henry Edwards of HHB Communications show off their new 8-track location sound recorder, the PortaDrive, offering portable 24-bit/96-kHz multichannel recording and on-board mixing.



PHOTO GALLERY



The radio exhibits will move from the North Hall to the Central Hall next year.

Photo © NAB



Michael and Theresa Gay of Purdue University made this quilt for Broadcasters General Store. Posing are recent additions to the sales team Cindy Edwards, Gary Tibbot and Cecile Gibson, along with BGS veteran Buck Waters.



Photo © NAB

NAB Broadcasting Hall of Fame Inductee Dick Orkin, shown center with David Kennedy and Eddie Fritts, recalled his youth in Sunbury, Pa. The Orkin boys wanted a TV, of course, but my father would tell us, "You don't need a TV, just close your eyes and you'll save us nearly a thousand dollars."

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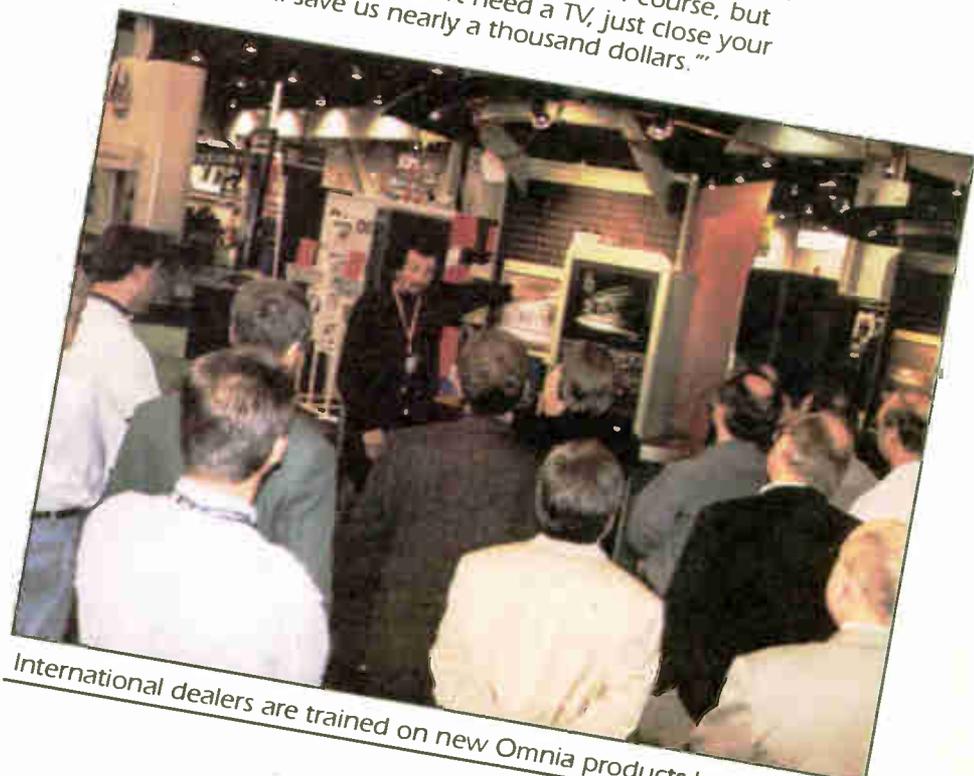
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Sony

▶ Continued from page 48

also seems to have something to do with battery power. When the B100 does only a TOC Edit (0 to 5 seconds) read times are about 7 to 8 seconds.

For me, motor noise can be a relatively minor concern — as long as one is aware of the issue. But it is interesting to observe, or more accurately, hear the problem itself. To activate Record requires a single push of the largest button on the machine. This sets the motor in motion, and the machine begins recording almost instantaneously.

Some motor noise

Between 0 and approximately 6 seconds the motor seems to go into a preliminary startup mode. From 6 to approximately 15 seconds, it is in a slightly less-noisy stage, finally settling down to a relatively quiet state. I must still report, however, that this motor noise is quite noticeable on playback, particularly in the first six seconds of a recording.

Thanks goes to Sony for the useful jog wheel on the left side of the B100. It functions for labeling and track moves, as well as speed control. I have not gone into the Group function in this review, as I do not use it in my work with MD.

As for MDLP, it is a nice feature to finally have in Sony's single business recorder. In my testing, LP2 is quite good, and it is handy to have the option of using LP4 when in need of cramming more material on a single disc.

The bass control, by the way (which is labeled Sound), operates only when using headphones or playing through a car cassette adapter. The Voice Up mode, which appears in the LCD, only operates with material recorded in stereo mode.

Two final recommendations: There is no reason in my view for Sony to have left out the ability to set record mode manually. And one excellent feature

would be a button allowing the user to skip backward in a track in small increments; such a feature is used by Marantz on its large 650 machine. Considering the labor required with the B50, and the B100 to an extent, to engage quickly in FF/RR a skip back control would be highly useful.

Sony is still the only manufacturer with a portable speaker/microphone MD recorder. The MZ-B100 has enough features to justify its purchase by news organizations or individual journalists looking for a well-built, compact machine, with long battery life on a single AA and MDLP capability.

This evaluation is based on my hands on use of the MZ-B100 for a few weeks, using a Japanese manual. I have not had the opportunity to correspond

with a Sony representative.

Sony responded to my observations on the B50 with explanations emphasizing that machine's focus on business users (thus the Voice Up function). Sony did, however, say that Sony engineers would be working on the issue of battery longevity and FF/RR times.

Perhaps we still have yet other models in the business/pro recorder line to look forward to. Sony is still the only manufacturer with a small portable speaker/microphone MD recorder.

My thanks to minidisco, the Internet MD retailer, for providing the test unit on which this review is based.

Dan Robinson is an avid MD user and works as a correspondent for the Voice of America. He is based in Washington.

Product Capsule:

**Sony MZ-B100
MiniDisc Recorder**



Thumbs Up

- ✓ Excellence of design/ergonomics
- ✓ MDLP capability
- ✓ Extensive group folder functions
- ✓ Onboard mics and speaker
- ✓ Single AA battery power



Thumbs Down

- ✓ Overly long times for TOC Edit/Data Save
- ✓ FF/RR still slow to engage
- ✓ Motor noise still significant

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Mackie Forges Agreement With Peak Audio

A licensing agreement Mackie Designs recently made with Peak Audio, a division of Cirrus Logic Inc., will permit the incorporation of the Peak Audio CobraNet technology into current and future Mackie, EAW and RCF products.

CobraNet is a real-time digital audio distribution technology that allows the transportation of audio and control data over 100 MB Ethernet networks. The company says it has become a standard for multichannel distribution in the commercial sound marketplace.

Mackie says its aim is to offer reliable solutions to customers who design and assemble digital audio systems with Mackie, EAW and RCF equipment.

For more information contact Mackie Designs in Washington state at (425) 487-4333 or visit the company Web site at www.mackie.com.

Hearing

► Continued from page 47

with frequencies ranging between 16 Hz and 20 kHz. At the age of 30, humans still hear tones over 17 kHz; between 30 and 40, up to around 15 kHz, and between 40 and 50, up to 12 kHz. Over the age of 50, the upper limit could be lower than 10 kHz.

The ear's dynamic range also is reduced by frequent overexposure to sound levels exceeding 85 dBA for extended periods of time. Hearing loss may be even greater among professionals who are used to prolonged work with high listening sound levels — around or over 90 dB, for instance — during their everyday activities.

Hearing loss also is affected by stress and anxiety levels. Sound professionals have to be more concerned with hearing

Further, unlike other people, sound recording engineers cannot wear hearing protection devices. Their ears must

their ears as the finest tool they use in their work. The hearing mechanism is the final recipient of sounds produced by audio systems.

Perceptual changes usually occur over the course of several years and appear gradually rather than suddenly. Consequently, even audio professionals may not immediately notice that hearing loss is taking place.

When hearing loss is due to overexposure to loud sounds, it will first result in a loss of the ability to hear high frequencies and, later, to hear middle and low frequencies. People usually begin to notice a change in their hearing ability during normal activities.

They may notice difficulties in understanding a conversation in a noisy environment while, in more serious cases, they may notice changes of a timbre in music. Sound professionals who find themselves increasing the volume of control room loudspeakers are experiencing an early sign of loss.

Sad but true: most people suffering from hearing loss usually need not an increase in volume but in clarity of sound.

See the sidebar for specific steps to protect your hearing.

Loud sounds can interfere with speech communication. They can annoy. They can disturb concentration, thus causing a decrease in efficiency. And, worst of all, they can damage hearing.

Blažo Guzina is a senior engineer at Radio Televizija Srbije in Belgrade, Serbia. He is a professor in the Sound Recording Department of the Arts Academy at Univerzitet Braća Karić. Contact him via e-mail at blazo_guzina@yahoo.com or visit www.bg.dk3.com.

It is important for all sound pros to be aware of the harmful effects that can come from years of day-to-day overexposure to high sound levels.

health than do other people, especially those who work under pressure — common in radio and television stations.

be open to sound.

Also, as emphasized at the beginning, sound professionals depend on

Enter to win one of 26 great prizes in Radio World's reader appreciation contest giveaway!

Dear *Radio World* Reader: Last year, many of the greatest names in our industry teamed up with *Radio World* for a year-long sweepstakes extravaganza that resulted in almost \$50,000 in prizes given away. Due to the overwhelming response from you, we've decided to do it all again in 2002 as a way of showing our appreciation to our loyal readers.

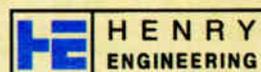
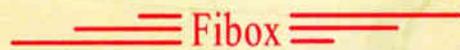
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3. Follow the instructions and fill out the electronic entry form — *that's it, you're done!*



This is your chance to participate in our Readers' Choice program and win great prizes from these fine *Radio World* supporters:



Steps You Can Take

Sound professionals should be aware of the harmful effects of years of day-to-day overexposure to high sound levels.

If you work in such environments, consider these measures to safeguard your hearing:

1. Adopt the habit of working with listening levels as low as possible. Sooner or later — the later, the better — you will be forced gradually to increase the sound level of your monitors.

2. Take regular pauses between recording sessions. Spend some time in a quiet environment in order to let your ears rest a little before continuing.

3. Visit a qualified audiologist at least once a year for diagnostic testing. Beyond standard clinical hearing tests, new tests have been developed to evaluate hearing ability in the presence of background noise; the normalized Hearing in Noise Test (HINT) is more appropriate for sound professionals than the usual tests.

Always bear in mind that damage is proportionate to length of exposure, sound levels and frequency.

Contest Rules: To enter the drawing, simply register online at www.rwonline.com/sweeps. 26 drawings will be held throughout the year. Contest registration expires Dec. 4, 2002. Final contest prize announcement on Jan. 1, 2003. One prize per winner. All contestants MUST reside in the United States and have a valid mailing address. Winners should receive prizes within 30 days of notification; however, actual delivery time may vary and is not guaranteed by IMAS Publishing. Federal, state and local tax laws may apply to prizes and are the sole responsibility of the winner. Employees and affiliates of IMAS Publishing are not eligible.

Shecky

► Continued from page 47

the punchlines and you've got the full picture.

So ladies and gentlemen, direct from Washington D.C. — where a man is *still* a man unless he's voice-tracked — please welcome Shecky Peterson!

Cue the band

(Brass and sax music stinger, the usual polite golf-claps) Hey-yy, good evening, ladies and gentlemen. Good to see you all here. Hey, show of hands: who went to see Dick Orkin get inducted into the Broadcasting Hall of Fame?

(Every hand in the room goes up)

Wow. Nice turnout. I never met the man, but I once had one of his guys spray my house for bugs. *Ba-da-bum!*

Man, the trip out here was horrible. I was seated between two vultures on the plane. Yeah, real vultures! The flight attendant comes by and asks if they're hungry. "Yes," said one, "I'd like two dead raccoons please." The flight attendant brings him one dead possum instead. "What kinda airline is this?" he screeched. "I asked for two dead raccoons!" And she said, "Sorry sir, rules allow only one carrion per passenger."

Ba-da-bum!

Oh, and things were no better when I got to my hotel. One of those "theme" places with a western motif. I'm there at the bar when a three-legged basset hound in a cowboy hat sits down on the stool next to me. He stands up unsteadily on the barstool and announces to the room, "I'm lookin' for the man who shot my paw!"

Of course that was before that big black bird sat down next to me and ordered a highball. The bartender told him, "Sorry, I can't serve you. You're a mynah."

Ba-da-bum!

Thank you, thank you, yer a wunnerful crowd.

So now what's with this IBOC thing? Does it work or doesn't it? Just when I got used to all those other acronyms like LPFM and LMA, along comes this one.

So what do those letters stand for? "It's Bogus, Old Chap?" "Infinitely Brilliant, Only Costly?" "It'd Better Operate Correctly?" or maybe it was two engineers talking after tests one day: "It's Broken!...Oh, Crap!"

(Piano player whispers in Shecky's ear)

What? "In-Band, On-Channel?" What's that mean? I worked a cruise off of the United Kingdom one summer with some bum musicians. I ended up throwing them all into the English Channel. I called that "One Band In Channel." Is that the same thing?

(Piano player shakes head)

Oh. Well, you know the one thing an IBOC engineer never yells when he invents something? EUREKA. *Ba-da-bum!*

Light bulb jokes

So how do you get your I.T. person to change a light bulb? *Tell him it runs under NT and you want a Linux bulb.*

How do you get a music director to change a light bulb? *Tell him its misfiled under Recurrents.*

How do you get Dr. Laura to change a light bulb? *First be sure the light bulb really wants to change first.*

How do you get a news director to

change a light bulb? *"We don't have a news director. Call our AM station ... no, I don't have the number."*

How do you get the "flood warning" bulb to light up on your EAS box? *Call for a tornado alert.*

How do you get a tower climber to change a light bulb? *"Oh, they're not bulbs anymore, they're LEDs."*

How do you get an overnight jock to change a light bulb? *You can't; computers don't have hands.*

Oh, and hey, speaking of computers

this is easy up here??!

Did you see the Mayo Clinic had a booth at NAB2002? Yeah, so did Hamilton Metalcraft and the guys that make the Rycote mic windscreens. Dare they call themselves *Ham with Mayo on Ry?* Good thing they didn't talk to Wheatstone.

And what if Winemiller Communications — you know, the guys that recondition broadcast vans — merged with Fischer Connectors? Hmmm, wine ... fish ... got the mak-

call the show closed:

It's 4 o'clock, the day is through —
Frank Foti's blasting out The Who —
People grabbing fact sheet bags.
One last roundup for neat-o S.W.A.G.,
I sit and watch the Crowds Go By —

(Bring in the strings)

It's time to take those airsick drugs —
We lost our boss in rolled-up rugs —
All the NAB signs come down,
As we shuffle out of town,
I sit and watch the Crowds Go By —

(Turns on red spotlight for effect)

Let's box our demos off the floor —
And see the dings not there before—
One more pull at the quarter slots,
I might win ...
(pause, smile, then sad expression to crowd)... but I do not,
It's time to join the Crowds Going By —

The piano winds down

Well, that's the show this year, folks. Don't forget to tip your waitress, and send a nice note home to your families.

Use those free postcards in your hotel room drawer, but do it before the new postage rates take effect. Vegas is the only place where it takes 23 cents to put your two cents' worth on a penny postcard.

Thank you, thank you, yer a wunnerful audience. See you at the 10 o'clock show.

Reach Shecky — er, Al — via e-mail to alanpeterson@earthlink.net.

'Washington, D.C. — where a man is still a man ... unless he's voice-tracked.'

— Shecky Peterson

(Seinfeld-type whiny voice here), what's the deal with all those computers on the show floor? Nobody is bringing cart machines to the show anymore. It's all computer! And they all came to the convention floor in two models: obsolete and obsolete-ready.

(Author's note: It's true. This may well have been the first year in five decades that nobody brought a cart machine to the NAB show. If you know differently, drop a line.)

And all those operating systems! I mean, yeah, everybody wants to move to Windows XP and Win 2000. But you've got Windows CE for PDAs, NT for servers and ME for the program director's office machine ... folks, ever notice that those letters spell CEMENT? Your computer doesn't crash, it hardens and tips over!

Oh, by the way. Last week, I accidentally put my Windows 95 CD-ROM into my car stereo. Know what happened? My car crashed for no reason.

Ba-da-bum!

Merger mania

And this convention is always great for announcing mergers, isn't it folks? Big companies becoming bigger by acquiring somebody else. It always happens.

Like this year, when the company that makes Molex connectors announced it was going to acquire Alesis. The new company name? *Molasses!*

Cool Edit would become a subsidiary of Starbucks Coffee. They'd call it *Cool Beans*. And Thomson Multimedia may try to get in good with furniture maker Mager Systems to be called *Mager Thom*.

I understand Klotz Digital is in negotiations to obtain the cartoon sound effects library from Sound Ideas, but the name "Cuckoo Klotz" doesn't sound appetizing to either party.

More ambitious may be the marriage of Inovonics with Garner Products, Dalet Digital Media, Veetronix and the folks who make the Da-Light rear projection screen: *Ino-Garna-Da-Vee-Da*.

Okay, that one was a stretch. You think

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ings of a pretty good Friday night meal, don't they?

Mandatory tearjerker

(Piano player plunks a warmup chord)

Okay, bring down the lights. I want to leave you with a pretty tune done years ago by my personal good friends, the Rolling Stones. You remember "As Tears Go By," right? Well, this is what you'll be humming next year right after they



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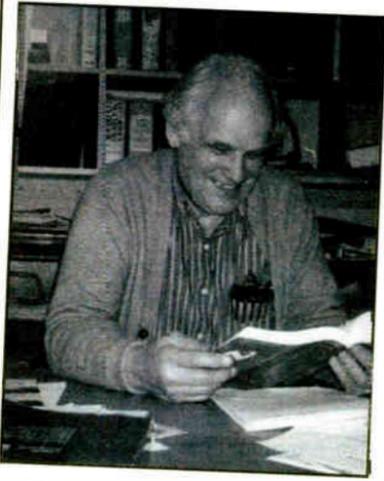
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David Blackmer, A Lifetime in Audio



David Blackmer, founder of dbx and Earthworks Audio, died in his New Hampshire home on March 21. He was 75. According to his son Eric, Blackmer was involved in audio since entering the business as a stock boy at Lafayette Radio in Boston in the 1940s. Building radios since the age of 10, the young Blackmer managed to fix a pile of radios that no one else was able to repair.

That was the beginning of his lifetime quest to improve the sound quality of audio until it approached the sound of the original. Blackmer studied radar electronics in the Navy and studied at Harvard University and the Massachusetts Institute of Technology.

He was longtime fellow of the Audio Engineering Society and a life member of the International Electrical and Electronic Engineers.

David Blackmer is perhaps best known as the inventor and founder of dbx, which led to the Blackmer VCA and RMS detector, which in turn yielded the dbx noise reduction system, dbx compressors and the dbx subsonic synthesizer. dbx VCAs were used mostly in early automated consoles; dbx processors were used in many early stereo televisions.

As president and chief engineer of Earthworks Audio, Blackmer developed many audio tools that were extremely accurate, according to the company. In recent years he developed a new model for human hearing, which considered the importance of time domain resolution.

Lithgow Visits Irving's Place

Actor John Lithgow recently visited McHale Barone's Irving's Place Studios to record a package of 60-second radio spots for a branding and advertising campaign for Amica Insurance.

Agency Cossette Post (New York) developed the TV and radio campaign featuring Lithgow guiding consumers through a series of utopian slice-of-life vignettes.

Pictured from the left in Studio C are Amica Communications Officer Patricia Stadnick, Cossette Post President and Creative Director Steve Crane, Lithgow, Amica Senior Assistant VP Margaret C. Munroe and Chris McHale.



PRODUCT GUIDE

Low-Cost POTS Codec From Musicam USA

Liberty, a low-cost POTS codec from Musicam USA, was introduced in Las Vegas at NAB2002.

Priced at approximately \$2,600, Liberty is touted by the company as compact and portable. The codec delivers 15 kHz, bidirectional audio over a single over an analog telephone line with connection rates as low as 24 kbps.

If line rates below 24 kbps are encountered, Liberty gradually reduces high-frequency audio response. Audio end-to-end delay is minimized at less than 100 ms. If line quality changes during a connection, Liberty can automatically negotiate in less than 1 second.

Liberty contains features that may not be found on more expensive POTS codecs, such as dual coding inputs, independent level controls for send and return audio monitoring and programmable function keys for instant access to frequently dialed numbers or menu functions.



The codec connects easily with a cell phone for wireless operation at normal telco bandwidth. When encoding for improved audio, a visual display of line condition lets operators further optimize the connection. In the event of a line or power failure, Liberty automatically reconnects in seconds.

A suite of Windows-compatible remote control software is available for free. For more information from Musicam USA contact the company in New Jersey at (732) 739-5600, fax (732) 739-1818. e-mail info@musicamusa.com or visit www.musicamusa.com.

PRODUCT GUIDE

Free Licenses for WireReady Newsroom System

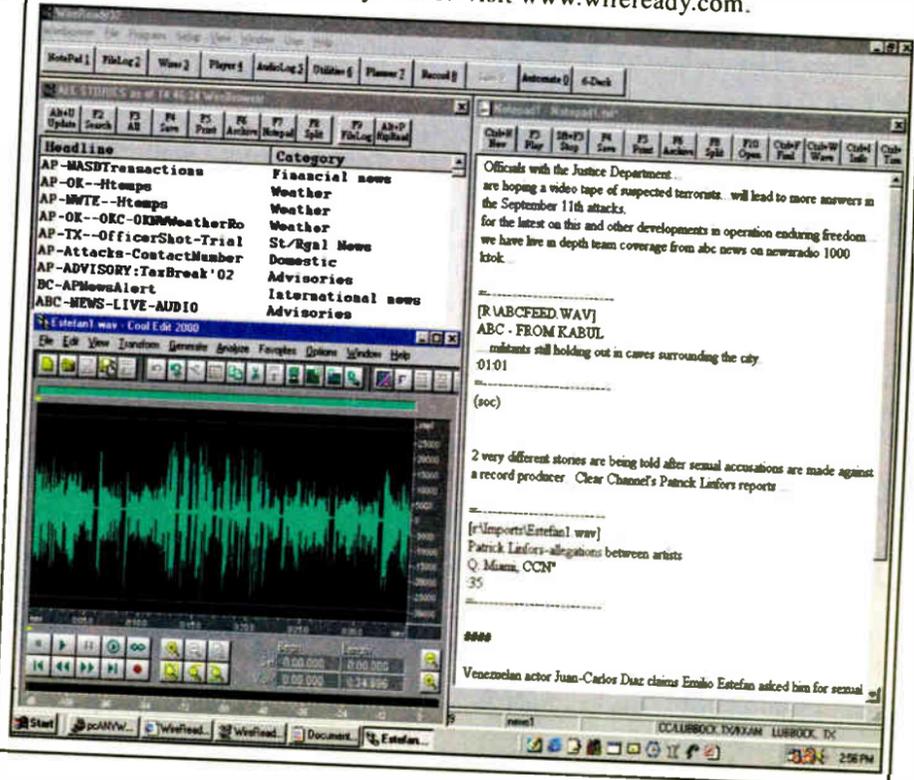
WireReady NSI, the manufacturer of WireReady32 studio automation, sales and newsroom software for radio broadcast facilities, started offering free software licenses for radio stations that purchase SalesReady.

As of April 1, stations that purchase SalesReady, a telephone sales, client tracking and customer service program, qualify for an equal number of free licenses for the Newsroom system.

According to the company, this sort of offer is part of a trend, with Metro Networks, Associated Press and other companies providing free electronic newsroom software as part of bundled packages.

WireReady first provided the SalesReady sales system to the Shepherd Radio Group in Missouri in 1995. A Windows-based version began shipping in 2001. WireReady provides electronic newsroom software to 2,000 radio stations in the United States.

For more information contact the company in Massachusetts at (800) 833-4459, e-mail sales@wireready.com or visit www.wireready.com.



In the next issue of Radio World, May 22, Frank Beacham looks at JK Audio's solutions for recording from cell phones.

Buyer's Guide

Tech Updates



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May 8, 2002

USER REPORT

Nautel Q20 Install Is a Breeze

by Lewis Downey
Chief Engineer
KUER(FM)

SALT LAKE CITY Last year I installed a Nautel Q20 solid-state 20-kW FM transmitter for KUER in Salt Lake City. I have to say that the installation was easy and I have been impressed with the design features.

The transmitter site is atop Mt. Vision on the west side of the Salt Lake Valley, which is not always accessible in the winter months, so reliability was a key factor in my decision.

So was efficiency, because the air is so

thin at such a high altitude (8,446 feet above sea level).

After several days of telephone visiting with engineers using Nautel FMs across the country and taking a close look at the design of the Q20 and other transmitters, I knew that the Q20 was my choice.

The preinstallation information supplied by Nautel gave me an edge for preparing to receive the transmitter. The AC disconnect panel, containing the first layer of MOV protection, was convenient for our situation because it provided an additional easy-access primary power disconnect for installation testing.

The remote control and telemetry interface is straightforward and the documentation is thorough, detailed and accurate.

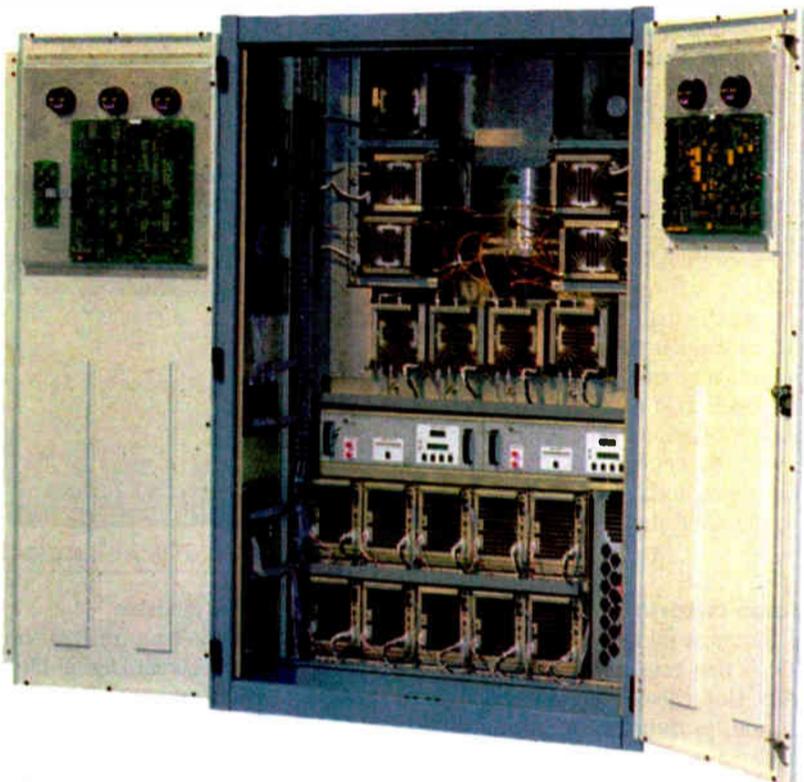
The company provided a preinstallation book, essentially a course on light-

ning and transient protection.

I mentioned that reliability is key for me. A description of the power supply will show you why this transmitter is so reliable.

The AC power comes into an AC rectifier suite, which can be wheeled out for easy access for servicing. The AC power is rectified by a six-pulse rectifier. At the electrical entrance there is an 860-J

See NAUTEL, page 63 ▶



USER REPORT

WGY, Harris Pave Path to Digital Future

by Bob Blanchard
Market Engineer
Clear Channel

SCHENECTADY, N.Y. NewsTalk Radio 810 WGY(AM) has been breaking new ground since it became the state's first commercial radio station in 1922.

The tradition continued as we prepared for our 80th anniversary by installing a new Harris 3DX50 transmitter with a clear migration path to digital.

Ever since General Electric put us on the air, WGY has been committed to providing the best possible signal to listeners — not an easy task in the Mohawk Valley.

I recall hearing some time ago that when GE owned the station, some of its high-level executives went to their design engineers and asked what could be done to improve reception in our service area in the Adirondack Mountains. The story goes that the GE SuperRadio receiver was a product of this request, but I don't know for sure that this is so.

Coverage commitment

I point this out because Clear Channel too is committed to providing maximum coverage for our stations — especially 50-kW clear-channel AMs.

With a history dating to 1922, it's not surprising that WGY's transmitter site had become a snapshot of broadcast equipment history. The American Bridge Co. had put up the WGY tower in 1936-38, and GE purchased it for \$30,959! The transmitters we'd used over the years also were something of a "Who's Who."

For 20 years, we'd been using a Harris MW-50 and our backup was a 40-year-old Gates BC-5P. Although the transmitters had served us well, component failure was becoming an issue. Plus, with the significant performance improvements in

See HARRIS, page 56 ▶

Olympic Gold

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The Impact and Caddy were the preferred equipment used in the Audio Switching Control Room in Salt Lake City.

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Caddy AD DA Converter:
• A companion to the Impact digital router, it is also an ideal stand alone AD DA Converter.

JT's FMT-30 Exciter Fits in Florida

by Frank Vela
Chief Engineer
WTBH(FM)

CHIEFLAND, Fla. WTBH(FM) is a small, class-A noncommercial station serving most of Levy County, Fla. It operates 24 hours a day with continuous community programming.

WTBH suffered a major lightning strike late last fall. Our old Versa-Count exciter was severely damaged, and considering it has been Band-Aid repaired many times over, this was the time to replace the exciter with something fresh.

Our Versa-Count PLL/Oscillator sections were replaced with a **JT Communications** PLFM-100 retrofit card several years ago, and it has proven to be dependable and trouble-free.

Door-to-door demo

JT Communications President Jim Trapani advised me that a new 30-W exciter had been introduced to its product line. As the JT Communications manufacturing facility is almost in our back door in Ocala, Jim decided to deliver an exciter to the station personally. After he explained some of the features, we were on the air with the exciter in minutes.

The FMT-30 contains interesting features, some unique, some conventional. The FMT-30 is frequency-agile, with little tuning required. The power amplifier is a hybrid, no-tune module. It is easy to replace if the need arises. Control of power is adjustable from 0 to 30+ W, with a clean transition at all power level adjustments.

Front-panel controls include a power control, RF transmit switch and a Bright LED meter with a selector that switches among several parameters both necessary and supplementary to the exciter. The relative forward and reflected power readings are just that, indicating a relative indication only. The PA Voltage and PA

Current readings can be used to determine the PA input power. The transmitter efficiency at 30 W measured 74 percent, according to a Waters dummy load/wattmeter. The relative forward power reads 10 at 30 W output, and appeared to track within 3-5 percent of the actual power output.

The rear panel consists of the IEC AC filter input, fuse and AC power switch. Next to the power filter is a terminal block for audio input and remote control connections. To the left is the RF output connection.

The power supply consists of a composite $\pm 12/\pm 5V$ switcher and a linear supply for the PA module. The main control board is mounted on the front panel and contains the electronics for power control, AFC lock, SWR foldback protection and over-voltage/current protection. ICs are socketed.

An internal in-line fuse opens if the PA regulator components short, protecting the power amp from catastrophic failure. Heat-related components are located on the main heatsink, cooled by a ventilation system that draws air in from the front panel, through the heatsink and out the rear of the chassis. There is a thermal cut-off switch on the heatsink, opening at 140 degrees if the fans fail to operate.

The FMT-30 contains the same PLFM-100 electronics as the Versa-Count, but the FMT-30 seemed quieter. The dual fans were not offensively loud; not much louder than the noise of a few computers.

I decided to perform some additional tests.

I connected the FMT-30 to the dummy load and ran a sample loop from the Bird sampler to the Belar modulation monitor. I connected a square-wave generator to the composite input and looked at the modulation monitor composite output with a scope. I set the frequency to 100 Hz, and was impressed at the pattern;

almost no tilting of the waveform.

I attempted to measure the noise floor of the exciter — it was better than the noise floor of the monitor! I disconnected the RF output to see what would happen. The PA voltage decreased to approximately 12 V and stayed there. Reconnecting the dummy load/wattmeter reset the power back to the rated output. Apparently, the SWR foldback protection worked fine.

Remote operation

The remote RF feature allows me to operate the transmitter remotely. When the FMT-30 is set to the "RF OFF" position, all B+ is removed from the PA module.

Frequency stability remained well within FCC specs, considering the master oscillator is not oven-controlled. The

most change I noticed was only a 200-300-Hz decrease (in a hot room).

The only issue I have with the FMT-30 is the ventilation holes for the main heatsink. In an enclosed environment, this doesn't appear to create a problem.

The only other issue is changing frequency. You have to open the main cover, then the PLFM-100 cover. A few minor trimmer adjustments have to be made with the PLFM-100. However, a station does not change its frequency every day, so once again, a trivial issue.

The \$999 price of the FMT-30 is well worth the investment. The FMT-30 has been working flawlessly for months, and sounds, performs and operates identically to the high-priced digital counterparts.

Once funds become available, we will be purchasing a backup chain, and already have another JT FMT-30 in the budget.

For information contact JT Communications in Florida at (352) 236-0744 or visit www.atlantic.net/~jtcomm.

Harris

► Continued from page 55
recent transmitter designs, it was time to reevaluate and, let's just say, retire those Conalrad buttons on the 5P.

We wanted a new transmitter that could handle dense modulation with ease and, by sending our MW-50 to auxiliary status, we also could finally retire the BC-5P that so badly needed to go.

This spurred our decision to purchase a 3DX50 transmitter. Clear Channel's AM specialist, John Warner, was instrumental in making this project happen. John, who has had a fair amount of experience with the latest AM transmitter technology, specified the 3DX50.



Bob Blanchard and the Harris 3DX50 Transmitter

changed the way we move air around at the building, from using outside ducted air under the original setup to using two new wall-mounted, five-ton air conditioning units with the 3DX50.

It has been only a few months, but with our new arrangement — the 3DX, air conditioning and denser modulation we now employ — our bills have been coming in at around \$4,800. That's quite a bit of heat we used to burn. And there's no more

TECH UPDATE

SVPA Offers FM Amplifier

Silicon Valley Power Amplifier Corp. recently introduced its 10/1000 power amplifier to the FM broadcast industry. The power amplifier produces 1 kW of output power from a 10-watt input. The higher gain is achieved by adding a preamp stage, which drives two of the SVPA's 500-watt power amplifier modules.

The preamp is a version of the company's 150-W module (010-150 CP), and in this application is required to supply a maximum of 40 W, so the company says the module coasts at the maximum 10/1000 output power.

The 500-watt modules are identical to the SVPA 700-W modules except for the use of an aluminum base plate instead of copper. They are internally preset for a maximum 575-W output, so they always operate within their potential. The power amplifier uses a switch-mode power supply that has power factor correction and will put out a steady 48-V as long as the AC line voltage is between 165 and 265 VAC, keeping the output power of the amplifier constant despite any line voltage fluctuations. The combiner/filter unit is the same used in the B-1000 amplifier for seven years.

The power amplifier is self-contained and needs to be connected only to the exciter, antenna and AC power to be put into service. At 70 pounds, the 10/1000 transports and installs easily. A higher output power version of the 10/1000 is available that uses two of the 700-W modules. The unit retails for \$6,500.

For information contact Silicon Valley Power in California at 408-986-9700 or visit www.svpa.com.



Purchase criteria

The foremost purchase criterion he set for WGY's new transmitter was improved reliability. But it also brought us improved signal quality, reduced operating costs over a long period of time, and, not insignificantly, digital compatibility.

Since the 3DX50 went online in December, it has met these criteria and more. The many features built into the transmitter are impressive. Its extensive redundancy, its ability to maintain 125-percent modulation capability even if several power amplifier modules are out of service and its ability to be serviced during operation provide the reliability we needed.

These features mean no emergency trips to the transmitter site — especially nice as I'm responsible for seven stations in the Albany area, each with a different transmitter site. Control and monitoring are excellent; and the status fault log feature leaves no one wondering about what happened or when. Remote transmitter switching is easy.

The 3DX50, with typical overall efficiency of 87 percent, is reducing our power bill.

Our monthly electrical bill at the transmitter site used to run about \$6,000. We

feeding the tube monster.

WGY's new transmitter includes Harris' patented Direct Digital Drive technology, which takes digital amplitude modulation to the next level. With 3D modulation, Harris has been able to eliminate the RF driver section of the transmitter; instead, a low-level signal directly drives each power amplifier module. This method improves modulation linearity and bandwidth — important for the transition to IBOC DAB.

While we won't be transmitting digitally in the immediate future, we certainly expect to do so within the operating life of the transmitter. The 3DX50 will give us a seamless transition to hybrid, then solely digital, transmission. I doubt that we would have purchased a transmitter in 2001 that could not make an easy transition to digital.

As we celebrate our 80th birthday, it feels, on the transmission side anyway, like WGY has never looked or sounded better.

The transmitter has a retail price of \$179,900.

For more information contact Harris Corp., Broadcast Communications Division in Ohio at (513) 459-3440 or visit www.harris.com.

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DSC-32/64 Satellite Channel Controller
The DSC-32/64 allows complete remote control of two StarGuide II/III, Wegener Unity 4000 or ComStream receivers. An encoder control with a 16 x 2 LCD display provides local control and program descriptions, while external control may be in the form of serial or 64 contact closures. Custom programming is accomplished with a non-dedicated computer.

SDD-8 Serial Data Director
The SDD-8 is a Serial Data Director, with one master RS232 port, and 8 RS232 target ports that can be selected under software control, from a host computer, or other serial device. The function of the unit is very similar to a mechanical port selection switch (A, B, C, etc.)

DSC-20 Dual Satellite Controller
The DSC-20 adds remote control capability to two StarGuide II/III, Wegener Unity 4000 or ComStream receivers, allowing complete control of receiver functions by serial or contact closures. Customized programming is accomplished with a non-dedicated computer.

COA-37 Connect O' Adapter 37
The Connect O' Adapter 37 provides an effective way to convert the DB-37 connector to removable screw terminals. The COA-37 is designed to plug into the male 37-pin D-Sub connector on any StarGuide II or III Relay Module.

COA-15 Connect O' Adapter 15
The Connect O' Adapter 15 provides an effective way to convert the DB-15 connector to removable screw terminals. The COA-15 is designed to plug into the male 15-pin D-Sub connector on any StarGuide II or III Audio Module.

COP Connect O' Pad
The Connect O' Pad (COP), provides an effective way to connect and adjust the audio outputs on your StarGuide II and III receiver. The COP is equipped with an eight position removable screw terminal for connection to the balanced left, right, monaural outputs, audio and chassis ground.

USC-16/SG Upgrade
The USC-16/SG is a firmware upgrade for the USC-16, Universal Satellite Channel Controller. The USC-16/SG is field programmable to switch all functions on StarGuide II / III or other satellite receivers.



PSC-II



DSC-32/64



DSC-20



COA Connect O' Adapter 37



SDD-8



COA Connect O' Adapter 15



COP Connect O' Pad

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USER REPORT

BE Races in Transmitter Olympics

by Barry McLellan
Engineering Manager
Clear Channel of Salt Lake

SALT LAKE CITY While everyone was caught up in the 2002 Winter Olympic games here in Salt Lake City, we were busy preparing to move two FM transmitter sites from their respective mountaintops, power down transmission for three others and reengineer another, all of which required creative transmitter swapping on our part. In the process we were in the market for a new transmitter.

Triathlon

Our triathlon began long before the Olympics, when the engineers at KSL(TV) finalized plans to add three stations to its existing 10-station community antenna on Farnsworth Peak, an antenna farm named after electronic television inventor Philo T. Farnsworth that towers over the Salt Lake Valley.

Over six years, we have replaced four main transmitters and four back-ups from BE. In that time we have had only two component failures.

Ten stations run off the shared antenna at the site, but by increasing power handling capability — courtesy of a new Jampro antenna — another station under our charge, KOSY(FM), was able to join the fray. KOSY is a Class C owned by Mercury Broadcasting, for which we provide engineering services.

In order to move KOSY, 106.5 MHz, from Lake Mountain to Farnsworth Peak, we had to resolve a channel spacing problem with another Mercury station, KRAR(FM) on 106.9. We also had to build a mountaintop site for KRAR 75 miles north of Salt Lake Valley in order to satisfy the FCC contour and reduce second-adjacent-channel interference.

Efficiency

Meanwhile, we had our hands full with the changes at Farnsworth Peak.

Station owners leasing space at the site had passed the hat and collected enough money to add two bays to the proposed new antenna. With more antenna gain, we could reduce power on all FM transmitters at the site, reengineer another on the mountain for the shared antenna and reduce power down to around 10 kW TPO.

Once it makes the hike up to

Farnsworth Peak this summer, KOSY no longer will need its 20-kW transmitter — a reliable Broadcast Electronics FM-20T. So we decided to replace an older CSI transmitter servicing another station at Farnsworth Peak with the FM-20T, and purchase a new 10-kW for KOSY.

Buying a new transmitter is a big deal under any circumstance, but these circumstances called for just the right transmitter. We needed a power-efficient transmitter in order to participate in Utah Power and Light's cash incentive program, which effectively would give

us a cash rebate based on the kilowatts/hour we saved during the year.

The Broadcast Electronics FM-10S, listed for \$62,500, exceeded this requirement with greater than 61-percent overall efficiency. It's efficient on space, too. In about the same space as the old transmitter required, we were able to fit the FM-10S and our equipment rack. We were also able to bring the entire transmitter into the building with two men using a heavy-duty hand truck.

From my experience with a BE 5-kW solid-state transmitter, I am look-

ing forward to having such a reliable and redundant transmitter such as this FM-10S at this site. Being responsible for 11 stations, the fewer transmitter problems I have, the more I can enjoy my life.

In fact, over the last six years, we have replaced four main transmitters and four back-up transmitters from Broadcast Electronics. In that time we have had only two component failures. And those were caused by a bad tube and a power line problem.

The real Olympics start for us after the snow thaws, when we'll begin swapping around transmitters and moving sites.

For more information contact Broadcast Electronics in Illinois at (217) 224-9600 or visit the company Web site at www.bdcast.com.

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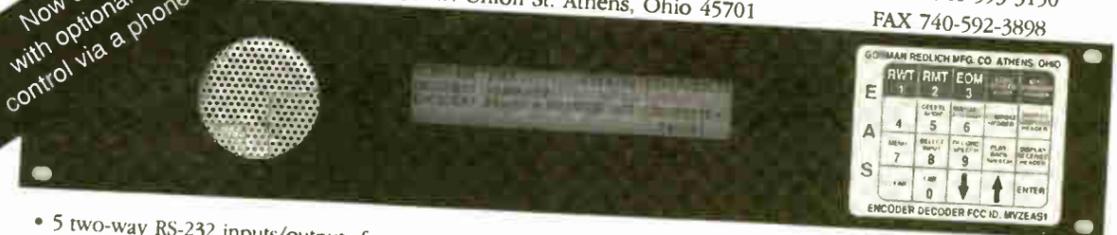
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USER REPORT

BE AM Saves Costs in Kentucky

by Girard Westerberg
Engineering Manager
Clear Channel Communications
WLAP(AM)

LEXINGTON, Ky. Managers decide which transmitters to buy using different sets of considerations.

For those of us making the decision for WLAP in Lexington, Ky., it involved

a few good specs, some hard-won experience and a Bush Hog.

When Clear Channel Communications gave us the go-ahead to purchase a solid-state AM transmitter for the 5-kW WLAP and semiretire its Harris MW5 for backup, we made the usual list of transmitters. All were competitively priced and had decent enough specs, so I knew we couldn't go wrong

in terms of lowering power consumption and getting out the best sound for the legal modulation limit.

But being from the old school of broadcast engineering, I harbored concerns about the durability of a solid-state transmitter and whether it would hold up to all the lightning hits we get here in the Bluegrass State. Then I thought of the Bush Hog incident.

Good experience

About five years ago, our station in Georgetown, Ky., now WSNE(AM), had lost two towers in its three-tower array due to an accident with an industrial-strength mower.

We needed a lower-powered transmitter to operate temporarily with the remaining omnidirectional antenna while we put the array back together again.

The station's Continental transmitter is powered for 10 kW. Period. Powering it down to 1 kW or less would mean an entire retooling of the transmitter. We needed a new transmitter, fast, so we contacted all the transmitter players.

Broadcast Electronics was able to ship its AM-1A solid-state 1-kW transmitter overnight. We used it continuously for the time needed to repair the towers and get our 10-kW Continental back online, and then began using it for reduced 45-W nighttime power. For five years, the transmitter has held up in all kinds of rough weather, so when the time came to replace WLAP's transmitter, I pushed for a Broadcast Electronics AM-6A solid-state transmitter.

When we received the AM-6A, it was light enough for three of us to unload it from the truck. Installation was reminiscent of my experience with the AM-1A at Georgetown. We simply plugged it in and turned it on.

Ditto on performance. Broadcast Electronics advertises noise (stereo) at

better than 55 dB below a reference level equivalent to 100 percent negative modulation of either Left or Right channel in a 22-Hz to 30-kHz bandwidth (unweighted). Our ears confirmed it; this transmitter gave us 125-percent positive peak modulation with unheard of audio quality.

I also like the idea that the AM-6A operates at a lower temperature above ambient than its predecessors, which will increase the life of the power transistors. This transmitter is so "cool," in fact, that we don't have to exhaust heat from the transmitter building. A set of muffin fans is all that's needed for air flow. There isn't enough heat coming out of the transmitter to even bother with ductwork.

That's a cost saving, certainly, and so is not having to buy tubes, which was an annual \$5,000 event when we had the MW5.

Our first budget round after installing the AM-6A showed it decreased WLAP's technical operating budget by 21 percent, thanks to component cost savings and reduced power consumption.

But the AM-6A has earned my respect in its durability. It has a stellar AC line surge suppression design. In the event of a lightning hit to the tower, a Ferrite toroid transformer at the transmission line suppresses EMP induction into the solid-state amplifiers. It actually has a photocell that can "see" lightning and will drop off transmission when it detects a hit.

Other design techniques — like VSWR detection and foldback circuit that reduces carrier interruptions from nearby weather disturbances — make it durable enough to weather our thunderstorms here in Kentucky. In the time we've owned the AM-6A and in the five years we've owned the AM-1A, we've had quite a few thunderstorms roll in, and these transmitters haven't so much as coughed.

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



TECH UPDATE

SBS Offers FM Exciter/Transmitter

Sound Broadcast Services makes the FM30, a broadcast FM exciter that can also be used as a low-power, stand-alone transmitter. The FM30 series comes in a variety of models, two of which are the FM30/M mono version and the FM30/S stereo version.

The exciter uses wideband design techniques and frequency adjustment via internal switches. The FM30 uses the SBS linear modulator to give what the company calls quality sound reproduction with freedom from overshoots and artifacts. It will operate into a load without damage due to its VSWR cut back circuit, which protects the power amplifier stage from adverse operating conditions.

The front-panel metering shows forward and reflected power with internal voltages and the modulation level. Additionally, a front-panel monitor point for RF output is provided. Quick-view status monitoring using dual-color LEDs indicate that PLL lock, forward power and reflected power are within a preset tolerance when green. The rear panel includes a remote control/monitoring socket that allows carrier muting and status signaling to an external system.

The exciter has a range of input options. It has a multiplex/composite input. The FM30/M includes a mono limiter with preemphasis and the FM30/S includes a stereo limiter with 15-kHz filters and a stereo encoder. Power output is 0-30 W on an AC power supply of 230 V, 50/60 Hz or a DC power supply of 24-30 V. It takes up 3 RU.

The 30/M retails for \$2,475 and the 30/S for \$2,992.

For more information contact Broadcasters General Store in Florida at (352) 622-7700 or visit www.broadcastdealer.com.

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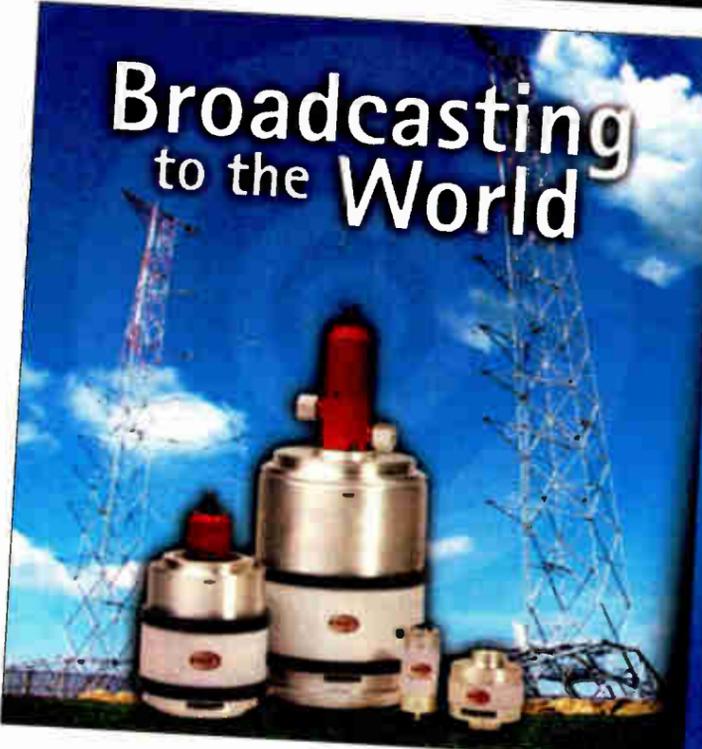
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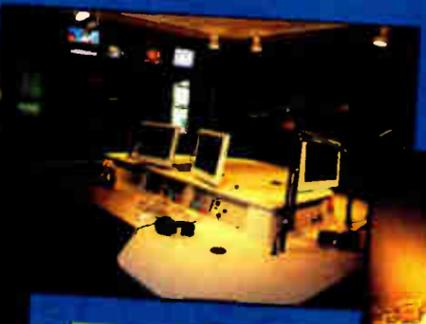
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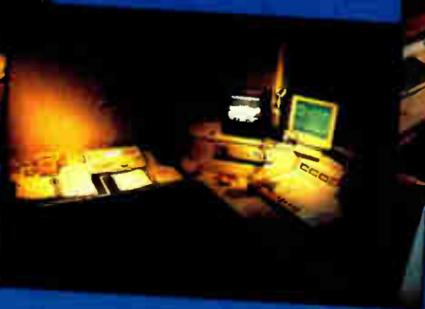
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TECH UPDATES

Larcen Makes Compact 25-Watt FM Translator

Larcen is promoting a new 25-watt FM Translator, introduced at NAB2002, as the most compact and all-inclusive on the market. The FMT-25 solid-state translator is designed to provide strong audio performance in a rebroadcast chain, with an RF output in excess of 25 W in the 87.5-108 MHz band.

The FMT-25 includes an FM rebroadcast receiver and a wideband FM transmitter in a single-space, 19-inch rackmount unit. The frequency for both sections is controlled by a TCXO and synthesizer. The receiver includes a high-quality "front end" with tracking filters and a selective ceramic IF filter to ensure selectivity and audio performance.

Metering facilities are provided for monitoring. The FMT-25 includes a headphone output for monitoring the received signal. It can be powered by a 120-V AC supply or a +24-V DC.



It also includes an additional wideband (100-kHz) input for the insertion of RDS or External Code Key facility. The FCC code key facility is provided on the unit for insertion of a code key module internally, operating on a FSK subcarrier or insertion of the subcarrier externally via the auxiliary wideband input. The retail price is \$3,295.

For more information contact Larcen in Colorado at (303) 665-8000 or visit www.larcen.com.

QEI Offers Multipower Transmitters

QEI Quantum M-Series 1.2-kW to 9.6-kW solid-state FM transmitters are promoted as providing reliable, trouble-free service with several cost-reducing features. The products use modular power amplifiers that are available in power levels between 1.2 and 6 kW at 600-watt increments and between 6 kW and 9.6 kW in 1,200-watt increments.

QEI used CAD/CAM techniques and computer-assisted manufacturing to produce an internal modular system that is easy to maintain and allows the transmitter to be upgraded to a higher power level in the field. The transmitter houses the exciter, IPA, FET power amplifier modules, output combiner, power supplies and harmonic filter/directional coupler assemblies in one unit.

The solid-state design has reduced operating expenses because it eliminates tube replacement costs. It saves on power consumption and reduces heat loads. Controls and meters are placed ergonomically.

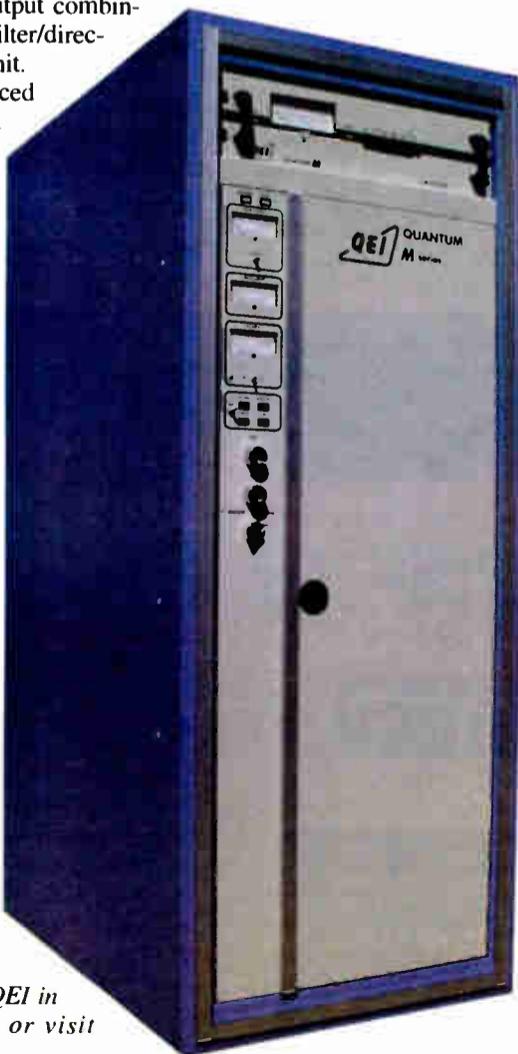
The M-Series Quantum exciter is descended from QEI's Model 675 linear-frequency modulated oscillator (FMO).

The power amplifier modules comprise four FETs combined for 600 W output power. A self-aligning connector feeds each module to the high-power, solid-state combiner. This provides low-loss matching and isolation of the power amplifiers.

The company says this design eliminates trouble-prone connections and high-loss cabling. Filtered air pressurizes the cabinet, eliminating dust infiltration. The power amplifier module compartment has several quiet fans for redundancy and to ensure even cooling of modules.

The M-Series is available in a range of power levels priced from \$20,595 to \$56,595.

For more information contact QEI in New Jersey at (856) 728-2020 or visit www.qei-broadcast.com.



Nicom Packs Power in Small FM Amplifier

Nicom's NA 5001 FM amplifier is designed to be small, relatively lightweight and powerful. It is under four feet tall (19-inch, 22-unit standard rack) and is less than 3 feet deep. It weighs 286 pounds, which, according to the company, makes it easier to handle than other 5-kW FM amplifiers. It puts out 5 kW with 75 W of drive power.

The amplifier is made of two RF modules placed on either side of the unit that can be extracted from the front for maintenance or from the side by taking off the side panels of the rack.

Each module has a maximum power of 3 kW. Each module has autonomous control and protection. The modules are coupled through a 3-dB combiner located in the middle of the system.

The power supply is three-phase and has a 12-phase rectifier in an extractable drawer at the bottom of the system. It can be ordered as either 220- or 380-V units and meets U.S. and European standards. Because of the power supply, distortion of the absorbed current is low.

The front has a digital display that shows the main parameters and accesses the diagnostic menus. Pricing for the system, including driver, is \$39,900.

For more information contact Nicom in California at (619) 477-6298 or visit www.nicomusa.com.



Nautel

► Continued from page 55

capacity MOV from each phase to ground, reducing the bulk of any transient energy to an acceptable level for devices downstream. Additional MOVs are then placed between phases.

Further downstream, the AC is rectified by 24 1,600-V redundant diodes. Each diode is fused in series, and each diode is again given transient suppression via MOVs in parallel with the diodes. With as few as two operating diodes per phase, the transmitter will continue to operate. An LC filter then filters out any DC ripple, and the inductor provides current limiting in the power chain to the switching power supplies.

This is just the beginning.

Power supply

The Q20 uses 16 modular switching power supplies. Each has a small isolation transformer for added transient protection. In addition, the switching power supplies use no electrolytics in the power chain (which are highly susceptible to transients).

Nautel did it right when they designed this power supply. This feature (no electrolytic capacitors) will contribute to a long life for these power supplies. There are also dual low-voltage switching power supplies for the critical low-level circuitry and a switching power supply for the IPA. For me, this meant not only plenty of protection, but also a lot of redundancy in the power supply, resulting in extremely high reliability.

The 16 switching power supplies power 16 RF power modules. The power modules are hot-swappable, each housing four 370-W power amplifiers. These broadband RF amplifiers use Motorola MRF151G (Gemini Series) prematched FETs. Each RF amplifier is individually connected to a single-stage combiner via a BNC connector.

This part went surprisingly fast and relatively easily. I like the level of redundancy here. Loss of an RF power module or switching power supply means only a slight reduction in output power.

Remember, there are 16 of these RF power modules, or 64 power amplifiers in total. If one fails, I know it's nothing serious, and when Mt. Vision is covered with snow, I can gladly wait until the weather clears.

She's a beauty

The combiner is a beauty. It's a single-stage unit that combines the 64 amplifiers in parallel. There are no wasteful balancing reject loads to be found, so it runs cool and efficient at roughly 68-percent efficiency.

Twenty-four hundred cfm is all the cooling air exchange it needs. As I said, the air at this altitude is quite thin, but the Q20 runs fine.

The unit is compact for 20 kW of power. It takes up roughly 15 square feet — much less than its tube predecessor — so now I have much more room in the transmitter building.

It was nice to see that the front section of the chassis can be taken off. That way it can fit through a standard door without needing to tear down any walls.

The transmitter has been on air for roughly nine months, spanning its first winter without a single burp through the attendant AC power failures, exhibiting reliable operation and excellent performance.

Hats off to Nautel for a well-designed transmitter.

For more information, including pricing, contact Nautel in Maine at (207) 947-8200 or visit the company Web site at www.nautel.com.

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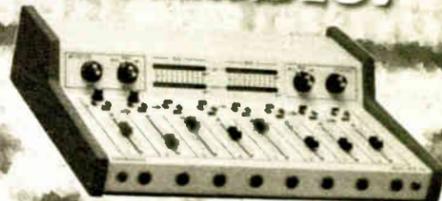
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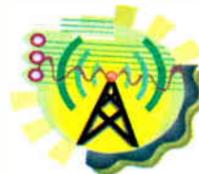
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TECH UPDATES

Bext Offers Power Transmitter/Exciter Series

Bext's PT LCD series of frequency agile-LCD display FM transmitters/exciter comes in 30-, 60- and 100-watt versions.

The exciter takes up two rack spaces. They are microprocessor-controlled; S/N typically is at 90 dB, providing digital CD-quality sound. The optimized PLL design improves low-frequency response.



Bext PT 30LCD 30-W Transmitter/Exciter

Functions are visible and programmable from a large, illuminated display on the front panel, which is built to have a user-friendly RS-232C graphics interface that allows the setting and reading of a unit's working parameters. Alarm conditions come with automatic notifications and have a permanently memorized time stamp.

The exciter can perform self-diagnosis, and they are always on-air at any VSWR level due to a built-in proportionate auto foldback circuit.

The exciter can be connected to the engineer's home PC via a modem, so the operator can read the status of the equipment parameters and make changes. AES/EBU digital inputs are available, as well as a 24-V DC power supply, so that if AC is lost the station can stay on the air.

For more information including pricing, contact Bext in California at (619) 239-8462 or visit www.bext.com.

Nautel AM Systems Ready for IBOC

The new Nautel XL60d 60-kW AM solid-state broadcast transmitter is designed to be compatible with Ibiqity Digital Corp.'s IBOC digital broadcasting system.

Nautel designed a wide-bandwidth modulator filter with improved phase linearity, increasing the modulator bandwidth to 40 kHz, which it says is approximately three times the bandwidth of the IBOC signal. In addition, the modulator switching frequency has been increased to approximately 130 kHz.

Other Nautel AM transmitters (1 kW, 2.5 kW, 5 kW, 12 kW and 30 kW) are compatible with Ibiqity's AM IBOC system. Nautel also offers the NE IBOC Digital Exciter, built under technology license from Ibiqity, for use with AM transmitters for IBOC digital transmission.

The 80 power amplifiers of the XL60d contribute equally to the RF output signal, so if an amplifier is lost, spectral integrity is maintained. The company says this design puts less stress on the amplifiers.



The transmitter is capable of 66 kW with 125-percent modulation or 50 kW at 155 percent. The dual exciter offers duplication of RF drive, modulation drive and critical low-level control/monitor circuitry. If a power module fails, it can be removed and replaced without shutting down the transmitter.

The XL60d and its predecessors do not require tuning and loading adjustments for antenna matching. The XL60d is capable of operating into an equivalent 1.5:1 antenna mismatch at the carrier frequency and ± 15 kHz from the carrier.

For more information, contact Nautel in Maine at (207) 947-8200 or visit www.nautel.com.

Continental Adds New Tube to Transmitters

The Continental Electronics Corp. veteran 816R-5C and 816R-6C 35- and 30-kW FM transmitters have received an upgrade in the form of the new 4CX20000E Eimac power tetrode tubes.

The "grounded screen" single-tube power amplifier 4CX20000E can provide 20-dB gain in the FM broadcast service with over 35-kW output, and has been tested at over 40-kW output, according to Eimac. The tube has the physical dimensions as the previously used YC-130 available from Eimac and Svetlana. Continental supplies the parts and installation information to convert to the 4CX20000E tube.

The transmitters feature dual-module solid-state IPA, which increases reliability and decreases maintenance and complexity. The IPA offers greater bandwidth and a self-protecting RF module. An automatic power output control maintains output power at reduced AC line voltage.

Dual VSWR protection circuits cover severe instances and limit reflected power during antenna icing. Positive pressure cooling pressurizes the cabinet, drawing intake air through the top-mounted air filter. A second fan provides PA cooling.

The power supply protection uses breakers and indicating fuse holders on the front panel for quick power supply diagnoses. Twenty-seven LEDs indicate the operation of control circuit interrupts, interlocks and overloads.

The broadband quarter-wave cavity provides extended bandwidth for stereo and extended SCA performance. The AC phase loss detector monitors phases, voltages and phase rotation. The remote control interface has opto-isolated DC connections to link to any remote control system. An automatic power recycling feature recycles the transmitter after a power failure.

For more information including pricing, contact Continental in Texas at (214) 381-7161 or visit www.contelec.com.

Crown Features Remote Management

Crown Broadcast has designated its newest line of FM transmitters as the FMX series, allowing an engineer to monitor and adjust transmitter performance without a site visit.

FMX has digital monitoring and control plus a remote management option. One part is the Digital Management System, designed to make managing and monitoring transmitter performance easy. Management is accomplished with one control knob and display. Operators can use menus to make readings or adjustments with password protection.

The other half, the Remote Management System, allows the engineer to use a phone to keep track of the transmitter's performance and make parameter changes. The RMS can call the engineer if a significant fault occurs. It can enable the user to monitor remote site functions such as HVAC, tower lighting, STL status and security status via digital, analog and relay-type connections.

The FMX series is available in 30-, 100- or 250-watt power levels in standard configurations: exciter, integrated transmitter and translator. FMX is available in Crown's 1-kW and 2-kW medium-power products.

Older Crown transmitters can be changed to FMX capabilities with upgrade kits. A Digital Management System can be added by removing a transmitter's front panel, exchanging a circuit board, switching connections over the new front panel and installing it. The RMS attaches to the rear of the unit with a few connections.

For more information including pricing, contact Crown in Indiana at (877) 262-8900 or visit www.crownbroadcast.com.



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Jampro JLC-3, 3-bay, 104.1 MHz, good condition with tuner, \$1800 +frt. Jim Garling, KTIL, POB 40, Tillamook OR 97141. 503-842-4422.

Phelps/Dodge CFM/LP3 3 bay tuned to 95.3FM with de-icers, removed from service in 7/01 due to upgrade & freq change, power gain 1.5, 3 sections, \$500. Tony St. James, KFLP, POB 658, Floydada TX 79235. 806-983-5704.

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Phone: 856-232-1625 • Fax: 856-232-2075
Email: rjbeme@aol.com.

CSI FM-3000E, 3 phase, 3 kW w/exciter, used as primary until 3/96, active standby until 11/01, includes spare parts, \$8950. Clark Jones, Eddins Bldg, 1707 Warnke Rd NW, Cullman AL 35055. 256-734-3271.

CSI T-25F xmtr, 25 kW power amplifier xmtr w/harmonic filter, \$5500. Clark Jones, Eddins Bldg, 1707 Warnke Rd NW, Cullman AL 35055. 256-734-3271.

Harris Gates II, 2500W Solid State AM xmtr with lots of extras, 1510 kHz, never used in excel cond, \$12,500/BO. Angie Sugalski, WCN, POB 444, Spartanburg SC 29304. 888-989-2299 or angie@wilkinsradio.com

Harris MW-50 xmtr. Currently not operable but available for parts and/or sell as is. Tuned to 1010 freq. Kevin Shaffer, KSIR, 231 Main St, Ft Morgan CO 80701. 970-867-7271.

Parts available for RCA BTF-10E1. Max Turner, Susquehanna Radio Corp, 317-558-7302 or mturner@indyradio.com.

Harris FM-20K, PN 994-8052-002, Serial # 85-0077-005, BO. Hiram Champlin, Chisholm Trail Bldg, PO Box 952, Enid OK 73702. 580-237-1390.

Harris MX-15 exciter, PM 994-7950-004, Serial MFG444022459, BO. Hiram Champlin, Chisholm Trail Bldg, PO Box 952, Enid OK 73702. 580-237-1390.

NCR AM88 PLL 100 milliwatt AM transmitter "kit" (Part 15), new, parts & case, \$130. Gene Whittenberger, Whittenberger Studio, POB 396, Mexico IN 46958. 765-985-1114.

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Western Michigan University's WMU Radio is seeking to fill a full-time, Broadcast Engineer position to operate, test, maintain, and repair electronic and digital audio equipment including transmitter, satellite downlink, consoles, and audio server; record remote and in-studio programs and concerts. Qualifications: Three years' experience in broadcast maintenance and repair; working knowledge of contemporary electronics, troubleshooting practices, broadcast computers and networks; ability to travel and properly record concerts. Ability to do heavy lifting and work out-of-doors; college education in a relevant field, Bachelor's degree preferred. WMU offers a competitive salary and an excellent benefits package. For a more complete description of the job, visit our web-site at <http://www.wmich.edu/hr/job.htm>. Fax or send cover letter and resume by May 31, 2002 to: Human Resource Services #2887, Department of Human Resources, Western Michigan University, 1903 W. Michigan Ave., Kalamazoo, MI 49008-5217. FAX: 616/387-3441. E-mail: hr-jobs@wmich.edu. WMU is an EO/AA Employer.



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*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.

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Call Simone Fewell, Ext. 154, Classified Ad Manager, to reserve space in the next issue. Use your credit card to pay, we now accept VISA, MASTERCARD and American Express.

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72	Wheatstone	www.wheatstone.com
57	Wheatstone/RDA Systems	www.rdasystems.com

◆ READER'S FORUM ◆

Poor public radio!

I'm so sick and tired of public radio crying in their coffers (Jan. 16, "Pubcasters Fight Shaky Footing"). They ought to try to run a small-market radio station where you really have to get out and work to keep the doors open and on the air.

Dealing with the public and calling on accounts is real public radio, supported by advertisers and listeners alike.

It just breaks my heart to hear about New York's WXXI only able to raise \$3.5 million of a projected \$8 million. What the hell are they paying these people and where is all the money going?

Dealing with the public and calling on accounts is real public radio, supported by advertisers and listeners alike.

Now with the Internet, public radio can do a better job of begging, just like most religious broadcasters, all doing it tax-free and with somebody else's money. You can run a radio station for a lot less and still do a great job serving the public and the public interest. I've only been doing it for a little over 20 years, so what do I know?!

Hey WXXI, get with the program or let me come on board for a great salary. I need the money!

*Joe Davis
Owner/Operator
KLSR(FM)
Memphis, Tenn.*

Mt. Wilson

I read your article "Wagon Trail to RF Site" in the March 1 issue. This was an excellent story about Mt. Wilson. As a California native, I could relate to most of the call letters. It

brought back great memories of the old stations.

In 1984, I had been moved to Colorado Springs by a large company called NCR. I enjoyed the microelectronics world for some time until the offer of radio came around. I couldn't resist the opportunity. I began my career in radio and never looked back. It had been a good choice; NCR closed its doors in 2001.

While in the radio business in Colorado Springs, I have the unique privilege of accessing Cheyenne Mountain, which overlooks NORAD. This site too has a great deal of interesting history. Some of the stories reflect on the first man to build on top of the mountain. He would light a fire on the top to let his wife in Colorado Springs know he was safe.

With close to 1,000 transmitters, the mountain deserves a little fame.

*Cliff Mikkelsen
Director of Engineering
Clear Channel Communications
Colorado Springs, Colo.*

APT and DAB

In the years that I have been with APT, Radio World has been an important magazine to assist in understanding the state of the radio industry.

Without sounding too evangelical, I believe APT has an important message to get across to decision-makers in the private and public radio networks. This message revolves around the dangers of multiple passes of psychoacoustic-based compression algorithms, i.e., ISO-MPEG Layer II, Layer III (MP3), AAC and PAC, etc.

Simply introducing an APT codec in the broadcast chain will assist in addressing these problems of audio quality.

Whereas in FM or AM program content, this may not be readily identifiable as a problem, it really becomes an issue when digital emission is introduced. In the United Kingdom, both the Capital and GWR groups have committed to the apt-X-based technology in light of DAB.

However, in the United States for IBOC, we are endeavoring to get this message across. This will be achieved in a number of ways, including white papers at NAB, articles in trade magazines and hosting double-blind listen-

FCC Data to Get Facelift?

Bravo to the FCC for seeking public input about what it's like for broadcasters to use its online licensing systems, such as the Consolidated Database System.

One reader of a broadcast-related Web discussion group urged, "Use this opportunity to comment on the many CDBS shortcomings." Another stated, "CDBS stands for Consolidated Data Base Shortcomings."

The latter engineer also suggested that the April comment due date was not enough lead time. "Many of us could write volumes," he said.

The commission sought input on all of its electronic licensing systems, not only CDBS. They include the Equipment Authorization System, the Experimental Licensing System and the Commission Registration System.

But among broadcasters, the CDBS has generated the most headaches. Users have criticized the system for inaccurate or missing records, causing problems for consulting engineers who use it to generate technical studies.

The FCC has not ignored the problem; engineers and attorneys who use the CDBS say there has been marked improvement since its 1999 inception. Ad-hoc committees from the Association of Federal Communications Consulting Engineers and the Federal Communications Bar Association have been meeting with the Audio Services Division about ways to improve CDBS as well. Radio World last chronicled the database situation in the Oct. 24, 2001 issue.

"The FCC is not running from the problem," said one attorney from the FCBA group. Still, one engineer said, the FCC must devote more money and personnel to the project; otherwise, solving the database problems will take a while.

The commission, according to its written notice, sees the long-term project as a way to improve licensing systems "for our customers."

Once the agency sorts through the suggestions, we could see improvements by the fiscal year 2003, which begins this fall.

It took a while for the FCC to acknowledge that the database system used by broadcasters was flawed. We commend it for acting more aggressively now.

— RW

ing tests for acknowledged industry "golden ears."

I would like to believe that Radio World would be supportive in assisting APT to disseminate this information to the broadcast engineers who are charged with maintenance and upgrade of their broadcast chains.

Should you wish to discuss any aspect of the above please do not hesitate to get in contact.

*Jon McClintock
Commercial Director
APT
Belfast, Northern Ireland*

Weather reporting

OK, so you have inflated weather warnings (March 13, "Inflated Weather Warnings?").

Ever listened to traffic radio in Los

Angeles? All traffic problems from bad wrecks to flat tires are reported as a major backup. Is the traffic report true or not true? You just don't know anymore.

*Bill Dawson
Engineer, TV/Radio
Pepperdine University
Malibu, Calif.*

Write to Us

RADIO WORLD
READER'S FORUM

P.O. Box 1214

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—EDITORIAL STAFF—

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Telephone: (703) 998-7600 • Business Fax: (703) 998-2966 • Editorial Fax: (703) 820-3245
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Japan: Eiji Yoshikawa	+81-3-3327-2688	Fax: +81-3-3327-3010	e-mail: callem@msn.com
Asia/Pacific: Wengong Wang	+86-755-5785161	Fax: +86-755-5785160	e-mail: wwg@imaschina.com
Latin America: J.O. Lima e Castro	+55-11-3873-1211	Fax: +55-11-3673-1499	e-mail: limcas@uol.com.br

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