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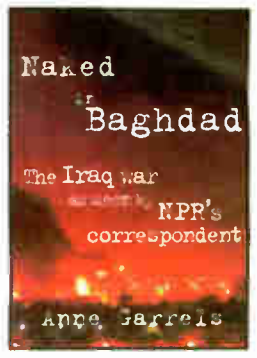

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$2.50 The Newspaper for Radio Managers and Engineers September 24, 2003

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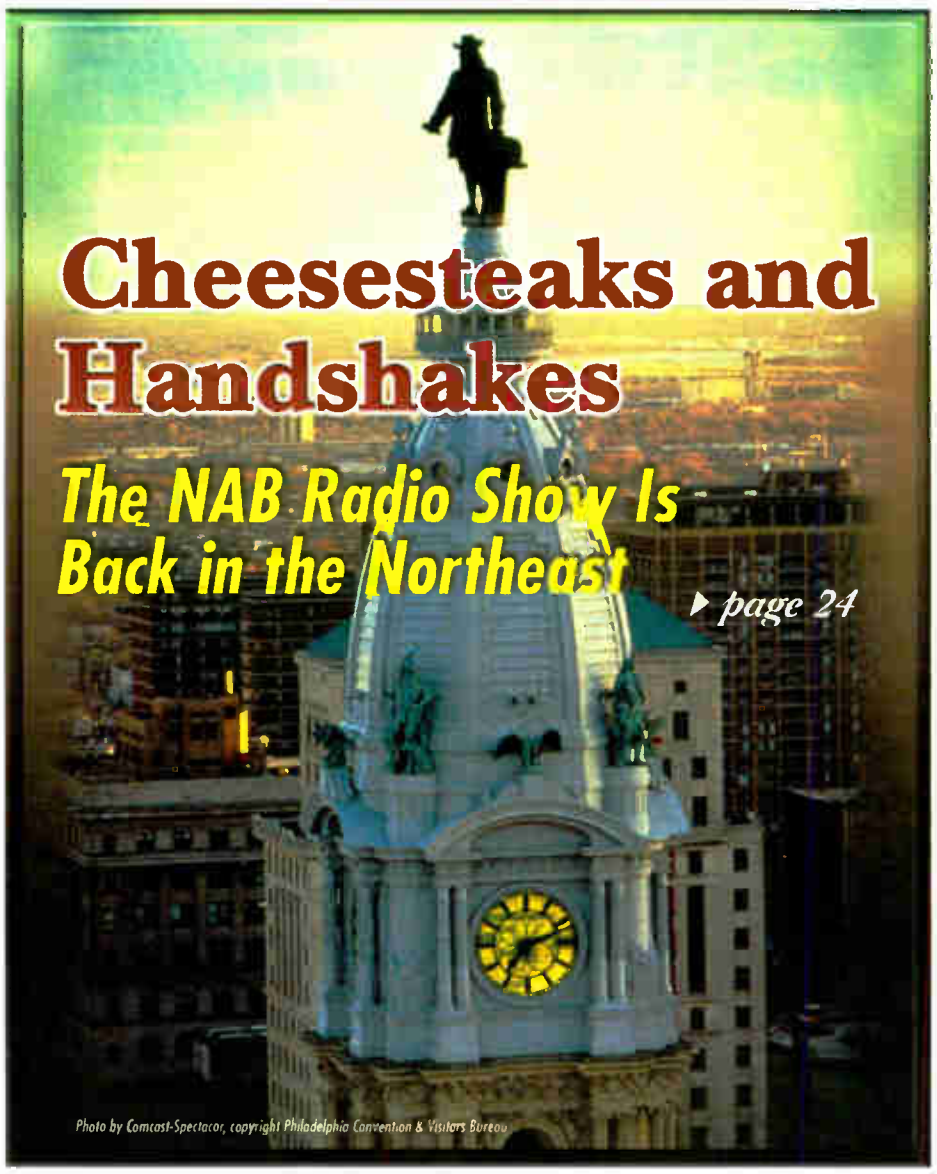

NEWS MAKER

Levin Seeks To Dispel The 'Myths'

WASHINGTON Andy Levin, Capitol Hill insider, is chief lobbyist for Clear Channel Communications. Just this year, the radio giant established a Washington presence separate from that of its regulatory counsel, Wiley, Rein and Fielding, the law firm that handles Clear Channel's business with the FCC.

While major television networks have legislative lobbyists at the federal level — and their radio divisions can take advantage of that expertise — most radio groups not co-owned with a TV network typically rely on the NAB to lobby for them, or retain lobbying firms for specific issues.

Pundits said Clear Channel opened a Washington office in January to battle negative publicity that the company, and radio in general, have been receiving.

Levin is on an intimate footing with communications policies; he was a staffer for the House Energy and Commerce Committee when the Telecom Act was debated and passed.

Radio World News Editor/Washington Bureau Chief Leslie Stimson spoke with Levin about life in the political trenches.

See LEVIN, page 6 ▶

World Radio History

◆ NEWSWATCH ◆

Court Stays New Media Rules

PHILADEPHIA A federal appeals court blocked the FCC's new media ownership rules from taking effect on Sept. 4 as scheduled.

The action leaves the current rules, including the radio market definition, in force. The agency was preparing to lift a freeze it had re-imposed on the filing of applications for license transfers or construction permits on Sept. 5. It planned to give guidance soon on the filing of new applications and on how it would handle pending applications. Indications at press time were the FCC would use the old forms. It had readied new forms to comply with the revised media ownership rules, which are now on hold.

Hours after hearing arguments in the Third U.S. Circuit Court of Appeals in Philadelphia on Sept. 3, a three-judge panel decided that the issue of relaxing some of the radio and TV ownership limits warranted more time for review.

"Given the magnitude of this matter, and the public's interest in reaching the proper resolution, a stay is warranted pending thorough and efficient judicial review," the judges stated. They did not say how long implementation would be delayed. However the temporary stay gives the courts more time to settle lawsuits to overturn the rules.

"While we are disappointed by the decision by the court to stay the new rules, we will continue to vigorously defend them and look forward to a decision by the court on the merits," an FCC spokesman said.

The judges heard arguments from the Media Access Project, representing the Prometheus Radio Project, which wanted to stop the new rules, warning of further media consolidation. It filed a petition calling for judicial review of the rules passed by the FCC in June.

The FCC, Fox, Viacom and NBC argued for the rules to go into effect.

Once the judicial review is complete, the court will uphold the rules or compel the commission to revise them. In either case, the decision could be appealed.

The judges indicated they would move quickly to act on requests to move the case to the federal appeals court in Washington.

In the order, the judges felt the government would have little recourse but to undo mergers that could later be found to be unlawful if the new rules were overturned.

The legal battle could be moot if congressional efforts to undo portions or all of the rules are successful.

Powell Selects Chief of Staff

WASHINGTON Two days after his chief of staff announced her departure, FCC Chairman Michael Powell selected a replacement, appointing Bryan Tramont.

Tramont was Powell's senior legal advisor, advising him on FCC agenda and circulate issues, and specifically on wireless, international, technology and consumer matters. Tramont worked in the same position to Commissioners Kathleen Abernathy and Harold Furchtgott-Roth.

Tramont replaces Marsha MacBride, who had served in the position since Powell became chairman in 2001. She said she was leaving the agency for the private sector.

Powell called MacBride his "most trusted and loyal adviser." She came to the FCC in 1991 and rejoined the commission in 2001 as Powell's chief of staff after working as vice president of government relations for the Walt Disney Company. She headed commission's Homeland Security Policy Council.

Powell lost another top aide, his legal adviser on media issues, Susan Eid, in July.

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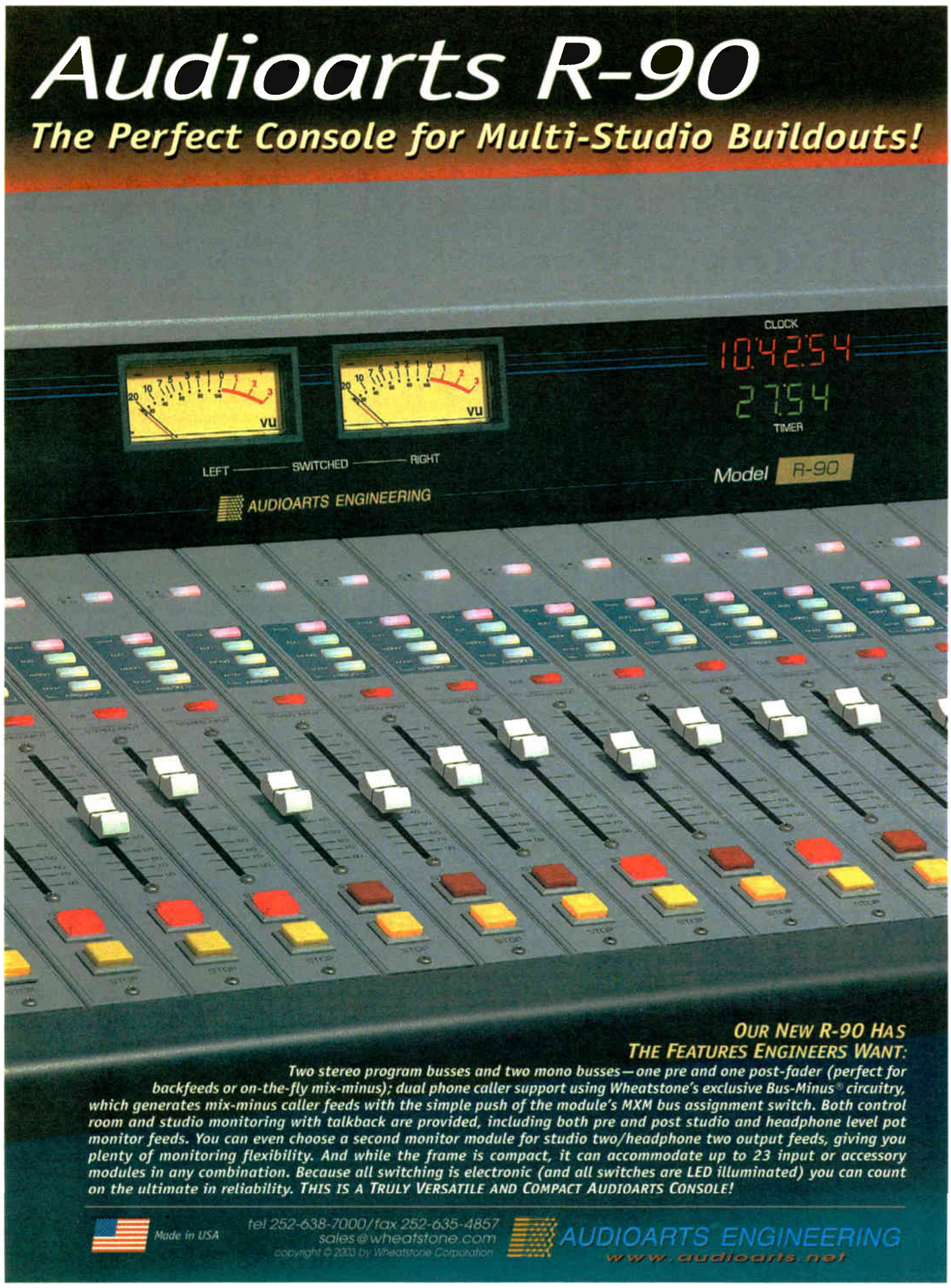


See us at the NAB Radio Show Booth #14

World Radio History

Backups Aid in Blackout Radio Response

by Randy J. Stine

Weeks after the big blackout of August 2003, engineers and other radio station employees were still talking about how it affected their operations.

Broadcasters were reminded again during the big power outage of the importance of emergency preparedness.

When it crippled major cities like New York, Detroit and Cleveland, broadcast engineers in those markets relied on backup generators and a little ingenuity to get through the emergency until power was restored.

New York radio was hit hard when the Empire State Building, home to most of the city's FM transmitters, went dark. Some stations switched to backups at Four Times Square and the Alpine Tower in New Jersey. Other stations simply stayed off the air until most of the city's power was restored — up to two days later.

Studio move

According to one New York radio chief engineer, some New York television stations were grabbing young men from the street and offering good pay to lug cans of diesel fuel to the top floors of the Empire State Building to power backup generators.

New York fire officials limit the amount of fuel that stations may store to run their generators. At one point a large drum spilled, leaking fuel down countless stairwells, the source said.

Photo by Bill Sweeney/WNYC, New York Public Radio

WNYC Reporter Richard Hake works by flashlight.

Kevin Plumb, director of engineering for ABC Radio's New York City cluster, said, "We immediately went to the generators to run our studios, which are atop Madison Square Garden. That worked fine until we ran out of water pressure for the generators about 16 hours later. We realized that was going to happen, so we made plans to move to studios at ABC Radio Networks down the street." The cluster includes AM stations WABC, WEPN and WQEW, as well as WPLJ(FM).

Once the blackout hit, WPLJ staffers began burning commercials and music to CD in preparation for the studio move, Plumb said.

WPLJ immediately switched to its full-power auxiliary antenna at the Alpine Tower in New Jersey, while WABC remained on its main antenna in Lodi, N.J., on backup power, he said.

"Once we moved to ABC Radio's studios, we utilized ISDN lines and the StarGuide satellite distribution system to feed audio to the transmitter sites. WQEW/Radio Disney was off the air until the weekend because we have no generator at the transmitter site," he said.

Three ABC Radio engineers were essentially trapped for nearly 48 hours at the studios atop Madison Square Garden, Plumb said, going without much water and food.

"It was very difficult to get people in and out of the building. Once anyone left, they could not get back into the building. So they had to stay. When the Radio Disney Bazooka bubble gum ran out after about the 18th hour, they got a little desperate," he joked.

"We did suffer some damage to our Harris DX 50 transmitter for WABC, which didn't like the power fluctuations. We had to replace several controller circuits," he said.

The EAS connection

The only glitch in Plumb's contingency plans was losing all transmission capabilities from the Empire State Building for nearly 30 hours.

"We had planned on using microwave for signal to Empire in emergencies, but without power there we had to rely on ISDN instead."

Other major northern cities experienced

See BLACKOUT, page 5 ▶

Radio's Role Seen as Crucial

NEW YORK Public warning officials say the massive power blackout in August was a good indicator of whether radio and television broadcasters have improved emergency preparedness plans enough since 9/11 to ensure the delivery of information during a national emergency.

"Broadcasters appear to be better prepared to maintain facility management with alternative power supplies and backup transmitters. An emergency simulation or exercise is good practice. The real deal is a better test of the infrastructure," said Tom Fitzpatrick, chair of the government to public messaging subcommittee of the Media Security and Reliability Council.

MSRC is a federal advisory committee developed after the 2001 terrorism attacks to ensure that broadcasters remain on the air in the event of further attacks or natural disasters. Members submitted recommendations to the FCC on ways to ensure delivery of emergency information via public warning systems earlier this year.

"Overall, the broadcasters did a very good job of fulfilling their public service obligations," said Jim Dailey, director of the FCC's Office of Homeland Security. "A lot of lessons learned from New York City caused broadcasters to examine their emergency backup plans. I think having generators should be a part of any business plan."

Spotlight on radio

The FCC is in discussions with several MSRC working groups on a list of 26 recommended "best practices," which called on the government to create a Media Common Alert Protocol to deliver emergency information via digital networks.

"We are still in deliberations at this point. I think MSRC is on the right track with what (the FCC) has seen to this point," Dailey said.

He said the blackout likely will be discussed when MSRC officials meet with the FCC in November.

The blackout helped spotlight radio's role as a mass medium, said Ann Arnold, executive director of the Texas Association of Broadcasters and chair of MSRC's government to media subcommittee.

"Radio in particular proved invaluable and allowed thousands of New Yorkers to stay informed via hand-held and car radios," she said. "Broadcasters' response to the blackout was promising."

Broadcasters recognize the need to modernize and update facilities to have state-of-the-art generators available, she said.

Some radio groups relied on plans made for the expected but never-realized Y2K power glitch three years ago.

"Many broadcasters ran drills in preparedness for Y2K for the potential loss of the electric grid. That was the game plan most stations used here during the blackout," said Karole White, president/CEO of the Michigan Association of Broadcasters. However, White said stations that were without generators were knocked off the air. "Some had generators at tower sites but not at their main studios. Certainly that is an area that needs to be addressed still," White said.

— *by Randy J. St*

World Radio History

FROM THE EDITOR

Garrels Gets 'Naked in Baghdad'

by Paul J. McLane

"We've settled into a routine of bombing and briefings."

Thus does Anne Garrels begin an entry in "Naked in Baghdad." The statement is matter-of-fact, like the rest of her new book.

NPR's senior foreign correspondent was one of 16 non-embedded American journalists who stayed in the Iraq capital as war fell upon it, and the only U.S. broadcast correspondent who remained to cover the initial invasion.

We are blessed with little good writing about radio news and the latent power of the medium. I may be biased — I am a former radio journalist with a wistful bit of would-be war correspondent in me — but her story will interest anyone who wonders how reporters do what they do when bombs are falling.

Recalling Stalin

We see Garrels in pre-war Iraq, working sources despite the presence of minders. We learn what some Iraqis think about Saddam Hussein and the United States. We come to appreciate Amer, her driver, protector and friend.

She reports on the decaying infrastructure even as sparkling new mosques and palaces are built. This is poignant in a city of history and culture, about which an Arab phrase said, "Cairo writes, Beirut publishes and Baghdad reads."

Garrels files reports for "All Things Considered," "Morning Edition" and other shows via satellite phone from hotel rooms. Sometimes the work is exciting, at other times it is journalistic ditch-digging. She covers up a mirror so she doesn't have to see herself "getting grayer" after yet another 1 a.m. report for rush-hour listeners at home.

A Russian speaker, she likens Iraq to the crumbling Soviet Union in the late 1970s. She also compares Iraq's leader to Stalin, noting that Saddam encouraged children to report their parents for subversive comments.

She becomes adept at bribery and paying "fees" for accreditation. She also has learned in other conflicts that her sex can be a boon. Many women will talk to her about things they would not discuss with a man. However, she must cope with males interested for other reasons. A hotel guard catches her taking a swim in the pool and pulls her aside to "cop a feel." She laughs him off.

The book reminds us of U.N. inspections, human shields, Saddam videos; the Iraqi information minister and his "stand-up comedy routine"; reports of American pilots in the Tigris, the bombed marketplaces, the inevitable zoo stories. ("Every war has a zoo.")

Raw reporting

We read of Iraqis hungry for news from the BBC, Radio Monte Carlo and VOA; we see the government jamming Radio Sawa. At Internet cafés, Iraqis try to sneak past the government safeguards and Saddam screensavers to find out what's happening.

Garrels knocks her satellite phone to the floor and breaks it; she repairs the panel with tape from a first-aid kit. In the streets she records screaming Iraqis waving body parts of victims, and struggles to determine whether the damage was caused by bombs or anti-aircraft weapons.

We laugh ruefully at the description of her broadcasting naked in her room. She did so in case authorities were to knock on her door; she didn't want them to confiscate her sat phone and hoped that being in the buff would give her an excuse to keep the door shut long enough to hide the equipment. Robert Siegel apparently had no idea.

Self-effacing, Garrels can't help but reveal her courage. She remained of her own volition — complaining about the inadequacy of audio gear at recording cannon fire from an A-10 Warthog; feeling her hotel shudder under fire from a U.S. tank in an incident that killed two colleagues.

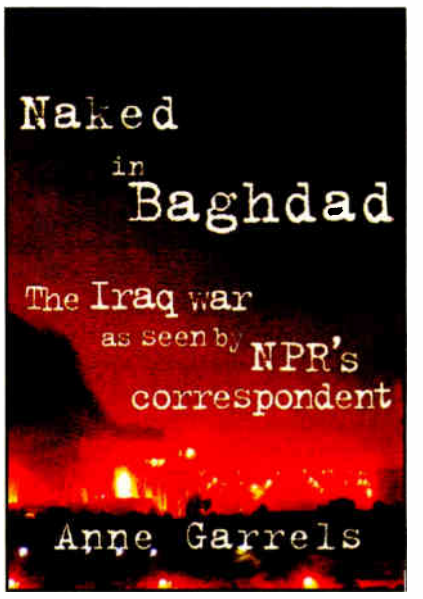
An unexpected treasure is a series of e-mails sent to friends by her husband, artist Vint Lawrence. In these he refers to her as Brenda, as in Brenda Starr, the comic strip journalist/heroine.

He is a better writer than she; he is a better writer than I. His beautiful prose, interspersed through the book, illuminates their love story. Vint describes coming home one night to find his "Baghdad Bauble" curled up asleep with a family dog after a 36-hour journey. She calls Vint her "secret weapon," a source of remarkable stability and support.

This book is a diary in retrospect, a chronicle of what she saw and heard. Her writing is descriptive, not deep, as one expects from a radio reporter.

Discussed too briefly are the choices wartime reporters must make: Should one tactfully avoid forbidden topics, such as Saddam's personality? Or report everything and risk your visa? Also touched on only briefly are the journalists around her and the personalities to be found among print, TV and radio people.

Occasional gossip about the likes of Geraldo Rivera and Peter Arnett is tantalizing. Recalling an earlier encounter with Rivera, she writes, "It was clear he was playing by different rules that blurred the lines between journalist and combatant. He was upping the ante and I didn't want to be in his playpen."



Mixed metaphors aside, I love it. You go, radio girl.

"Our intimate war, with no networks and no stars, has turned into the usual gang-bang," she says after U.S. troops secure the hotel. "When I see Dan Rather and Christiane Amanpour wandering down my floor, I realize it will soon be time for me to leave."

We are reminded too that men and women journalists died covering the conflict, including a close friend of Garrels.

Just one view

Understandably the book has no photos; but I miss them. Her text lacks the grit we would expect from a print journalist. Garrels does give us the big flavor, the passing anecdote, the brief meeting with an Iraqi woman in a kitchen or a man at a backgammon table.

I'm intrigued by how reporters do their thing under such circumstances. I appreciate reading about the limitations of what they can achieve. She points out in her introduction that each reporter had but one window on the conflict; hers was from Baghdad.

Indeed her view was only a sliver of a war; and the city itself saw relatively little of the fighting. "I am having trouble finding new material that goes beyond official rantings and more 'thud, thud, thud,'" she laments at one point.

I'm glad she is so frank. Too many reporters are not. Her story is no less compelling.

Our winner this week is Ken Burns, information systems engineer with Christian Family Radio in Bowling Green, Ky. He wins a pair of AKG's lovely K 271 Studio headphones.

The K 271 has a comfortable circumaural ear cup design and a closed back for isolation from noise — 40 dB of ambient noise suppression, so it can be used in loud environments. A mute switch engages when the headphones are taken off. The removable cable has a mini-XLR jack on the headphone and a gold-plated mini 1/4-inch plug. Made in Austria, the K 271 Studio is covered by a two-year warranty. Retail value: $249.

You can sign up for a shot at the rest of this year's prizes at *www.rwonline.com*.

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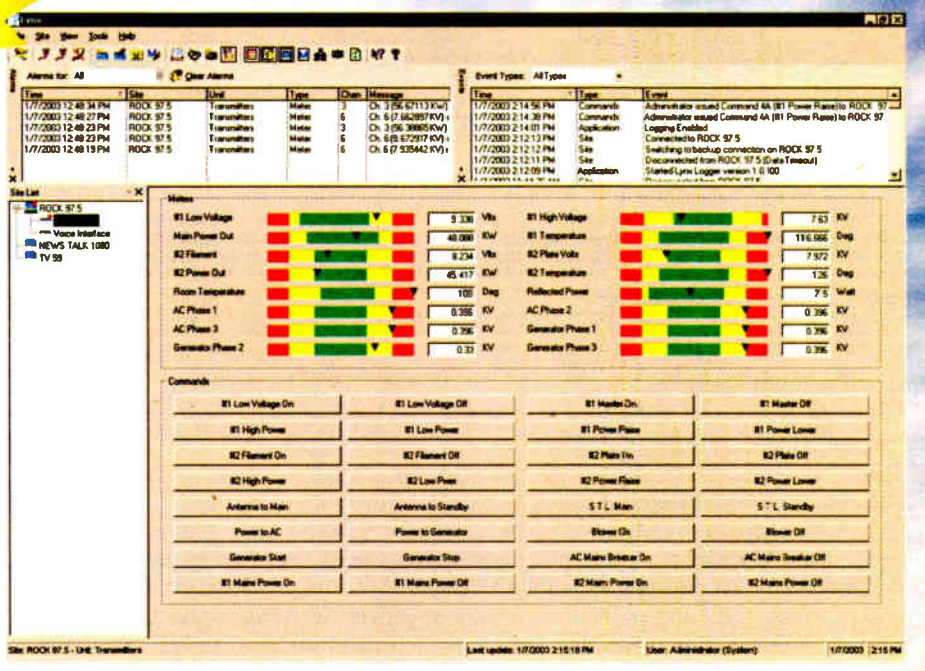

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World Radio History

◆ NEWSWATCH ◆

Settlements for Contested LPFMs

WASHINGTON Chairman Michael Powell had said the FCC would change paperwork processing procedures to help more LPFMs get on the air. Now the commission has taken that step.

It announced a new settlement period for applicants vying for the same LPFM frequencies. Requests for approval of settlements filed by Oct. 31 and that satisfy all the criteria will receive faster processing.

This limited waiver policy will allow settling applicants to use all available LPFM channels to resolve technical conflicts and get construction permits. To see the list go to *www.fcc.gov.*

The Media Bureau also has reactivated its LPFM frequency finder to help applicants find alternative available frequencies. Go to *www.fcc.gov/mb/audio/lpfm_channel_finder.html.*

Radio Martí Part of Tests to Cuba

WASHINGTON Radio Martí signals would be part of a new video transmission channel planned by the U.S. Broadcasting Board of Governors to Cuba.

BBG Chairman Kenneth Tomlinson said the organization will begin testing "to see if TV Martí can be sent to the Cuban people via satellite," unencrypted and viewable to anyone with a dish and receiver.

"According to various commercial sources, satellite dishes are being used by more and more Cubans, and the numbers continue to rise," he stated.

Other recent changes to the services cited by Tomlinson: Major League Baseball games are broadcast on TV and Radio Martí, including the playoffs and World Series; and Voice of America's half-hour radio program "Ventana a Cuba" will switch from a weekend to a daily schedule.

FCC Looks Into Bird Kills

WASHINGTON Do towers kill birds? The FCC has opened a Notice of Inquiry.

This spring, Chairman Powell told staff to investigate whether broadcast and cell towers pose a threat to migratory birds. Environmentalists say many birds die each year because they fly into the tower structures. Some believe the lights attract the birds. Broadcasters, meanwhile, say the evidence is thin and that any "kills" that do occur are not the fault of the towers.

The FCC staff says there isn't enough evidence to know if this is a real problem. The purpose of the NOI is to gather information on such things as tower lighting systems, tower height, antenna support structures and locations. The agency is compiling comments and information on scientific research relevant to migratory bird collisions with communications towers (WT Docket 03-187).

FCC Grants Delay On 'No Fax Ad' Rule

WASHINGTON The FCC has extended to Jan. 1, 2005, the effective date of its new rules requiring written consent before sending advertising faxes — to itself and other businesses. This does not change the effective date for telemarketing rules or other rules regarding faxes.

The extension permits those sending fax ads more time to comply with the rules and get written consent and signatures from parties to whom they wish to send faxes. The extra time will also allow the commission to consider any petitions for reconsideration.

NAB joined the American Association of Advertising Agencies and the Association of National Advertisers in asking the commission to reconsider the fax ban and reinstate the "established business relationship" exemption.

The groups also asked the FCC to clarify that a trade association membership is the same as having "prior express invitation or permission" to fax members, unless a member says it doesn't want such faxes. As an alternative, the associations asked the commission to create an exception to allow trade groups to fax members.

Blackout

▶ Continued from page 3

outages as well.

In Detroit, WJR(AM) Director of Engineering Ed Buterbaugh said the 50 kW station did manage to stay on the air thanks to some ingenuity.

"When the power dipped, originally we went to UPS for our studios in the Fisher Building. Then we ran generator power there and at the transmitter site at River Rouge, which is about 15 miles from the studios."

WJR is Detroit's LP-1 EAS station, Buterbaugh said, adding to the importance of keeping the station on the air. In fact, the station has a full studio at the transmitter site and immediately dispatched an engineer and on-air person there when the blackout struck.

"Everything worked perfect until we decided to top off the generator at the studios with fuel on Friday night. We must have stirred up some rust in the tank and the generator started running only sporadically. So we switched to the studio at the transmitter site for several hours," Buterbaugh said.

Power was restored to most of Detroit within 48 hours, he said.

Greater Media's three Detroit stations, FM outlets WCSX, WRIF and WMJC, shuffled facilities and studios to remain on the air, said Mike Kernen, Greater Media's chief engineer for the cluster.

"WCSX is in an office building by itself about 10 miles from where we have combined studios for WRIF and WMJC, where we have an 800 kW generator. One of my engineers was able to patch one of the WRIF production studios into the WCSX air chain. We even borrowed some classic rock from the other stations and threw that on," Kernen said.

"We had some UPS power at WCSX, but the ISDN lines went down anyway. That was a big problem. The circuits were down for more than three days. We eventually grabbed one of the WCSX audio servers so we could play our commercials and the music library and just worked out of the production room," he said. "To the listener, it probably went unnoticed."

Kernen said loss of cell phone service in the early hours of the blackout temporarily caused communication breakdowns between the engineering staff and transmitter sites.

Over in Ohio ...

Clear Channel's six Cleveland stations fared well, according to Dave Szucs, director of engineering.

"We were pleased with how things went. The studios immediately went to UPS and then the generator took over. We have a 750 kW generator in the basement of the building that houses all of our facilities," Szucs said.

WMMS(FM) was the only early casualty of the blackout, he said. "Only because we do not have our own generator at the transmitter site and relied on the landlord's, which didn't work."

Szucs credited Clear Channel's WKBN(AM) in Youngstown, Ohio, for finding and sending a trailer generator to restore the WMMS signal about six hours into the power outage.

"WTAM(AM) did lose about 10 minutes of air time when a transfer switch got hung up in a half-way position at the transmitter. Otherwise our plans worked out," he said.

Stations in Toledo, Ohio, experienced similar difficulties during the blackout. Gary Fullhart is director of computer services for Clear Channel's cluster, which includes FM stations WVKS, WRVF and WIOT as well as AMs WSPD and WCWA. Fullhart also is chief engineer for WVKS.

"Our five stations are in two different facilities about a block apart. WVKS, WRVF, WSPD are in one building, with WCWA and WIOT in another that has a small generator. With power outages in Toledo being such a rare occurrence, it wasn't deemed necessary to have backup generators in both facilities," Fullhart said.

"Ironically, we have a storage facility a couple of hundred feet away (from the WVKS facility) that fortunately didn't lose power for some reason. We ran very long and very high-current extension cords, which powered most of the studio wing. It still took us nearly an hour to get WVKS, WRVF and WSPD back up."

He said the stations lost a couple of audio amplifiers because of the power fluctuations when the power came back on.

"It was about 80 volts instead of 110. Power was restored to the stations about six hours after it went out."

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World Radio History

Levin

▶ Continued from page 1

RW: Why did Clear Channel establish a Washington office?
Levin: I think most companies Clear Channel's size have a Washington office. It was unusual that Clear Channel went as long as it did without one.

Photo by Leslie Stimson

But it was understandable because Clear Channel didn't become as big as it is until fairly recently. ...

RW: What are you trying to accomplish?
Levin: The biggest challenge that we have is to try to educate people about who we are and what we do.

Unfortunately, there have been an awful lot of allegations and misapprehensions and misunderstandings about our business. And because we weren't here (in Washington) earlier, to tell people the real story, those allegations and myths got traction and got a bit out of hand.

What we're really trying to do here is dispel the myths about the radio industry, explain to people the good things that Clear Channel does.

RW: What are some of those myths?
Levin: One of the myths is that big is bad.

A lot of people think that as a company gets bigger, its interest in the local community necessarily diminishes. It couldn't be further from the truth.

Clear Channel is a very large company. It owns a lot of radio stations. But it doesn't matter whether you own five stations or 100 stations. If you're not paying attention to the community that you're serving and providing the kinds of entertainment, news and information that they want, you're not going to be in business very long. ...

It's gotten a bad rap lately in that people are accusing radio of becoming less localized and more national. But it simply isn't true. We have to provide our listeners in Dallas, Texas, with a different kind of programming than we provide our listeners in Detroit, Michigan. If you compare the playlists between the two cities, you'll see that even in the same format we play very different kinds of songs.

RW: Tailored to that —
Levin: Tailored to that audience, exactly. That's another myth specifically about Clear Channel, that we're playing the same playlist everywhere, that it's a standard playlist and that it's dictated out of corporate from San Antonio, Texas.

RW: I believe that's the position held by those who oppose voice tracking. Clear Channel and voice tracking are synonymous in some people's minds.
Levin: Voice tracking is an issue. I think that a lot of people sort of look at the past through rose-tinted glasses. They think that radio 20 years ago was so much better than it is today. And I'm not sure that that's true. In fact, I would say it's the opposite.

Today, radio has so many more diverse formats on the air. It reaches so many different audiences than it did 20 years ago. ... But opponents of deregulation will always argue that things were better in the past than they are today.

RW: When stations were losing money...
Levin: That's exactly right. The notion that deregulation was bad for the industry is another myth we try to dispel. Most people don't remember that just 10 years ago stations were losing a lot of money. It was hard to sell a station. There wasn't capital out there. It had pretty much dried up for radio. ...

RW: How do you think it's going, your efforts to turn around the myths?
Levin: It's only been a short time since we opened the office here and it does take some time to ramp up; but I think we're doing a great job so far. I can tell by people's faces when we go into to talk to them and explain the facts around certain issues that they've heard and sometimes their jaw just drops wide open.

When they hear, for example, that radio is the least-concentrated segment of the media industry, and we show them the data, the statistics ... the numbers that the Justice Department itself uses when evaluating how concentrated an industry is. And they can tell from that objective data that radio is the least concentrated, much less so than television or newspapers.

RW: What is Clear Channel's position on the local radio ownership limits? Does Clear Channel think eight as a cap is fine, or that they should be raised or eliminated?
Levin: Our view is that the FCC made a big mistake in the order. ... They addressed sort of the competitive anomalies that occurred in smaller markets based on the old rule. They didn't take a look at similar anomalies that occur in large markets.

The current rule is that you can own a maximum of eight stations in markets that have 45 or more total radio stations. So that means that markets like New York City and Chicago and Los Angeles, that have nearly 100 radio stations, are treated just the same as markets like Memphis, Tenn., that has 47 stations.

'Today, radio has so many more diverse formats on the air. It reaches so many different audiences than it did 20 years ago.'

We believe that there really ought to be different treatment for the largest U.S. cities where there are not only a tremendous number of radio outlets, but also a tremendous number of other media voices: newspapers, television stations, all kinds of outlets. ...

RW: How high should the limits be in the biggest markets?
Levin: It's hard to say; I wouldn't want to pick a number, specifically. Certainly, I know it's not the same number as Memphis.

(Editor's Note: As Radio World went to press, The U.S. Court of Appeals for the 3rd Circuit in Philadelphia granted a request from the Media Access Project to stay the new media ownership rules, which were due to take effect Sept. 4, pending the results of legal challenges and congressional initiatives. NAB and three of the major TV networks filed separate challenges to various portions of the rules. It remained unclear how long the stay would last. In the meantime, the FCC's previous media ownership rules remain in force.)

RW: What does Clear Channel think about the intended new radio market definition? The Arbitron Radio Metro...
Levin: We opposed that quite strenuously at the FCC.

We knew from the beginning that the FCC was going to look at the radio market definition. We knew that there was political pressure to do something about Minot, N.D. and markets like it, where the old radio market definition may have resulted in companies being able to own more stations in those smaller markets than, perhaps, Congress intended.

RW: Sen. Byron Dorgan, D-N.D., mentions Minot frequently at communications hearings; he doesn't think it should be part of the Bismarck market.
Levin: Sen. Byron Dogran really put Minot on the map. But we had no objection and

See LEVIN, page 8 ▶

From Hill Staff To Lobbyist

Before opening Clear Channel's Washington office in January, Andrew W. Levin spent seven years as minority counsel to the House Energy and Commerce Committee. He was chief telecommunications advisor to ranking committee Democrat Rep. John Dingell of Michigan and counsel to Democratic members of the committee on communications policy and technology matters.

Levin, an attorney and CPA, was a key House negotiator of the Telecommunications Act of 1996, the most significant rewrite of communication laws since 1934.

Levin is senior vice president of government relations for Clear Channel.

The 40-year-old has worked in the telecommunications field for 19 years. Prior to joining the committee, he was employed for 12 years by Bell Atlantic (now Verizon), where he held a variety of positions in the legal, marketing and finance departments.

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Clear Channel Director of Engineering for St. Louis Daryl McQuinn said: **"Sounds much better than a bad [RPU], almost as good as a good [RPU], and way better than you should ever expect from a cell phone remote!"** but all KLOU's Program Director Al Brock could say was, **"Wow!"**

Shaun Kassity from Salem Communications' 104.7 The Fish in Atlanta: **"Thanks to Matrix GSM we had the best sounding remotes ever on our station!"**

Steve Kirsch of Silver Lake Audio: **"The feed was rock solid. I'm very impressed—it sounds much better than I thought it would."**

Collin Mutambo, Radio Simba, Kampala, Uganda: **"We are indeed quite impressed."**

But our personal favorite, from Jerry Dowd of Jefferson Pilot's WBT in Charlotte, NC: **"We hope to keep the betas until you get nasty with threatening letters."** Thanks Jerry. We'll take that as a compliment!

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World Radio History

Levin

▶ Continued from page 6

understood the FCC's desire to change the market definition to take care of those few anomalies around the country, like Minot. In fact, we suggested various ways, along with other radio companies, to fix that problem.

Unfortunately, instead of taking a surgical approach to the old market definition and making the necessary changes to correct for what created the so-called "Minot problem," the FCC decided to throw out the entire rule and start again. So they've picked up the Arbitron idea and we pointed out, as well as many other radio companies, that there were a host of problems inherent to the Arbitron system. ...

We think it was a big mistake and we would advocate going back to the pre-existing definition with some modifications to adjust for those few market anomalies that existed.

RW: *Such as modifications to the contour overlap rule the FCC decided to use on a temporary basis while it conducts a rule making for defining radio markets in areas not rated by Arbitron.*

Levin: Yes, the 58-mile contour suggestion was something we had submitted during the comment process, and the FCC adopted that as an interim rule for markets that are un-rated by Arbitron.

But we don't see any reason why that shouldn't be extended to all markets permanently. That would correct those problems that the FCC was trying to correct. ...

(Ed. Note: The FCC would have excluded from a market any station whose transmitter is more than 58 miles from the perimeter of the area where the contours of the stations to be combined overlap. The idea is to cut down on some of the unusually large markets that can occur when a large signal contour that is part of a proposed station combo overlaps the contours of distant stations and brings them into the market.)

RW: *Do you think Clear Channel would have needed to spin off some stations after the two-year waiting period, under the new market definitions?*

Levin: The FCC did one good thing for radio, in that when they redefined the market, they grandfathered existing companies ownership of stations that would be non-compliant with the new rule.

We don't consider that a huge victory because it's hard to imagine in this country that it's a big win to be able to keep property that you already bought, legally. But, nevertheless, we're satisfied and content that we're grandfathered; but at the same time, we strongly believe that the definition is inappropriate. It hurts radio operators both large and small and ultimately, the public.

> **'What we're really trying to do here is dispel the myths about the radio industry, explain to people the good things that Clear Channel does.'**

RW: *At a hearing recently, a small operator from the Eastern Shore of Maryland testified that the new radio market definition would hurt the small companies because they won't be able to grow and fight off the big guys to acquire clusters.*

Levin: That has some truth to it. Everybody's sort of frozen in place with the new rule, and while some people may say that that benefits Clear Channel, we don't look at it that way. Every company has to grow in order to sustain itself. ...

RW: *Is Clear Channel going to file a petition for reconsideration, or go the appeal route?*

Levin: Our folks are looking at a lot of different alternatives internally and we have some time yet to decide yet under the rules to decide what we're going to do in response to this. NAB announced (in late July) that they were going to appeal to the courts the legality of the new market definition as well as the new rules dealing with TV duopolies. We certainly support that effort by the NAB.

RW: *Is Clear Channel going to remain an NAB member?*

Levin: I think NAB does a terrific job for its members and we have no intention of leaving.

RW: *Drawing from your experience as a staff member of the House Commerce Committee when Congress was debating the Telecom Act, do you think they knew what they were doing as far as radio in that Act? As a reporter covering that issue, I witnessed first-hand far more debate about telephony and television issues than radio issues.*

Levin: I think radio was a much easier issue in the '96 Act than some of the other things that the folks were dealing with on the Hill. Because we could see very clearly what the existing rules were doing to the industry. So I think there was less discussion, less debate about what the solution ought to be with regard to deregulation than there was with the other segments of the industry.

RW: *There were national limits in addition to the local limits...*

Levin: Exactly. Over the years the FCC had deregulated radio in certain ways, as they started to recognize that it was a highly competitive market (and) there was less need for regulation. But, still, in the early '90s it was heavily regulated, with ownership limits on a local and a national level; and it was starving the industry. ...

They dropped more stations in, but nobody could own more than two FMs in a market, so you ended with all of these formats competing against each other. The same format competing against each other all over the band and listenership was splintered so much that you couldn't make money in the business. ...

It was a pretty clear case where government regulation was unnecessary due to intense competition in the market. And not just unnecessary, but counterproductive to the health of the industry. So yes, I think they knew what they were doing.

RW: *Do you think Congress is going to be successful in beating back some of the ownership rules?*

Levin: Yes, I think the opponents of what the FCC did will have some measure of success, ultimately. I would predict that it will be in the TV area and it will simply be a rollback of the national ownership cap from 45 to 35 percent. That seems to be the issue that has the most traction with members. It's the one that's most easily understood, by members and by the public. ...

RW: *Rep. Maurice Hinchey, a Democrat from New York, wants to bring back the Fairness Doctrine; other members of Congress have suggested re-opening the Telecom Act. How likely are any of these bills to go anywhere?*

Levin: I don't think any of it really has much traction. There's always somebody, in every session of Congress, who wants to bring back the Fairness Doctrine. There's always somebody that wants to provide free airtime for political candidates. There's always somebody that wants to do a spectrum fee bill and use the money for one thing or another. ...

These things come back perennially. I don't see that there's any more solid support that would (help) any of those issues to pass than there has been in the past. A lot of these issues are used for political purposes to gain points at home and not necessarily with any serious expectations of legislating.

RW: *At one point, you were a leading candidate to fill an open commission seat. Is that something you'd still like to do?*

Levin: I'm really enjoying what I'm doing now. I think that (FCC commissioner) has got to be one of the toughest jobs, particularly in this environment.

RW: *What do you believe all the rumors about Chairman Michael Powell possibly leaving?*

Levin: I wouldn't be surprised if he left. I don't think if he left it would be because of the criticism he's gotten as a result of (the ownership rules), but I think he's been (a commissioner) for close to seven years, and I'm sure that's long enough for anybody.

No matter what you do as chairman of the FCC, somebody's going to be coming after you and say you did the wrong thing. That's got to be hard to live with day in and day out. So I wouldn't be surprised if he left at some point in the near future, although they're saying that he has every intention of staying.

RW: *What is your opinion of digital radio?*

Levin: I think it's going to be great. That's an example of another thing that probably wouldn't have happened without deregulation. Those are the kinds of new technologies and new services that companies can begin to look at when they're in a favorable regulatory climate, when they're doing well financially, and those things, absolutely, accrue to the benefit of the public.

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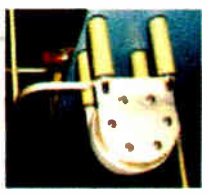

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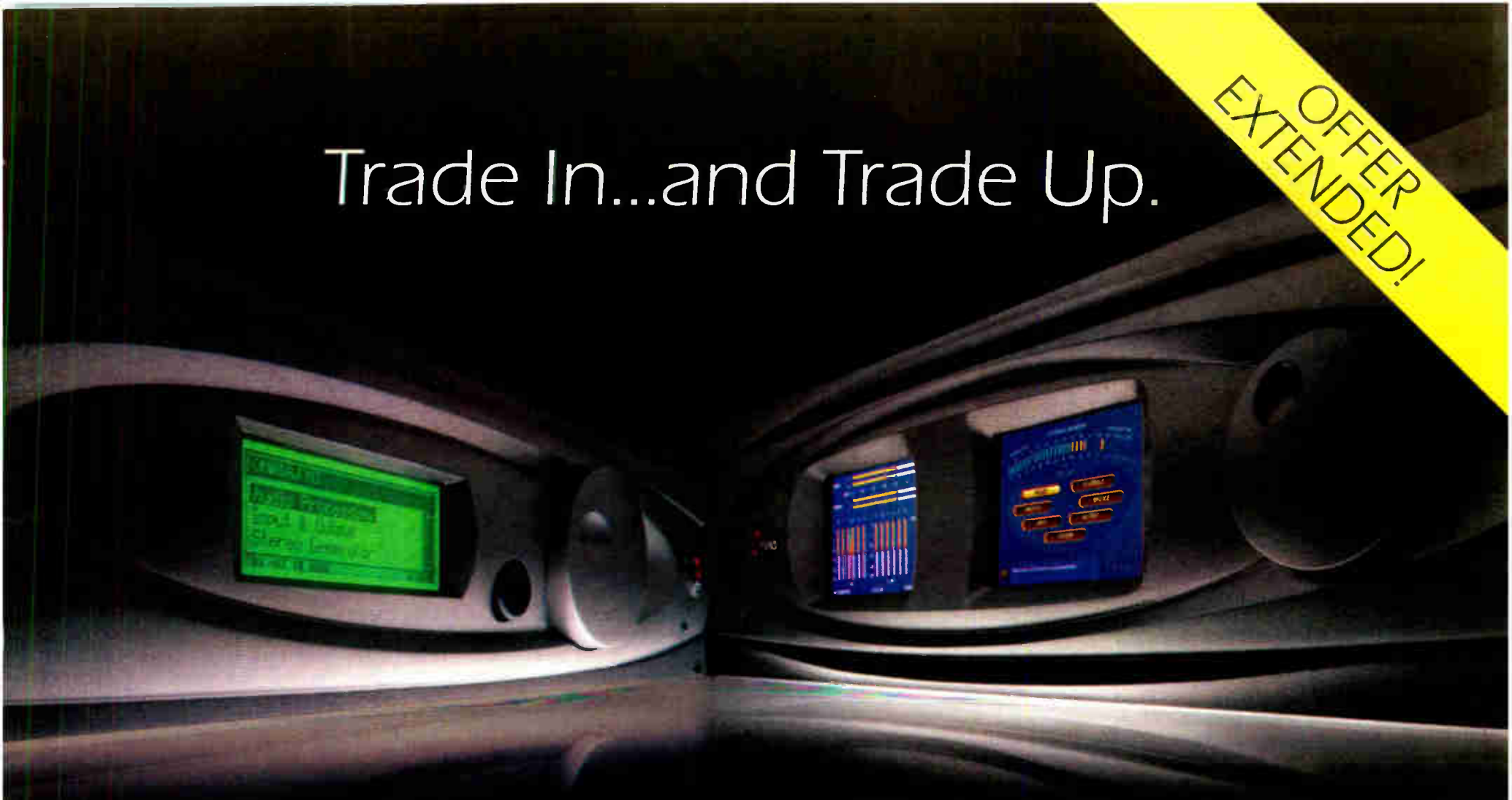

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World Radio History

Workbench

Radio World, Sept. 24, 2003

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

The Importance of Site Visits

by John Bisset

You may not want to read this column while eating your breakfast.

A well-known friend to broadcasters, Walt Lowery tells us about a site that an acquaintance took over on contract.

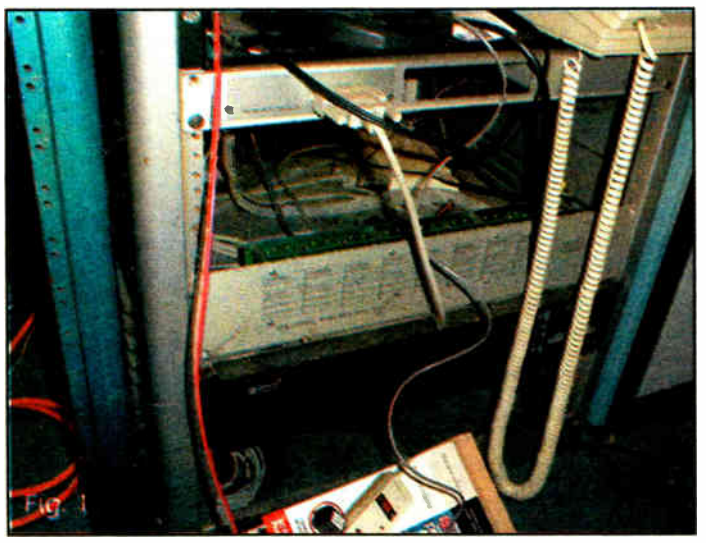
The new engineer made his first trip to the transmitter site, camera in hand. When he opened the door, he sent a number of large rats running for cover. They had taken residence in the equipment rack and Nautel transmitter, the rear door of which had been left open.

The room was full of spider webs. Clearly, no one had been in the building for months. The floor and every flat surface were covered with rat feces and urine. You can only imagine the smell.

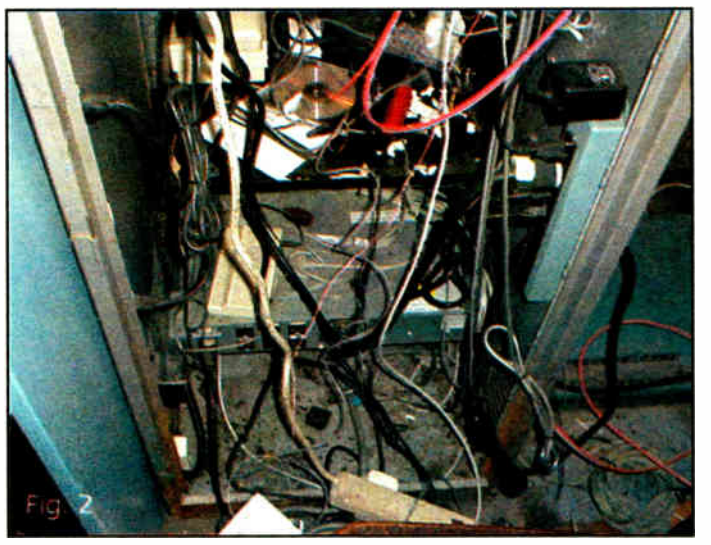
Fig. 1 shows the front of the equipment rack with a close-up of the mess. It wasn't any better in the back of the rack, as shown in Fig. 2.

Those aren't resistors, my friend, scattered on the top of the TFT in Fig. 3 on page 12! Even the Nautel transmitter was "home" to these invaders, as seen in Fig. 4.

Before doing any clean up, the contract engineer not only took photos but brought the local GM to the site. A haz-mat clean-up crew was dispatched to clean and sanitize the building. Another crew sealed all the cracks and holes in the building. The equipment rack and all the equipment in it were scrapped. The transmitter was cleaned as well as possible.



Rodent signs are visible.



More mess in the rear of the rack.

Lessons?

First, keep a camera with you, always; even a disposable flash model will do. Document any new contract site with pictures. You don't want to be blamed for a predecessor's mistakes.

Better yet, have the owner or GM accompany you to the site during your first visit. If there are repairs or upgrades required, you can explain them in person. Delegate nasty work like this to a company that specializes in such matters.

Disease is rampant in rodent and other animal leavings. Merely breathing in this kind of closed environment can be hazardous.

★ ★ ★

Paul Kaminski of the Motor Racing Network, a fellow Radio World contributor, writes that he's going to implement on his Web site the anti-spam java tip we discussed in the Aug. 29 issue.

He notes that he went to the site and found a couple of alternatives to the java, like making the address link "link" to a text file.

If the company and corporate IT guys want a reality check on how many e-can do a Google or other search by typing the address in quotation marks. It isn't pretty. Paul's been zipping off e-mails to each of the Web sites to ask them to delete the address.

Paul also offers a tip concerning e-mail security. Many station and outlet Web sites won't accept attachments unless they are notified in advance that the attachment is coming. Many users aren't sophisticated enough to realize that they can send attachments, the primary vector for virus infections, with their regular e-mail.

Here's what Paul did: At his site's media/PR contact page, he posted a link to the most complete site he's found for changing e-mailers to send plain text. The link is *www.expita.com/nomime.html.*

Paul writes that it's only fair that he give people the means to change their mailer, after he tells them that he will delete unexpected attachments.

Kaminski can be reached at *motorsportsradio@compuserve.com.*

★ ★ ★

Don Setliff is a senior broadcast maintenance engineer with West Virginia Public Broadcasting. He adds his 2 cents' worth of stupid operator stories.

At West Virginia Public Radio, live performance radio is still broadcast on certain days of the week. This usually involves miking choirs and chamber orchestras. One day, about 20 minutes into the performance, the radio engineer was called into the control room. The complaint was that the performers sounded "hollow and distant."

After some investigation, it was found that the operator had punched up the wrong module, sending audio from off-mic. The right push of the right button corrected the problem. The operator claimed that he had checked everything

See WORKBENCH, page 12 ▶

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World Radio History

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World Radio History

Workbench

▶ Continued from page 10

thoroughly before show time.

Back when Don worked as master control operator for a TV station, the transmitter engineer called to say that the transmitter would be off for a few minutes for maintenance. There was no advance notice, he just pulled the plug and the station was off.

The program director called to say she couldn't see the station on the TV in her office. Don informed her that the transmitter engineer had shut down for some troubleshooting.

She replied, "Well, put up a trouble slide!" Don's answer was "No one would see the slide." But this apparently wasn't taken very well.

You can reach Don via e-mail to *dsetliff@wvpubcast.org.*

★ ★ ★

Looking for a way to organize cables in your shop or transmitter shack?

Reginald Swedber, chief engineer for KJNP(AM) at North Pole, Alaska, writes that garden hose hangers make great hangers for coax, Heliax and test cables.

They are cheap and easy to obtain, and they keep the cables from getting those kinks or flat spots that occur when hanging cables on a nail. It is also easy to keep cables neat when they can be hung up on a wall, rather than spread out on a shelf or floor. This allows you to select one for use and put it back easily.

Plastic garden hose hangers are used at the KJNP transmitter shack to store spare cables and cables made for test purposes. They also do well for hanging extension cords that are used for remotes.

★ ★ ★

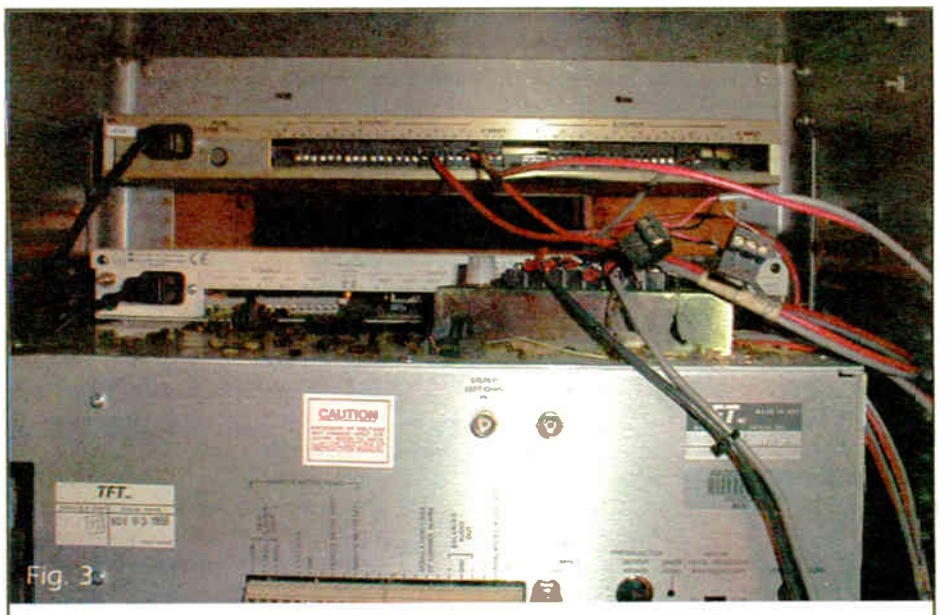
Ed Bukont of Commstruction, a national projects/project management company, says getting the mic off the table is not always an option.

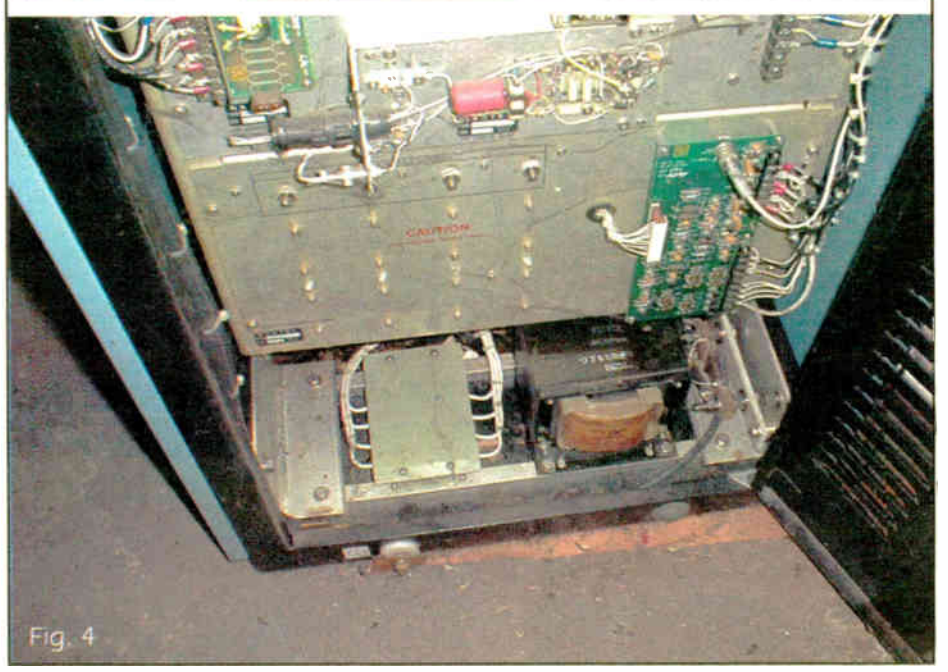
He found a neat, inexpensive alternative to the typical Atlas DS-7 desk stand or those flimsy collapsible stands that blow over with every gust of wind. Ed's find is a bass/kick-drum mic stand from On_Stage Stands, shown in Fig. 5.

It has a weighted base, short shaft and mini boom. It works well for getting the mic up where it needs to be, leaving the table free in front for hands and papers. The stand is versatile; you can remove the boom and use it as a regular desk stand. The only drawback is that the base is not heavy enough to support an RE-27 with shock mount. Other mics work fine.

Ed Bukont can be reached at *ebukont@msn.com.*

This instrument mic stand from On_Stage Stands also works with many, but not all, on-air mics.





Those aren't components on the back of that TFT unit. Even the transmitter didn't escape unscathed.

★ ★ ★

Some time back we showed unique uses of the old Scientific Atlanta satellite receiver card cages. A similar query went out for cart machine uses once they've been replaced by a hard-drive system.

One engineer wrote that he wired up an old cart machine, relay and a phone coupler to page him every time the generator ran. With multiple sites, this gave him a heads-up on whether weekly tests were run. The cart machine played the touchtone "code" for that site, to be displayed on the pager.

The out-of-service machines also were used for doorstops and shelf book-ends.

Perhaps the most unique use comes from Radio World's Alan Peterson. Demolishing a studio? Four cart machines welded together at the corners make a dandy wrecking ball.

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is regional sales manager for Dielectric.

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.

World Radio History

What's better than MP3? Broadcasters agree: it's AAC.

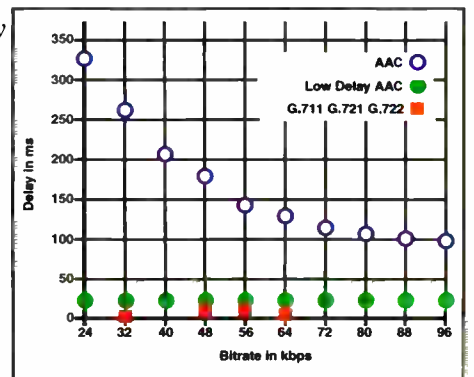
Being a technology leader is something we take pretty seriously. When new tech is introduced by a Telos product, you can be confident it's the absolute best – so you shouldn't be surprised to find high-performance MPEG AAC coding in the latest Zephyr products.

Remember the original Zephyr? Its introduction of MP3 coding turned broadcasting upside down, and since then MP3 has become extremely popular for audio distribution, especially on the Internet.

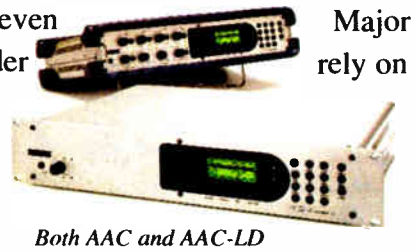
But MP3's compression technology is now over a decade old, and there have been a lot of advances in perceptual audio coding and compression since then. You wouldn't settle for a '386 computer these days – so why be content with compression technology from the same era? What you want is Advanced Audio Coding... MPEG AAC.

MPEG AAC takes advantage of all of the latest advances in compression technology. Compared to MP3, AAC delivers higher quality audio at much lower bit rates, resulting in noticeably better audio even over low-data-rate connections. AAC also cascades better than older codecs – especially important for HD Radio considerations.

AAC-LD *slashes encoding delay by nearly 70%* compared to MP3 – invaluable for real-time two way broadcasts. It also employs new techniques to offer both low delay and high fidelity. Compared to speech coders (such as G.722), AAC-LD handles both speech and music with good quality. Unlike speech coders, however, audio quality scales up with bit rate. With AAC-LD, audio quality is far superior to G.711 or G.722 at the same bit rate, and equal or better to MP3 at the same bit rate.



Comparative delay of AAC, AAC-LD and G.711/G.721/G.722 at different bit rates. AAC-LD delay delivers nearly immediate encoding with fidelity superior to MP3.

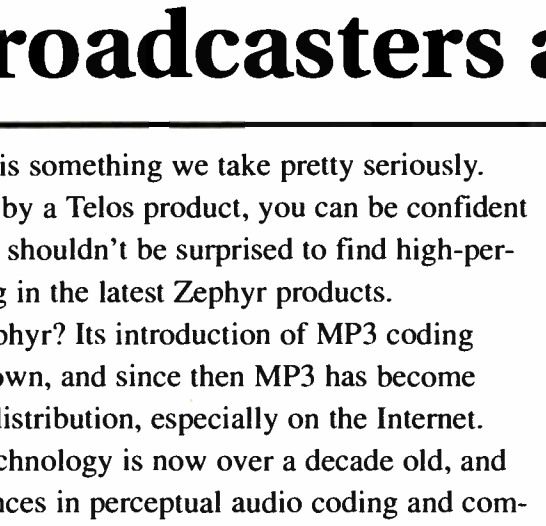

Both AAC and AAC-LD are featured in the Telos Zephyr Xstream rack and portable codecs.

Major personalities such as Rick Dees have come to rely on AAC-LD for better-sounding remotes. Jerry Burnham, KIIS-FM Special Projects Engineer, told us "AAC-LD coding in Zephyr stream is amazing. Low-Delay coding is a tremendous advantage. We get fantastic-sounding remotes, and we can interact with phone callers, traffic reporters and other remote sources without that annoying time lag."

Move Over, MP3

AAC was developed by the Fraunhofer Institute for Integrated Circuits (FhG IIS, the inventors of MP3) and a consortium which included Sony, Dolby Labs, Nokia and AT&T. Their goal: to create a codec that would satisfy the International Telecommunications Union's Recommendation BS.1115, which specified indistinguishable source-to-output quality at 64 kbps per mono channel. They succeeded with AAC, which is a coding algorithm *30% more powerful* than MP3.

AAC is, by scientific and subjective analysis, the best-sounding, most efficient pure perceptual codec yet, and has been part of the International MPEG-4 standard (ISO/IEC 14496) since 1999. As a point of reference, the near-CD quality Layer 2 codec needs a data rate of 192 kbps per channel to deliver high-quality stereo; AAC gives the same quality at just 64 kbps!



As this chart of the CRC's results clearly shows, AAC easily outperforms other codecs.

"The AAC codec outperforms the rest of the codecs," stated Canada's Communications Research Centre after performing double-blind subjective tests of 17 codecs (including MP3 and Layer 2) to determine which was best.

"When compared side-by-side, AAC proves itself worthy of replacing MP3 as the new Internet audio standard," says Apple Computer, which has incorporated AAC into its latest software products.

Better Audio, Less Delay

In addition to "plain" AAC, broadcasters have another tool specifically designed to improve the performance of remote audio transmissions: AAC Low Delay (known as AAC-LD for short).

"The Best Low-Bit rate Codec on Earth"

There's one more exciting part of the AAC story: *aacPlus*™. This extension of AAC melds Spectral Band Replication with MPEG AAC, resulting in truly stunning audio fidelity at bit rates never thought possible before. In tests conducted by the European Broadcasting Union (EBU) which compared a variety of codecs at several bit rates, they declared *aacPlus* as the clear winner, significantly outperforming proprietary competitors and improving over other standards; studies conducted by DRM and MPEG confirmed that *aacPlus* is ideally suited for the low bit rates of AM & FM IBOC. *aacPlus* has been chosen for use by XM Satellite Radio and Digital Radio Mondiale, and will soon be in 2.4G and 3G audio applications deployed by Matsushita and NEC.

Zephyr Xport is the only POTS codec with aacPlus. It can send 15 kHz mono audio over analog lines.

Industry experts agree. "AAC Plus is the future... all else is stone knives and bearskins," according to Gary Blau of Jefferson-Pilot Communications. Jeff Johnson of X-Star Radio Network agrees: "It is quite amazing how decent a 32 kbps bitstream can sound."

Telos has chosen *aacPlus* as the algorithm used in the new Zephyr Xport POTS + ISDN codec. Paired with custom modem technology developed by Telos, *aacPlus* enables Xport to send 15 kHz mono audio over ordinary POTS phone lines.

Of course we hope you will purchase Telos equipment. But even if you decide differently, make certain that whatever codec you do purchase – POTS, ISDN, serial or otherwise – takes full advantage of today's advanced audio coding technology. Make certain it has AAC.

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World Radio History

The Diverse Business of Radio

Stations Employ a Wide Range of Schemes To Support Their Operations

by Skip Pizzi

We discussed the divergence of public and commercial radio in the Sept. 10 issue, and noted how the current programming approach of public radio remains closer to that of radio's early days, whereas today's commercial radio uses a more recently developed style.

Before the advent of television broadcasting, almost all radio stations followed a program-style philosophy, meaning that most content was packaged in "shows" that ran sequentially on a fixed schedule. TV broadcasting adopted this model when it came along, and still uses it today, for the most part.

Meanwhile, most radio stations have moved instead to a "service" style of programming, in which there are few actual "shows," and the emphasis is now placed on format. There are variations on this, of course, such as "morning zoo" shows, or exceptions such as occasional live sports coverage on all-news or music station; but by and large, most commercial stations are characterized by their formats rather than by specific programs or by network affiliations.

While some public stations lean toward this format-driven style today, most devote at least some dayparts (particularly on weekends) to a program-based schedule, and many follow such an "old-school" schedule full-time. This leads to appointment-based listening, which causes many public stations to have widely varying ratings across their broadcast days.

Funding models

Where public radio in the United States today differs significantly from early radio is in its business model.

Although still evolving, it is currently a hybrid model that relies on multiple revenue streams. Most heavily leveraged today by most public stations are direct voluntary contributions from listeners. While these were once exclusively the result of the familiar — and unanimously loathed — on-air exhortation campaigns ("pledge drives"), they have more recently relied also on direct mail and online tools. And unlike earlier days when phoned-in pledges had to be billed and, the station hoped, fulfilled, most contributions now are made by credit card, fully and instantly paid.

The next most important funding source typically is the sponsorship (or "underwriting," as it is euphemistically called in the industry) of particular programs or dayparts by commercial enterprises. The FCC has fairly strict guidelines on the content of these announcements, in an attempt to distinguish them from commercials; but from a business perspective (and in many listeners' minds, as well), they generally follow the commercial radio model of on-air announcements sold at prices based on measured listenership.

Finally, many public stations rely on a baseline of funding grants from federal, state and local governments, as well as "major gifts" from foundations and estates. Some of these grants are keyed to a station's fundraising performance in the other areas ("matching grants"), while others are market-based.

The Big Picture

Photo: Gary Hayes, BBC

by Skip Pizzi

Public radio has been increasing audiences by moving into the margins abandoned by commercial radio formats.

Many state and local government grants are dwindling of late, due to budget shortfalls, and while federal grants are steady or slightly rising recently, they are always subject to the whim of congressional appropriations.

(In an attempt to minimize the impact of annual budget swings on operations, however, federal appropriations to public broadcasting are made with a unique two-year forward funding mechanism, such that the current year's funding for public broadcasting was set during budget negotiations two years earlier. This allows broadcasters to see what's coming from this funding sector, and also minimizes the potential for Congress to react capriciously to any public broadcasting content that it may find disagreeable.)

Like many other nonprofit operations, public radio stations also receive in-kind contributions. Note that some of the content broadcast on these stations is made available at no cost to the station (due to separately procured grants to the content producer), making it akin to an in-kind donation. In other cases, public stations may subscribe to a particular content provider's programming package at a flat rate, which is not affected by how much of the content they actually air. This implies that there is no incremental cost if a new program is aired from a package that the station is already paying for.

Strictly business

So while both commercial and public stations exploit audience size for their financial operations, their methods of leverage differ.

Public radio generally favors a direct method of quid-pro-quo (i.e., service delivered to listeners produces return from them and their surroundings), while commercial radio uses an indirect or triangular model ("quid-pro-quote?") that delivers appealing service to large numbers of listeners for free, while charging others for occasional access to this audience's ears.

Again, public radio's approach could be considered more of a "pure" radio service, while commercial radio uses a classical advertising model as found in other traditional media, but optimized here for an aural medium and its listeners' behavior.

Another interesting contrast worth noting in this discussion occurs between public radio and public television.

Whereas public radio has been increasing audiences by continually moving into the margins largely abandoned by commercial radio formats (e.g., jazz, long-form news, classical), the exact opposite has occurred in public TV. The areas once exclusively occupied by public TV, such as educational programs for young children, documentary, fine arts and oddball comedy, have now been taken up by numerous niche cable channels (e.g., A&E, Discovery, The History Channel, Nickelodeon, Comedy Central).

While public radio's commercial competition on content has retreated, public television's has attacked.

Such head-to-head content competitiveness has had a marked impact on PTV's audiences, which are dwindling while public radio's grow. The good news is that this trend has caused public TV programmers to actively seek out new content areas that are underserved, and many inventive new shows are now in development as a result. Nevertheless, the long-term viability of public TV as we know it in the United States is not assured, while public radio's future seems quite sound.

It seems that in the radio environment, a healthy coexistence between public and commercial radio is likely to continue, to both the industry's and the consumer's benefit.

Skip Pizzi is contributing editor of Radio World.

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World Radio History

Roxborough Farm Towers Above Philly

by Scott Fybush

Photo by Scott Fybush

From left: WGTW(TV); the old WCAU(TV) tower; the new Philadelphia digital TV tower; and the Banks, Fox and Gross Towers.

If you've ever driven the Schuylkill Expressway, Interstate 76 into Philadelphia, especially after dark, you've seen them: eight tall towers, beacons flashing, all within a mile or so of each other on a rise just above the Schuylkill River.

"Those red beacons would still be blinking," recalls radio programmer Clarke Ingram of the early-morning bus rides he would take from Pittsburgh to Atlantic City in the late 1960s. "As a wide-eyed kid of eight or nine, I viewed those tall towers with awe."

Philadelphia's radio community knows those towers as the "Roxborough Tower Farm" — and more than a few engineers in the City of Brotherly Love themselves view the site with something approaching awe.

"It's not the highest point in the city, by any means," said Mark Humphrey, director of engineering for Radio One in Philadelphia and the unofficial historian of the Roxborough farm. "But it does have the ability to look into the Schuylkill Valley; and with a tower height of 700 feet, you can see into the Delaware Valley as far as you need to."

"It's not unusual to see towers that spread out, or short towers clumped together," Humphrey reflected, "but when you see so many tall towers within a half-mile of each other, that's really something."

A half century ago ...

Yet for all Roxborough's prominence in today's Philadelphia broadcast scene — it's now home to nearly all the market's FM and TV signals — it's not the birthplace of TV or FM in the city.

That honor goes to another Philadelphia neighborhood a few miles to the north called Wyndmoor, where Philco put WPTZ(TV) Channel 3 on the air in 1941. WPTZ replaced an experimental signal, W3XE, that had already been broadcasting for a decade by then.

which had been using the landmark Art Deco PSFS Building in Center City Philadelphia, needed a taller tower; and because Philadelphia limited downtown buildings to the height of William Penn's statue atop City Hall, that meant moving to a tower out of Center City, which meant Roxborough.

The Philadelphia Bulletin, which sold WCAU(AM-FM-TV) to CBS in 1958, quickly acquired another FM construction permit and used the new 1200-foot Dresser-Crane WCAU(FM-TV) tower on Domino Lane for its new WPBS(FM) at 98.9 — and WPBS' all-important Muzak subcarrier franchise — as well.

WPBS even built studios on Domino Lane that are still in use today by its successor, WUSL(FM).

Roxborough remains one of the nation's most concentrated broadcast sites — nestled in a corner of Philadelphia that feels as though it should be far outside the city limits.

So it fell to the city's second TV station, WFIL(TV) Channel 6, to inaugurate the use of Roxborough for broadcasting. In 1947, WFIL put up a 600-foot guyed tower on an open piece of land off Ridge Pike, and an era had begun.

Just down the street, WFLN(FM) at 95.7 MHz built its own self-supporting tower and signed on as the city's first independent FM station the same year. Roxborough was off and running.

By the mid-'50s, Roxborough was already becoming the site of choice for FM and TV. WCAU(TV) Channel 10, which had been using the landmark Art Deco PSFS Building in Center City Philadelphia, needed a taller tower; and because Philadelphia limited downtown buildings to the height of William Penn's statue atop City Hall, that meant moving to a tower out of Center City, which meant Roxborough.

Channel 3 left its historic site in Wyndmoor in the late 1950s, teaming up with WFIL(TV) to build a joint tower at Roxborough. The 1116-foot tower, which went up in 1957, dramatically expanded the reach of Philadelphia's TV signals, spelling the end of attempts to build local UHF stations in surrounding communities like Reading and Allentown.

Channel 6's old tower remained standing, continuing in use for WFIL(FM) at 102.1, now WIOQ.

See FARM, page 18 ▶

World Radio History

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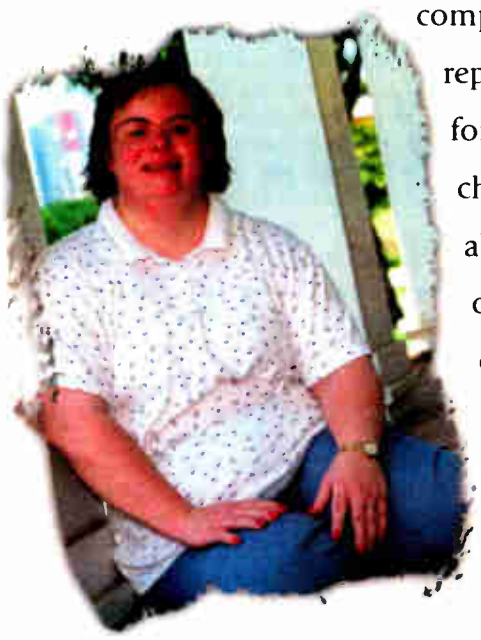

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World Radio History

Farm

▶ Continued from page 16

which is still there today.

Roxborough kept sprouting in the '60s, as the advent of UHF TV meant a need for more thousand-foot-plus towers.

UHF brings more steel

The "Banks Tower" on Domino Lane went up across from WCAU in the middle of the decade, named for William and Dolly Banks, who owned both WWDB(FM) at 96.5 and WPHL(TV) Channel 17, which had signed on from Wyndmoor but soon moved to Roxborough. Nearby, Irwin and William Fox built the "Fox Tower" for their WIBF(TV) Channel 29, while Kaiser Broadcasting leased land from Channel 6 to built a tower for WKBS(TV) Channel 48.

In 1979, the UHF dial filled out when Bill Gross built a tower for WWSG(TV) Channel 57 on a Paoli Avenue property that Storer Broadcasting had purchased 20 years earlier for an unsuccessful attempt to move its WVUE(TV) Channel 12 into Philadelphia from Wilmington, Del.

The Banks Tower became the home of one of the first master FM antennas in the country in the early 1970s, thanks to WPHL engineer Len Stevens.

"He built a non-directional two-layer ERI cogwheel and installed a combiner for three stations," Humphrey recalled. WMGK(FM) at 102.9; WDVR(FM) at 101.1, now WBEB; and WRCP(FM) at 104.5, now WSNI all moved to the master site and joined the tall-tower club at that point.

Later, when the Channel 57 tower went up, 101.1 and 102.9 would move there, joined by WXTU(FM) 92.5, which moved to Roxborough from suburban Norristown; meanwhile, WYSP(FM) 94.1 moved from the old Channel 6 tower to the Banks tower around the same time.

Now, stir in a three-tower AM

WRCP's AM signal on 1540 kHz also was calling Roxborough home by then.

"That was originally a one-kilowatt nondirectional daytimer somewhere in New Jersey," said Humphrey. With a CP in hand to go to 50 kW, WRCP needed somewhere to put three towers.

"It was probably easy to put a tower there," Humphrey surmises about the decision to add an AM signal to the FM and TV facilities at Roxborough.

Mark Humphrey of Radio One took this photo of WPSG(TV)'s antenna being airlifted to the Gross Tower. The FM antenna for WMGK/WMWX is attached to the base. Another tower is at left.

Whatever the reason, the existence of all that medium-wave RF amidst the big TV and FM sticks posed a challenge for both sides, with extra shielding a common feature at the tall towers — and, legend has it, no end of trouble getting the AM directional array to tune up properly.

RF isn't the only headache at Roxborough. Engineers there also had to deal with a city trash transfer station and incinerator that operated for decades on Domino Lane, right next door to the Fox tower. While the city wasn't a bad neighbor — it even leased land for the construction of the Fox tower and allowed one of that tower's guy wires to go across the street onto its property — the incinerator and the transmitters never got along well.

"It was a real maintenance nightmare for most of the engineers because soot would get sucked into the transmitters," Humphrey remembers. "It would cause corrosion inside the transmitters, and the guy wires had to be greased regularly."

The incinerator is long gone, but the transfer station is still in business on Domino Lane — surrounded by some tall new neighbors.

A new era of building

With the advent of digital TV in the late 1990s, Roxborough gained two more tall towers.

Channels 3 and 6 put up the tallest tower yet, at 1,276 feet, with a candelabra for both stations' DTV signals. Meanwhile, American Tower, thwarted by neighborhood opposition to its plan to put up a new tower northwest of the existing cluster, reached a deal with channel 10, by then owned by NBC, to build a new tower on the WCAU property on Domino Lane, replacing the old Channel 10 tower. The latter was shortened for use as a standby site.

The new 1,256-foot tower, which went up in 1998, incorporates space for FM tenants, with a four-bay ERI cogwheel panel array and a combiner system. So far, Infinity's WOGL(FM) at 98.1, an historic occupant of the Channel 10 tower dating to its days as WCAU(FM), is the only tenant there.

American Tower is now the biggest

See FARM, page 20 ▶

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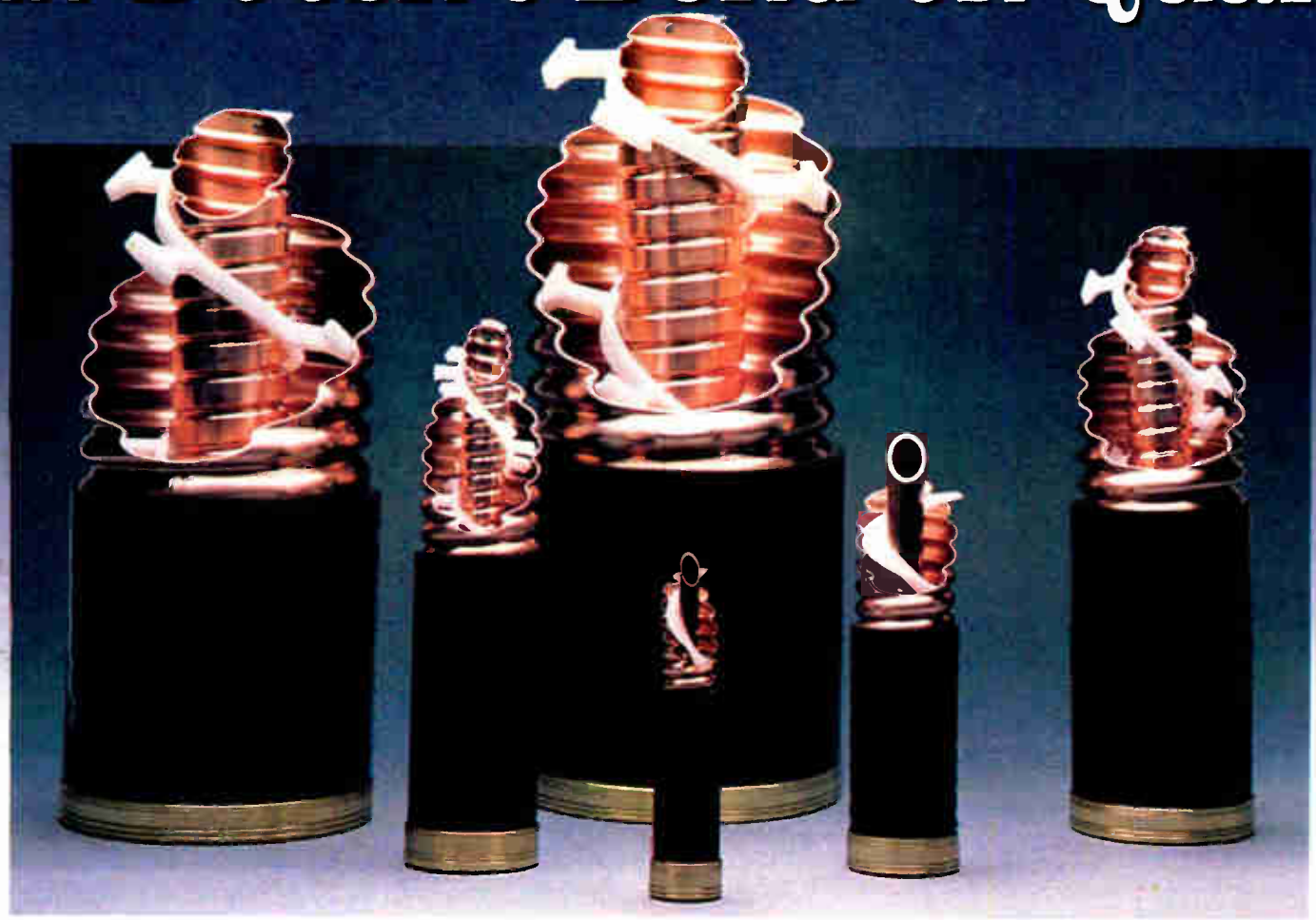

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World Radio History

COMPUTER TIPS

DOS Headache, Driver Solution

Specialty Add-On Cards: Just How Do You Make Them Work Under Windows NT, 2000 or XP?

by John Arndt

In the computer world, one thing is certain: change.

Not only is hardware constantly improved and upgraded to run faster, operating systems also improve to take advantage of the new hardware or add features not available in earlier versions.

All things considered, the amount of backwards compatibility is amazing. Literally thousands of programs and older hardware still work fine on the newer machines and operating systems. Most vendors of popular software and hardware add-ons are aware of the changes occurring and plan for updated drivers or patches to keep their customers happy when they upgrade.

NT and more

Occasionally, however, you do run into a situation where your old hardware or software just does not run on a newer machine or with a newer operating system. Those of us who grew up the broadcasting business along with the computer industry from its infancy remember operating systems that started with DOS, then migrated to Windows 3.1, 3.11, 95, 98, 2000 and now XP.

What about Windows NT, you ask? Well, when it was introduced way back when, it was a completely different animal than Windows 95 or 98. All of the Windows operating systems up to and including 98 were essentially GUI (Graphical User Interfaces) running in a DOS environment. Simply put, they were DOS machines that had point-and-click capability. Any hardware and software written for that hardware were DOS-capable programs that ran in the Windows environment through the DOS system.

With Windows NT — the NT stood for New Technology — the operating system was complete unto itself. Windows ran the whole show, it was not just a GUI over DOS as in other versions of Windows. This was probably NT's biggest advantage and downfall at the same time, in my opinion.

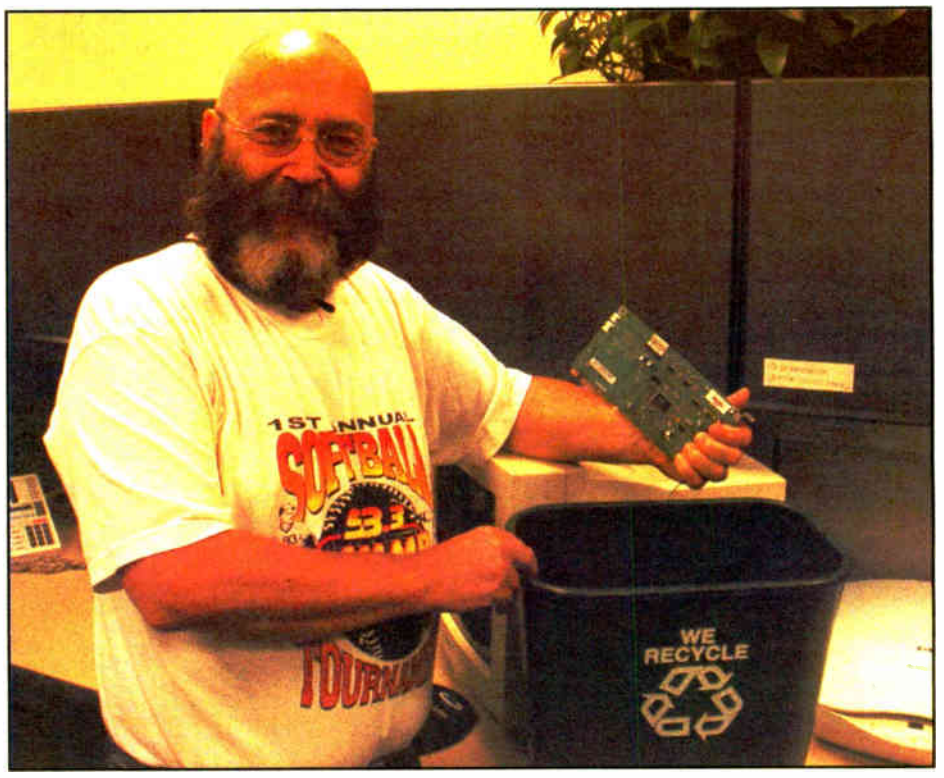
No longer restricted by some of the inherent limitations of DOS, NT could run more stable and allow for multitasking operations. However, because there was no more DOS, Windows needed the specific drivers to tell it where hardware was to be found on the machine and how to communicate with it. This probably is one of the main reasons NT never caught on for the home market in that many vendors never wrote the appropriate drivers for their hardware or software for NT since their products ran perfectly well in Windows 3.1x, 95 or 98.

Now we come to Windows 2000 and the current XP. Both these operating systems are rooted in NT technology. They are stand-alone operating systems not tied to the limitations of DOS and are not GUIs over DOS, as were their predecessors.

Microsoft did its homework this time and made a special effort when 2000 was introduced to have as many of the needed drivers written and available in its installation package to allow a smooth transfer from 95 or 98 to 2000; it gave others in the industry that produced hardware and software packages enough time to provide the drivers needed in 2000 to be written and available to their customers when they switched to 2000.

Knowing that the driver issue was one of the main reasons NT never took off, they were determined not to let the same mistake happen twice. The transition went amazingly well.

Although there were some horror stories, most people that upgraded to 2000 and subsequently to XP have done so without too many problems.



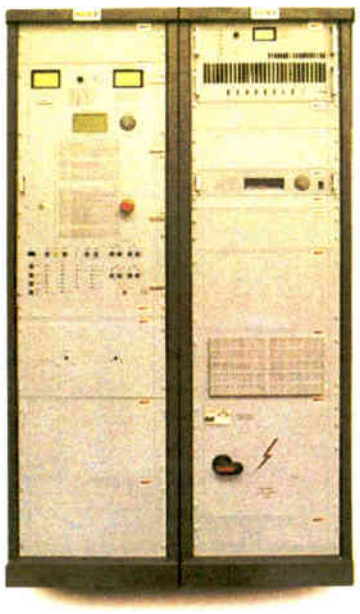
The author discovers that you may be able to recycle your specialty cards that run on DOS after all.

However, not every computer device has had a driver written for it to operate in NT, 2000 or XP. Now what? If you have a computer operated device and no drivers, what are your choices?

First, you obviously could keep the

See DOS, page 22 ▶

Pretty much A to Z in RF for FM and TV



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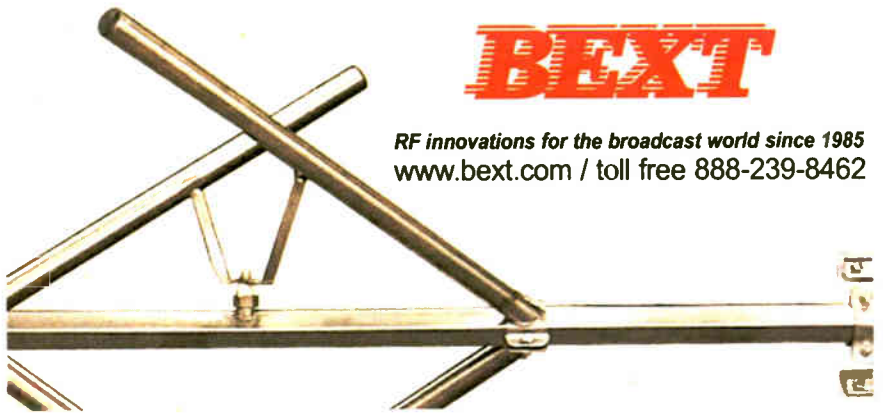

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Farm

▶ Continued from page 18

operator in the tower farm; in addition to the new Channel 10 tower, it owns the Banks (Channel 17) tower, the Gross (Channel 57) tower and the old WFLN(FM) tower.

And just this year, Roxborough landed still another big FM signal. Radio One's WPLY(FM) at 100.3, licensed to Media, had long been hampered by a tower site far out of town in Newtown Square, Pa. In early May, "Y100" joined its sister station WPHI(FM) 103.9 at Roxborough, operating from a unique seven-panel ERI cogwheel panel antenna on the Channel 48 tower.

Still growing

With eight towers over 1,000 feet; several shorter towers including the original WFLN(FM) self-supporting tower, now being used by Fox's WTXF(DT); 10 full-power analog TV signals; 11 DTVs; 16 FMs and, yes, a 50-kW directional AM, Roxborough remains one of the nation's most concentrated broadcast sites — nestled in a corner of Philadelphia that feels as though it should be far outside the city limits, even though it's just a few miles from City Hall.

"You drive back in that corner of Philadelphia and you'd think you were in (very rural) Potter County," Humphrey said. "It's very rural, and people like it that way."

Photo by Scott Fybush

On the left is the WGTW(TV)/WXPN/WPLY tower, and on the right is the old 'square cross-section' WUSL/WIOQ tower, first built for WPVI(TV).

Scott Fybush, a frequent RW contributor, publishes Tower Site of the Week (www.fybush.com) and has nearly driven off the Schuylkill Expressway several times while gazing at the Roxborough towers.

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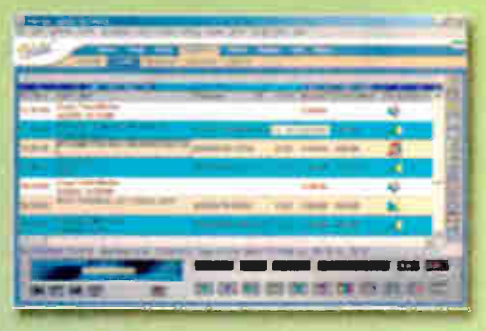

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World Radio History

DOS

▶ Continued from page 21

operating system installed on the machine that works. If there is no reason to upgrade to a newer operating system, don't change it and keep your hardware happy. No net gain and no net loss. Your investment in the hardware is still good and operates like usual.

Second, you may need to upgrade the operating system on this machine for a variety of reasons, not limited to network security improvements or other programs that must also run on this machine that do not run on older operating systems.

The vendor of your specialty hardware might make a newer version or model that does what you need it to do and will work on the new operating system. If they do, the new hardware might also give you some additional features, but in any case, even if available, will most likely be an expensive acquisition.

Third, you could try to find a person or company to write a customized driver for your application. Not only would it be difficult to find someone who has this capability and is familiar with your hardware, it most certainly would be time-consuming and therefore expensive and might not be as financially acceptable as other options, like purchasing new hardware or a stand-alone unit for the process originally done by this computer.

I was faced with just this dilemma recently. At our facilities we have the capacity (luxury, some might say) to extend our office WAN out to four transmitter sites. The computers at the sites primarily do transmitter remote control operation, audio processor adjustments and other hardware interrogation, and they can be controlled from any other computer on the WAN or even from our home if needed by connecting into the office WAN over the Internet.

Because of the network security issues over the WAN, we have been systematically upgrading all machines running Windows 98 or older to at least Windows 2000. At two different transmitter sites I have computers running Windows 98 with Modulation Sciences RDS-1 cards in them to generate the RDS signal used on the air. Even though Modulation Sciences said these cards shouldn't work under 98, the DOS program that ran the cards worked fine under Windows 98 and we never had a problem in their operation.

We eventually got to the first of these machines with the RDS-1 card and Windows 98 and upgraded to 2000. Oops, the card no longer ran, and I kept getting an error that hardware was not found. I knew this was an operating system problem as this was the only thing that changed.

After a call to our IT guys, they confirmed that the problem was a driver, or lack there of, and until that issue was resolved the card would not work under 2000. A call to Modulation Sciences was in order.

When I called I spoke with Eric Small, the owner. I explained my situation and he told me that not only is there no driver available for the card, he was surprised that the card even worked under Windows 98, as the program that operates the card was never written or tested in a Windows environment and was only designed to run in a stand-alone 286/386-class machine running DOS only.

His solution was to take an old 386 machine that I had lying around and set it up to run this card independent of the network and any other computers at the transmitter site.

Stubbornness pays off

Not one to take a categorical "no" for an answer to a situation, I set out to explore my options to this situation.

The idea of having an old 386 machine running this card that would not be on the network sounded counterproductive; the whole idea of being able to network the computers for control and operation was the reason for the upgrade in the first place.

Also, even though Modulation Sciences said the card shouldn't work in a Windows environment, it had worked under 98, so if I could find a way to overcome the driver issue, I was certain it would work in the same machine running 2000.

Further conversations with my IT guys here at the facility yielded no further insight. Both of them were unaware of any easy way to add a "portal" or universal driver in Windows 2000, NT or XP for addressing hardware directly that the DOS program of the Modulation Sciences RDS-1 card needed to operate in this new environment.

If you have a specialty card that uses a DOS program and you need to operate it under Windows NT, 2000 or XP, take hope.

After a few searches on the Internet using keywords like "port," "redirect" and "drivers," I came to a site selling a program called Direct I/O, *www.direct-IO.com*. Bingo!

This appeared to be just what I was looking for. It talked about experimental or specialty add-on cards that originally were addressed at particular port addresses with the old DOS peek-and-poke commands and let them operate in the non-DOS native NT, 2000 and XP environment.

The program acts as a universal device driver for these older DOS programs and is settable with port address, IRQ settings, memory requirements of the program and a place for associating the actual DOS program with these settings. The program has a trial period of 30 days so you can see if it will work for you; it is rather inexpensive to boot, $29 as of the date of this article. I downloaded the trial version confident that this was the answer to my problem.

After Direct I/O installation, which was fast and easy, I started to set-up the program for my RDS-1 card. The RDS-1 card has four port settings on it, selectable with "flee clips" over pins for selection of ports 200, 230, 300 or 330. You can also select the IRQ of the card at 3, 5 or 7. The direct I/O program not only needed to know the port address, but the range used as well.

Take hope

Because no documentation for this kind of information was in the RDS-1 manual, some trial-and-error settings needed to be done. After some birthing pains of trying to get the program setup properly, it worked! A setting of port 200 and IRQ 5 on the card worked with the program setting of port range 200-220 and IRQ 5. The RDS-1 card is sitting there, working just like before, running in the Command Prompt window.

I e-mailed Eric Small at Modulation Sciences to let him know I found a way to operate his RDS-1 card in my Windows 2000 machine. He let me know, almost apologetically, that the original software for this card had been written many years ago by a person who had long left the company. No one else at Modulation Sciences has changed or written any updates for the software; further, the software had been written and compiled in Modula II and could not easily be converted to a more current language to be rewritten.

He also said that during the initial tests way back when, the software/card had timing issues running on a (then) faster 486 machine! I assured him, that while my machine is no speed demon by today's standards — a Pentium Class I at 233 MHz — the card ran perfectly well in the older Windows 98 environment and the current 2000 environment with the Direct I/O device driver.

Small also stated that Modulation Sciences might take the RDS-1 circuit and technology a step further one day and incorporate it with a stand-alone CPU card and make it into a stand-alone box. If and when that may occur, he did not say.

If you have a Modulation Sciences RDS-1 card or another specialty card that uses a DOS software program and you need to operate this hardware under Windows NT, 2000 or XP, take hope. The Direct I/O universal device driver may work for you too. Give it a try and you may find you have saved thousands of dollars in hardware replacement costs for all of $29.

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John Arndt, BSEE, CPBE, CBNT, is assistant chief engineer of Greater Media's Philadelphia Radio Group (WMGK, WMMR, WMWX, WPEN) and has worked as a chief or assistant chief at several stations in Pennsylvania. He is a Senior Member of the SBE.

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World Radio History

Radio's Challenges Define Show

by Sharon Rae Pettigrew

"Station to Nation: Come Together. Revolutionize Radio."

While the theme of this year's NAB Radio Show may sound like a Paul and Ringo reunion tour, the annual convention in this city is anything but a blast from the past.

Terrorism within our borders, satellite radio and consolidation weren't issues just a decade ago. Today they help define our industry.

The state of radio in 2003 has managers scrambling to cope with these new realities.

Operating in a cluster environment, reduced budgets in a soft economy and broadcasting to the masses while making Wall Street happy are challenges Bill Bailey faces every day. Bailey is program director for a Grand Rapids, Mich., radio cluster owned by Regent Communications — mainstream AC WLHT(FM), soft AC WTRV(FM) and classical WFGR(FM).

Bailey juggles daily to tailor his stations' on-air presentation to deal with the needs of his audience.

Outside influences

Pile on to this equation increased competition from outside influences on radio listening, "such as computer games, the Internet and cable television," according to Bailey, who is on the steering committee to help direct conference programming at this year's show in Philly.

What: The NAB Radio Show

Where: Pennsylvania Convention Center, Philadelphia

When: Oct. 1-3

Exhibits: Wednesday 5-8 p.m.; Thursday 8 a.m. - 4 p.m.; Friday 8 a.m. - 2 p.m.

Registration: $495 for members, $895 for non-members, $100 for spouse; NAB Radio Luncheon $35; Marconi Awards $65

Info: www.nab.org/conventions

"We are also impacted by the record industry's focus on younger demos causing a vacuum in product appealing to adults," he said. "All of these topics are being addressed at this year's radio show."

Joe Bilotta, chief operating officer of Buckley Broadcasting Corp., chairs the Radio Show steering committee.

Jay Meyers is senior vice president, radio, for Clear Channel Communications. He says that while the beginning of 2003 was a bit of a struggle for the business, as the economy recovers, radio will recover as well.

Meyers pointed to other issues facing the industry.

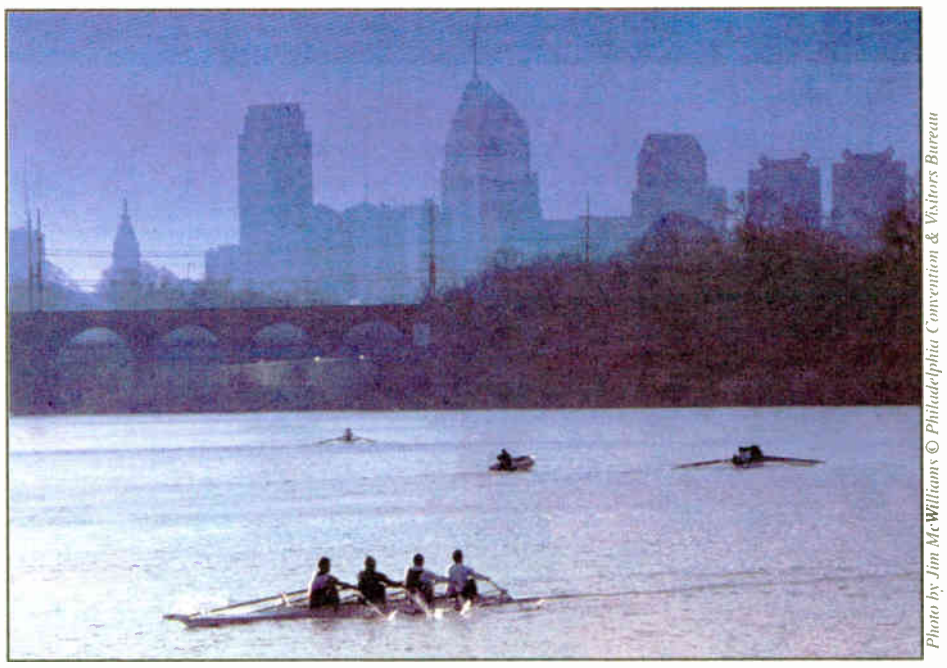

Photo by Jim McWilliams © Philadelphia Convention & Visitors Bureau

Scullers on the Schuylkill River

Bilotta cited a concerted effort to avoid the commonality of content that gravitates from one industry show to the next.

"The committee purposely avoided the 'sameness' factor and worked very diligently in addressing topical issues in the technical, programming and sales and management areas," said Bilotta.

Bilotta pointed to the uncertainties of what he calls a "somewhat stagnant business environment" going into the fall show.

"We must prevent the cannibalization tendency of cutting our rate structure in an effort to achieve budget goals," he said. "I think that this is the time to train a whole new legion of radio sellers and marketers to face the future."

"The technical challenges revolve around interference relating to low-power FM," said Meyers. "The uncertainties surrounding the true technical effects of IBOC are also an area of concern.

"From an economic standpoint, we're in the age of operating, now that we've put these station clusters together," he said. "We're now writing the book on effective operations."

Not business as usual

Mike O'Brien chairs the RAB Small Market Advisory Committee and is vice president of sales for Bliss Communications Inc. in Janesville, Wis.

"The term 'traditional broadcasting' is

See RADIO SHOW, page 28 ▶

Digital Rollout Is Workshop Highlight

by Jeff Johnson

Engineers attending the NAB Radio Show Technical Certification Workshops will have an opportunity catch up on issues and technologies facing the profession. A certificate will be awarded to attendees, applicable for SBE recertification credit.

Three workshops are scheduled. "AM/FM Antenna Certification" is on Wednesday Oct. 1 from 8 a.m. to 4 p.m. A "Digital Radio Certification Workshop" is set for Thursday, 9 a.m. to 5 p.m. The "AM/FM Transmitter Certification Workshop" is Friday, 9 a.m. to 4 p.m.

Maintenance and troubleshooting of AM and FM antenna systems, and how to deal with the FCC concerning antenna issues, will be the focus of the first workshop.

Tom Silliman, president of Electronics Research Inc., states, "This year we are adding a consulting engineer to the presentation, Charles Cooper from du Triel, Lundin and Rackley Inc. I thought that having Charles would add to the experience. Charles will add insight from the consulting side of the business as opposed to us manufacturing guys."

Cooper will cover FM field strength measurements in addition to a discussion of filing procedures and other topics relating to consulting issues. Also contributing to discussion of consulting issues will be Benjamin Dawson, president of Hatfield & Dawson.

Participating as well is Bob Surette.

See TECHNICAL, page 26 ▶

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World Radio History

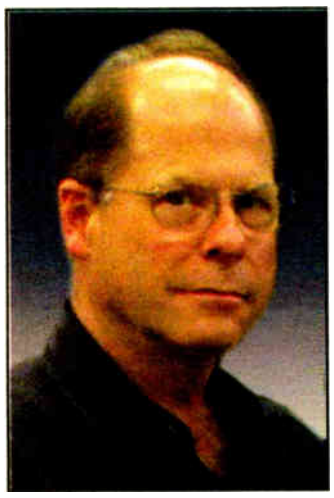
Technical

▶ Continued from page 24

manager of RF Engineering for Shively Labs.

"The implementation of HD Radio is uppermost in the minds of broadcasters and engineers," he said. "Learn what it takes to implement HD Radio and put the myths and misinformation to rest. Find out how isolators play an important role in IBOC transmission technology for multi-station installations."

Topics will include high-powered injection, interleaving antennas and backfeeding multi-station combiners and antennas. Ronald Rackley, a partner in du Triel, Lundin and Rackley, will contribute his expertise in AM directional antenna systems and other areas.



Tom Silliman

Bob Surette

Jeff Detweiler

John Bisset

0s and 1s

The "Digital Radio Certification Workshop" will involve three new and significant technologies.

Steve Church, founder and CEO of Telos Systems, states forthrightly, "It's inevitable. Just as PCs are universally used for editing and delivery of audio in radio stations, it is going to be Cat-5 for everything – audio and data together on the same network.

"Live low-delay audio will utilize Voice over IP (VoIP), taking advantage of this low-cost and capable technology."

Church, whose company is offering a line of Ethernet studio audio products, will delve into the applications of IP packet networks, VoIP telephony, Ethernet switches and routers, copper or fiber interconnection topologies, maintenance and security issues.

"HD Radio Conversion 101," the second topic of the Thursday workshop, will be presented by Jeff Detweiler, broadcast technology manager for Ibiquity Digital Corp. and Scott Stull, director of broadcast business development for Ibiquity.

"My presentation is an overview of HD Radio technology," Detweiler said. "It will serve as a springboard for the HD Radio data and implementers' panel. Simply stated, it will arm the attendee with questions for the implementers' panel and case studies."

Among the subjects: definition of the HD Radio concept, regulatory status, commercial rollout of stations and receivers, AM and FM HD Radio waveforms, and an overview of AM and FM HD Radio implementations.

Stull said, "With broadcaster rollout well under way, and station commitments growing, I expect this will be a very popular topic at the Radio Show. The new encoding software incorporating Ibiquity's HDC codec offers a big improvement in the audio quality of HD Radio.

"Since stations are now implementing the technology commercially and not just as test stations, Ibiquity can also step out of the way a little and let others describe their experiences."

A former executive at Ibiquity is E. Glynn Walden, now a consultant, who will also speak. Walden will look at new methodology for presenting AM coverage and interference data.

"More-powerful computers have allowed a more-accurate representation of AM signal strengths and interference," Walden said.

"My presentation will cover the methodologies used to produce AM tiled matrix maps where signal strengths and interference are represented by colored tiles depicting the represented data. The presentation will show how the data can be used to graphically represent population receiving a given signal level, quality of reception, and population lost to interference," he continued.

"This presentation will show how these techniques are used to depict day and night coverage as well as desired to undesired (D/U) ratios for co-adjacent channels, giving, for the first time, a total look at the performance of AM stations."

Given the controversy concerning AM digital signals' alleged damage to nighttime skywave coverage, this will be an important session.

Tx

Perhaps the most important component of the broadcast chain, the transmitter, is the subject of the "AM/FM Transmitter Certification Workshop," hosted by John Bisset, regional sales manager for Dielectric and author of the column *Workbench* in Radio World.

Beginning with basic transmitter principles and moving to basic, real-world troubleshooting, the workshop aims to arm attendees with sufficient knowledge so he or she no longer has to view the transmitter site as the "black hole" of the operation.

A highlight of the workshop is a panel of representatives from major transmitter manufacturers discussing maintenance tips for their products.

Attendees will hear about engineers' disasters during the "Chief Engineers' Lessons Learned" panel. A checklist of transmitter site maintenance duties will aid in avoiding lessons learned the hard way.

Last will be a discussion to prepare the engineer for those dreaded words "We're off the air" and how to respond competently.

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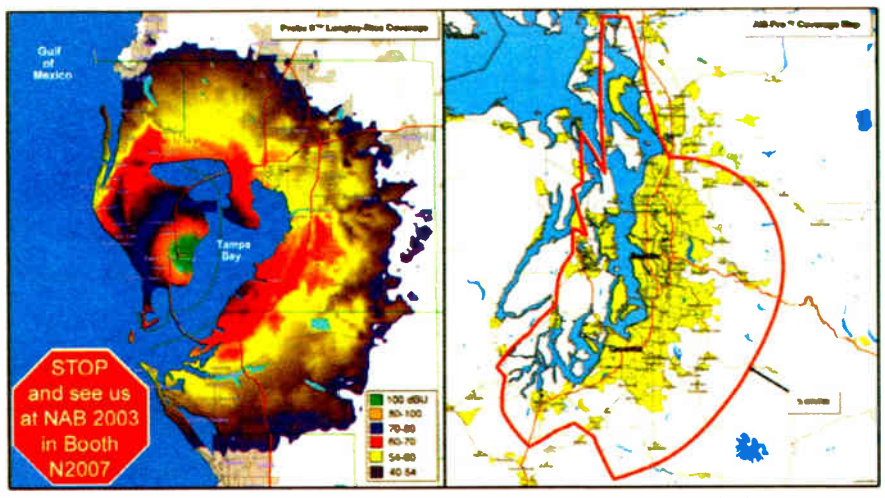

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World Radio History

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- *It was brighter than the RE 27ND without being edgy.*
- *The 421 was more honky and nasal sounding.*

Bob Heil, pioneer innovator of live sound reinforcement systems for such greats as the 'Who', the Grateful Dead, Joe Walsh, Peter Frampton, and countless others has been carefully listening to broadcast engineers, industry professionals and talented performers for many years. Bob has now allied his vast knowledge and 37 years of experience into his new line of high quality microphones and audio hardware.

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World Radio History

Radio Show

▶ Continued from page 24

an oxymoron," said O'Brien. "Radio needs an ongoing emphasis on digital, satellite and systems technology to remain cost-effective, yet a simultaneous effort to provide timely local content to distinguish itself from online services."

Two factors that work in radio's favor, according to O'Brien, are time poverty and listeners' need for community.

O'Brien called for an effort to "step up and synchronize" the treatment of billing, traffic and sales methodologies.

He believes radio is in a strong position to grow business markedly in the fourth quarter and the upcoming year.

"The United States is finally turning the corner into a bull market," he said. "The darkest days of the war are hopefully behind us, and consumers are exercising greater buying power."

And most important, according to O'Brien, "Our newer account executives have experienced a recession and are better poised to handle adversity than before."

Rosemary Scott is the south Texas regional research and marketing director for Hispanic Broadcasting Corp., and serves on the RAB Sales Advisory Committee. She expects corporate vision will be a hot topic at the show this year.

"A serious challenge is for large companies to acquire the vision it takes to manage successfully," she said. "Because consolidation has ramped up so quickly, many big companies are learning on the fly, and they are discovering that it is one thing to have a lot of stations, and quite another to run them."

Cluster communication

Scott highlighted the session "Accountability: Meeting Advertisers' Heightened Expectations," as an important one. Other relevant sessions include "The Future Is Here: State of Radio Sales" and "NTR Update: 50 New Places to Find New Business."

Clear Channel's Meyers helped put together the "Are You Cross Promoting or Are You Stupid?" session.

"This is a topic that no one is neutral on," said Meyers. "This topic is only an issue because of the state of the business today. The days of owning one AM and one FM radio station are gone.

"Now we have markets where you can own eight radio stations and can reach 50-60 percent of the target audience within your cluster, therefore radio becomes an effective medium to advertise the radio brand."

Jeff McHugh is program director for WKZL(FM), Greensboro, N.C., one of two stations owned by a family — Dick Broadcasting Co. He thinks the key to success in today's business environment is for companies to invest in research, effective marketing and entertaining personalities.

"I believe the biggest challenge is keeping radio fun for the listeners," he said. "The advertising money is there now, despite the economy. The technical challenges such as XM and wireless Internet are certainly facing us in the future.

"But in the next 12 months, radio will either open the door for those technologies by broadcasting mediocre content and dissatisfying listeners or will close the door on those challengers by stepping it up with innovative, compelling programming and marketing."

Sessions at the show are slated to target those issues. "The Promotions Smackdown" addresses eight criteria for any successful promotion; "Coaching the Coaches" takes a look at how to manage high-profile talent

Pat Paxton, senior vice president of programming for Entercom, feels radio needs to continue to reinvent itself.

"The stations that serve their listeners best are those that continually evolve based on what their target audience asks for," he said. "We need to develop superstar personalities and create exciting, intriguing radio."

Paxton points to unique content as the key to attracting new listeners.

"Personality is that unique content," he said.

Business and talk

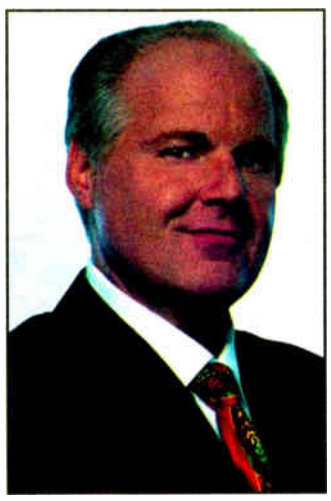
High-profile speakers round out the Radio Show experience in the City of Brotherly Love.

Wednesday's Dickstein Shapiro Morin & Oshinsky infosession "Broadcast Financing for the New Millennium: Grappling With New Ownership Rules" features Cumulus Media's Lew Dickey, Regent Communications' Terry Jacobs, Radio One's Alfred Liggins, Susquehanna's David Kennedy and Quantum Communications' Frank Osborn.

And despite the network's withdrawal from NAB membership, ABC Radio's John Walsh, host of "America's Most Wanted," is set to address attendees in a late afternoon Super Session.

Thursday opens with the FCC Breakfast featuring Commissioner Kathleen Abernathy; Premiere Radio Networks' Rush Limbaugh delivers the keynote address.

The afternoon features the annual Radio Group Executives Super Session, moderated by Sean Hannity of ABC Radio Networks. Panelists include Infinity's John Hollander, Clear Channel Radio's John Hogan, Susquehanna's David Kennedy, Hubbard Radio's Ginny Morris and NewRadio Group's Mary Quass.



Rush Limbaugh keynotes; Steve Harvey hosts the Marconi Awards, Jay Meyers and Bill Bailey are among the show planners

The Marconi Radio Awards Reception, Dinner and Show round out Thursday evening featuring Radio's One's Steve Harvey as emcee. A broadcaster band featuring some hidden talents of your colleagues will perform.

Friday's events open with the Congressional Breakfast addressing current legislative issues facing the industry such as broadcast ownership, indecency, Internet streaming and copyright, political ad costs and advertising regulation.

Tell me what you want ...

In light of declining show attendance, the NAB is working to focus on what attendees want out of the convention.

"Our research shows that determining factors for attendees coming to the show included networking opportunities, effects of current industry issues on their job/business, new products and conference topics," said John David, NAB executive vice president of radio.

"The exhibit floor, now called 'The Radio Exchange,' reflects increased interaction between the exhibit floor and sessions. We wanted to create an atmosphere where the learning and exhibition experience melded into one."

David said the NAB will continue to listen to attendees and exhibitors to work with them and provide a show that "meets their needs."

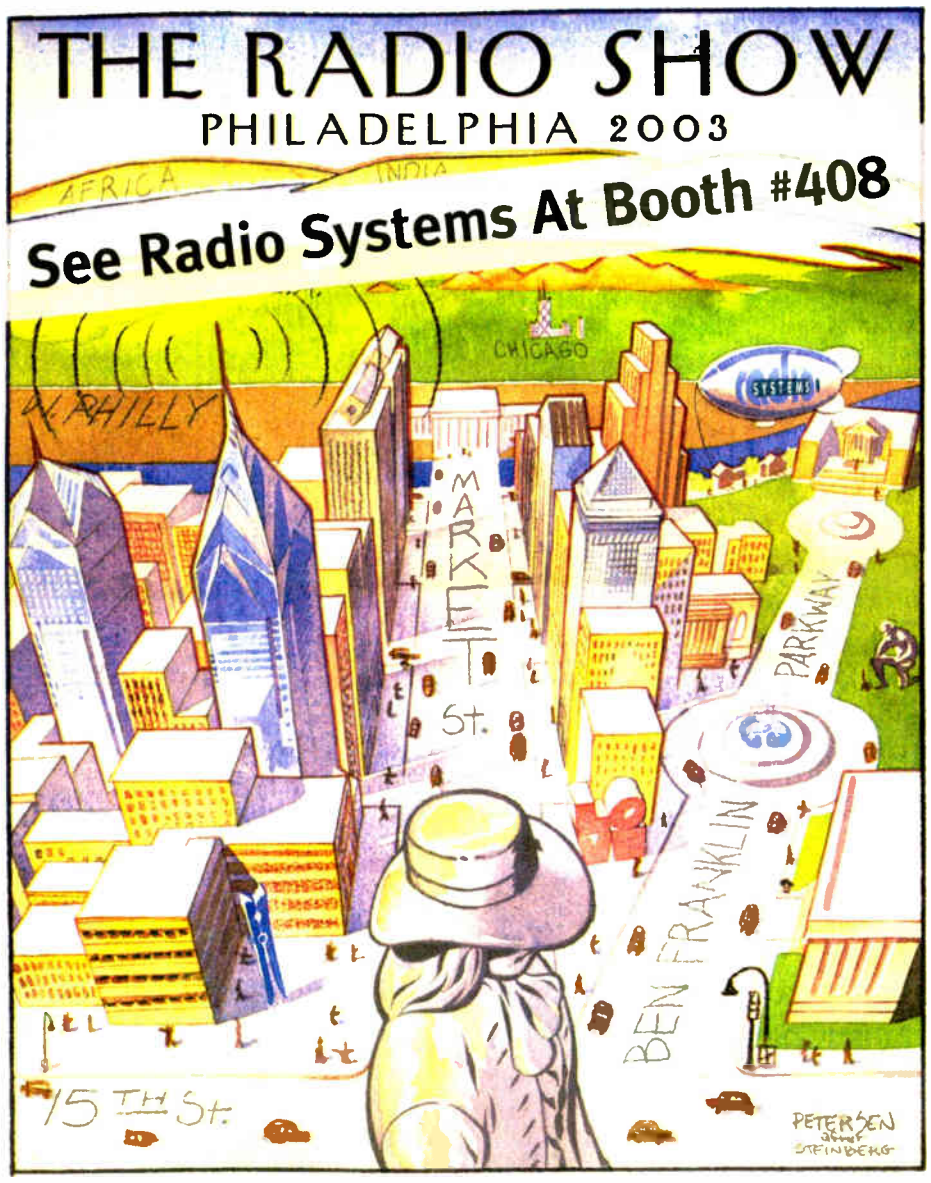
"If that means making minor adjustments here and there or a major change, then we will tackle it," he said. "It is imperative to us that the NAB Radio Show continues to succeed."

NAB President and CEO Eddie Fritts has said that the organization is "committed to the concept of an annual radio show."

And why Philly?

"It's the first time since 1990 that we've been in the Northeast," said David. "The convention facility is one of the country's best, and Pennsylvania broadcasters have helped to make it happen for NAB."

Pettigrew is a free-lance anchor and writer at WTOP(AM-FM) in Washington and owner of Rover News Services in Alexandria, Va. Reach her via e-mail to rovernewsservices@yahoo.com.



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World Radio History

Photo Courtesy BMI Archives and Judith Fisher Freed

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World Radio History

Exhibit Floor Stresses Intimacy

Networking Is Goal on the 'Radio Exchange,' Vendors Hope for a Philly Effect

by Lyssa Graham

Exhibitors hope to see an upward trend this year, given the venue of the NAB Radio Show in Philadelphia. The last fall show on the East Coast was in Orlando four years back, and the most recent in the Northeast or Middle Atlantic was in Boston in 1990.

Gerrett Conover, vice president of Radio Systems in nearby southern New Jersey, said his company is "very excited" about the convention and said the location could turn out to be a big advantage.

"We're hoping we have a lot of day trippers."

Conover said Radio Systems has taken an unusual step: instead of running ads that promote new products, the company is touting the show's location in Philadelphia. It is trying to encourage clients to try train travel, carpooling and day tripping this year.

"We certainly hope that we can get back to a 10,000 or 12,000 attendance figure," Conover said.

> **We're hoping we have a lot of day trippers.**
>
> — Gerrett Conover
> Radio Systems

NAB Senior Vice President of Corporate Communications Dennis Wharton said the Philadelphia location is generating "great buzz. It's an ideal location for travel," he said, "convenient to New York, Boston, D.C., Pittsburgh — we think things are looking really good for this show."

Approximately 100 exhibitors were on the roster a month before the event. Last year, 112 exhibitors participated in Seattle.

According to Wharton, the exhibit area has been revamped. "We're calling it Radio Exchange," he said. "It will be more user-friendly and convenient for attendees."

The floor will be somewhat smaller than in past years and tied closely to the sessions. Attendees will exit sessions directly onto the exhibit floor.

"It's one-stop shopping," Wharton said. "We're excited about the concept, and we think it will be a big success."

Wharton said exhibitors have indicated that they view the Radio Show as more of a networking opportunity than a place to showcase new products. A scaled-back floor is partly to reduce costs and partly to focus on those networking opportunities.

"We think it's going to be a different show, but a better show," Wharton said, calling the Radio Show more intimate than the annual spring convention in Las Vegas.

Lynn Distler, president of Comrex Corp., is hoping the show will be successful.

"Since radio is squarely our market and we care about it," she said, "we want to be there."

The planning of the show has not been without its bumps.

Earlier this year, a proposed change in the system of free floor passes, which are given to exhibitors for distribution among their clients, raised ire among companies planning on attending.

Pass policy

The NAB announced that exhibitors would no longer receive unlimited free exhibits-only passes, instead opting to give exhibitors 20 "VIP Day Passes" to hand out to favored customers. Exhibitors objected.

Wharton said those concerns led to the return to the old unlimited guest pass policy.

"We were responsive to the concerns," he said, "and we basically went back to the old policy. Unlimited guest passes will be provided to those who want them."

Distler said the NAB was wise to revoke the change. "We're hoping to pull as many people through as we can," she said, "We've got some neat new technology to show off."

Distler said she'd like to see attendance remain at least level with past years. She believes the location will bring new visitors. "If not in quantity," she said, "we'll see different people this year."

Although the pass policy change was rescinded, for some, it was too little, too late. Harris Corp. is among companies not exhibiting this year. Spokeswoman Jackie Broo cited the pass situation as the

See FLOOR, page 33 ▶

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WKDF / WGFX Studio Console Configurations

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World Radio History

Products & Services SHOWCASE

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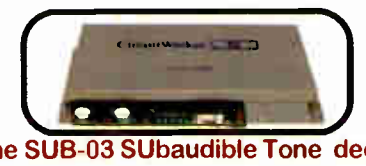

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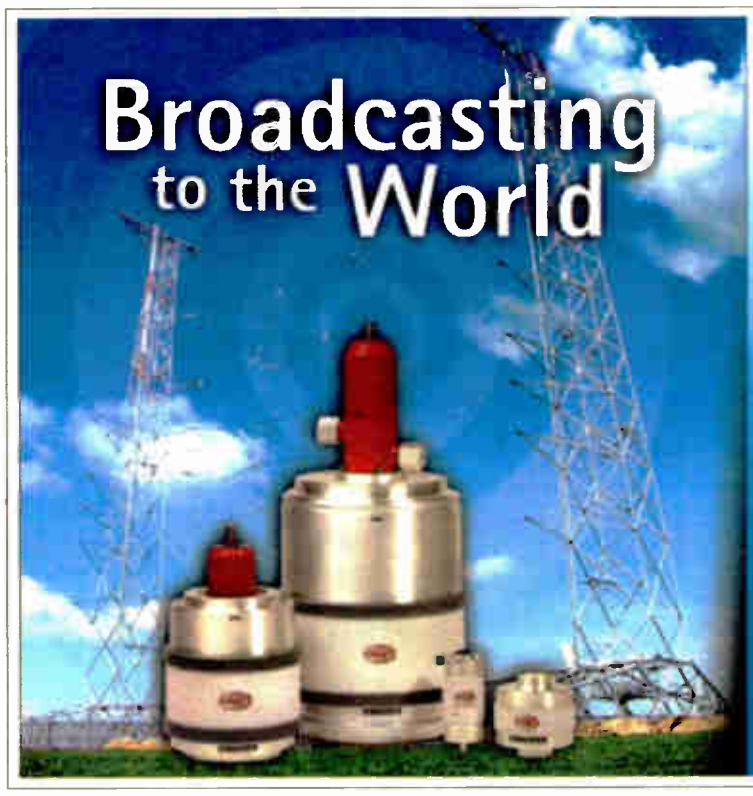

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World Radio History

Floor

▶ Continued from page 31

"underlying cause."

Broo said the debate over the passes was resolved too late for Harris to put together the equipment and staff needed to attend the show.

"We just decided that we would pass this year," Broo said. "Timing is everything, I guess. It's tough to do things at the last minute."

Although Broo said the show has been a good value for the company in the past, declining attendance is a concern. "Attendance has been going steadily down at the Radio Show," she said. "We'll pass this year and take a pulse of the show with our clients and staff and see what happens."

Reported attendance at the Radio Show in Seattle last year was just under 4,000, down from approximately 5,200 who attended the 2001 event in New Orleans.

The NAB's Wharton called the Harris decision unfortunate.

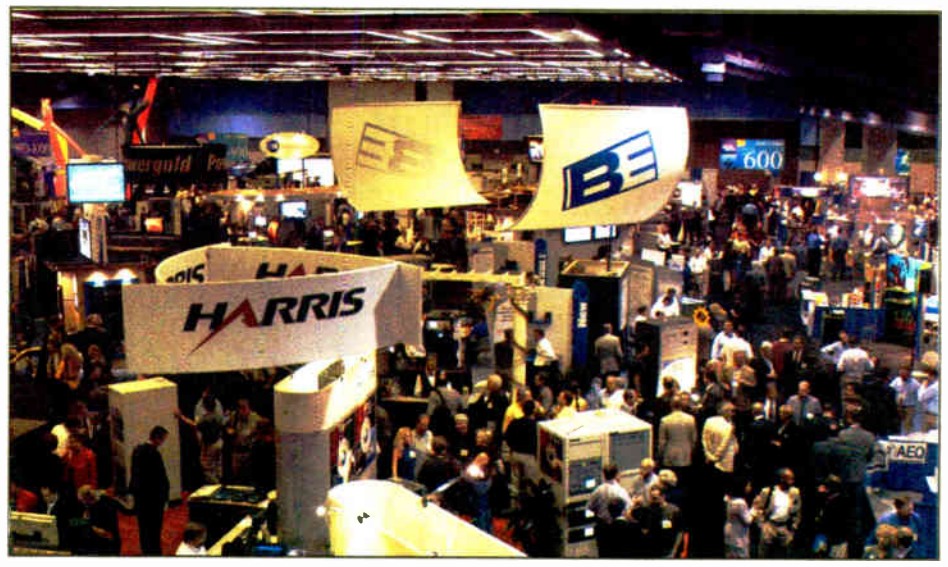
"Harris is a valuable exhibitor. We hope they'll be back at the Radio Show next year," Wharton said. "We think they will be."

Overall, Conover of Radio Systems said he's keeping his fingers crossed.

"The NAB's turnaround on the exhibit pass policy was very gratifying. Sometimes we manufacturers, although we pay to be associate members, are not the target audience for the NAB. Broadcasters are, and I understand that," he said. Still, Conover said he is "extremely happy with the NAB's response."

The show is tweaked every year, said Wharton.

"We're trying to be as responsive as we can to both our exhibitors and our attendees. We're committed to the Radio Show."



© NAB

A busy moment on last year's exhibit floor.

Marconis Set For Oct. 2

The Marconi Awards will be handed out in a ceremony on Oct. 2. They are given to stations and on-air personalities to recognize excellence in radio. Among the nominees:

Legendary Station of the Year: KSL, Salt Lake City; WABC, New York; WBEB, Philadelphia; WLW, Cincinnati; and WRIF, Detroit

Network/Syndicated Personality: Blair Garner, Premiere Radio Networks; Bob & Sheri, Jefferson-Pilot Radio Network; Clark Howard, Jones Radio Networks; Rush Limbaugh, Premiere Radio Networks; Sean Hannity, ABC Radio Networks

Major-Market Station: KFI, Los Angeles ; KGO, San Francisco; KPLX, Dallas; WBEB, Philadelphia ; WLTW, New York

Large-Market Station: KIFM, San Diego; KQRS, Minneapolis; KSTP, Minneapolis; KYGO, Denver; WMJI, Cleveland

Medium-Market Station: KUZZ, Bakersfield, Calif.; WIBC, Indianapolis; WIVK, Knoxville, Tenn; WOSN, Vero Beach, Fla.; WTCB, Columbia, S.C.

Small-Market Station: KITX, Hugo, Okla.; KLVI, Beaumont, Texas; KQMS, Redding, Calif.; WCRZ, Flint, Mich.; WFKX, Jackson, Tenn.

Other categories include personalities of the year in various market sizes and stations of the year by format. The dinner and show will feature comedian Steve Harvey as emcee and a Broadcaster Band.

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World Radio History

Exhibits

Exhibit Hours

Wednesday, Oct. 1 ..... 5-8 p.m.
Thursday, Oct. 2 ..... 8 a.m.-4 p.m.
Friday, Oct. 3 ..... 8 a.m.-2 p.m.

The following are exhibit booth numbers at the NAB Radio Show in Philadelphia. The list was provided by show organizers and was current at press time.

Late registrants may not appear here. Check your on-site program for changes.

Company ..... Booth

452 Chelmsford Entertainment..... 11

615 Music Library 615

AEQ 535

Air Force Recruiting 507

American Blues Network 2

Arbitron..... 113

Armstrong Transmitter 18

Army National Guard 409

ATA Audio..... 16

ATI - Audio Technologies Inc. 536

AUDEMAT-AZTEC INC 6

Intro: FMB80 RDS Generator: Use your RDS subcarrier to boost audience. Display station's call letters, song titles, artist names, many other services. FMB80: Dynamic RDS generator with embedded Web server. FM NAVIGATOR 100: Measure and improve the coverage and reception quality of FM programs with this an affordable and compact field-strength meter with GPS receiver and modulation monitor. AM_FIELDSTAR: The fast and safe way to do your AM proof-of-performance measurements, it is a field-strength meter with GPS receiver and modulation monitor.

On Display: FM_MC4: The worldwide reference for FM field strength and modulation measurements now including world-class GOLDENEAR software. GOLDENEAGLE AM/FM: The new generation of air monitoring and control equipment. IP2 CHOICE: Provides up to 128 digital inputs, 64 analog inputs or 64 relay outputs in one unit. Includes Script Easy software. IP2 I/O: Compact and affordable. Provides 12 digital inputs x 4 analog inputs x 4 relay outputs. IP2 Port - RS232 - TPC/IP gateway.

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BIA Financial Network Inc. 426

BMI..... 8

Broadcast Electronics Inc 317

Broadcasters General Store..... 109

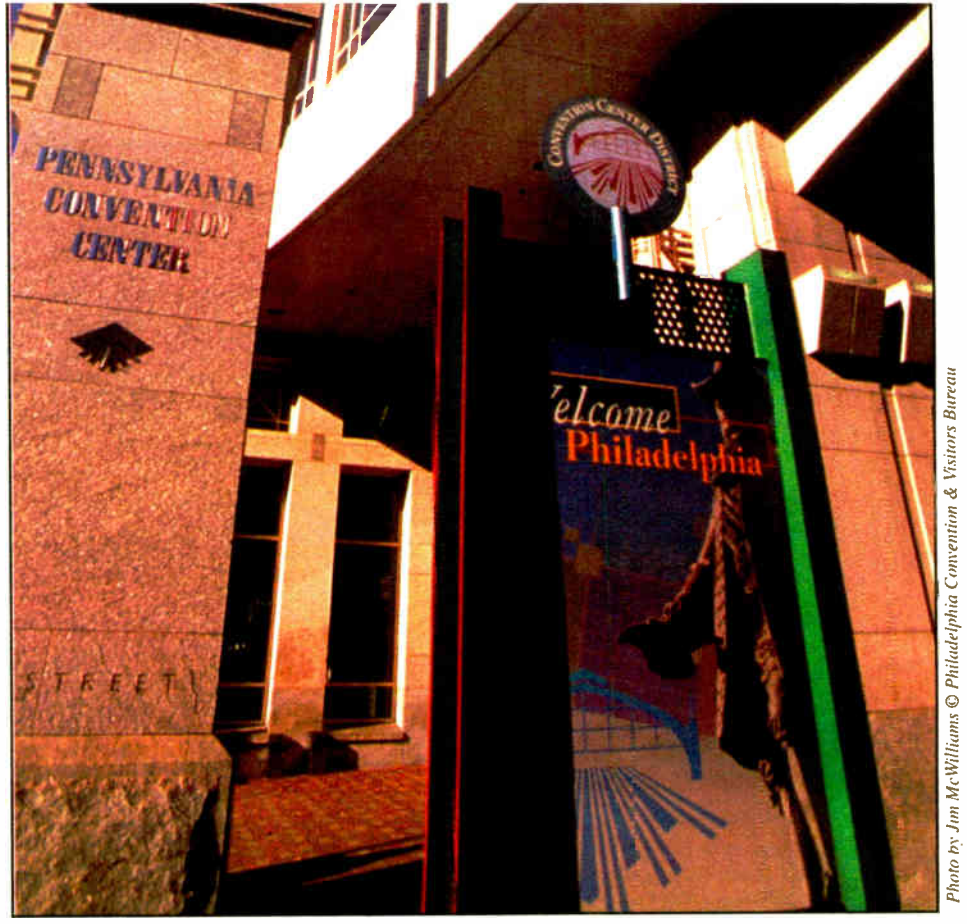
Broadcast Team, The 628

Business TalkRadio..... 4

CMBE Inc 17

Intro: HD Radio Coverage Maps. Predicted coverage and measured coverage of HD Radio signals. Comparison of analog and HD Radio coverage. Identification of interference areas and extended coverage. Radio Performance Tuning. Custom fine-tuning of audio processing, STLs, transmitters and antennas for maximum coverage and audio quality. Performance parts and equipment, diagnostic work, tuning and optimization of radio systems. Worldwide. Field Strength Equipment Rental. Audemat-Aztec FM-MC4 high-speed field-strength measuring equipment now available for long- and short-term rental. Rental includes all equipment and optional analysis and mapping of measurements.

On Display: Coverage maps from REALcoverage.com, including Longley-Rice point-to-point maps, interference maps, analog and digital coverage maps. Broadcast systems equipment for radio stations, including studios and transmission equipment. Specializing in systems for smaller broadcasters. FM Navigator field-strength measuring equipment.



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V-Soft Communications 436

Wheatstone Corp. 14

WinRadio 618

See us at the NAB Radio Show Booth #614

World Radio History

Special Section

High-Definition Production for Radio

WOR Explores World of Digital

by Stephen Murphy

From its inception, New York City radio station WOR(AM) has been a pioneering presence in broadcasting. Retailer Louis Bamberger started the heritage station in 1922 to support sales of crystal radios starting to appear on the shelves of his department stores. That Christmas, WOR was the only station broadcasting to the many who found gift-wrapped receivers under the tree.

Throughout the 20th century, WOR continued to pioneer technologically and creatively. The station introduced listeners to many of the best-known radio programs including "The Shadow," "Nick Carter, Private Detective," "Twenty Questions," "True or False" and "Rambling with Gambling." WOR was a frequent home to such notable personalities as Milton Berle, Vincent Price, Bob and Ray, and John Gambling.

The new and the familiar in WOR's Talent Studio 2. An Audioarts board, EV RE20 mic, Denon MD and CD machines and an ITC cart machine all working with an ENCO digital delivery system.

Dawn of the digital

In late 2002, the Buckley Broadcasting station became the first AM in the New York City area to broadcast in Ibiquity Digital's HD Radio format. Proponents of the in-band, on-channel technology behind HD Radio believe it will breathe new life and fidelity into many AM stations poised to follow in WOR's footsteps.

Tom Ray, Buckley Broadcasting/WOR corporate director of engineering, spearheaded WOR's leap into the world of HD Radio. His station worked with Ibiquity throughout the conversion to the hybrid analog/digital broadcasting format and subsequent testing phase.

Depending on the state of a station's existing equipment, bringing a transmitter site up to IBOC digital spec has the potential of significant technical and financial challenges. But Ray said the addition of HD Radio required few changes to WOR's production operations.

"Adding the digital broadcast had a minimal impact on the production side. Really the only thing we need to look out for is compounding digital audio file compression."

Because Ibiquity Digital's IBOC digital exciter must compress the program material, already-compressed files such as source MP3s will be recompressed, resulting in an increase in audible artifacts.

"Depending on the nature of the original compressed source, results range from imperceptible to quite noticeable," Ray said.

Some easy steps can be taken to minimize recompression, but this requires getting the message across to content providers.

"A majority of commercials we receive show up in MP3 format attached to an e-mail — of course, if you told me that 10 years ago, I would have said, 'You're nuts!' So now we continually stress the importance of sending us the highest quality possible, high-bit-rate MP3s. We would prefer WAV files, but they are far too large for e-mailing."

In certain situations, however, recompression is not so easily avoided.

"For instance, the StarGuide satellite receivers are completely MP3 — that's it, that's the only choice," Ray said. WOR receives and rebroadcasts satellite feeds from several sources including ABC News and Westwood One.

The fact that the Broadway-based station's satellite receivers are at the New Jersey transmitter site complicates the matter.

"We bring back 10 satellite channels in MP3 format from the transmitter site on the bidirectional T1 Intraplex audio codec," he said. "Because we send the programming from the studio to the transmitter uncompressed, remaining T1 bandwidth dictates that the 10 incoming satellite channels be compressed at the Intraplex. We compress as little as possible at this stage, but it is another cycle nonetheless."

Analog constant

Apart from the caution of recompressed files, Ray says his production studios have undergone no other changes related to the IBOC broadcasts. In fact, the station is still using the five Pacific Recorders System One analog broadcast consoles it purchased

See WOR, page 38 ▶

Digital Radio Production Update

Digital is upon us — not just in the form of HD Radio, but also through satellite radio. Even stations not planning any transmission of digital signals are taking advantage of digital upgrades in their studios thanks to the increasing power and lower price points of digital gear.

This special section of Radio World pauses to investigate how digital has affected the production of audio for radio. Articles include the status of terrestrial digital radio, a profile of one HD Radio station, updates on satellite, an in-depth look at NPR's latest state-of-the art facilities and product stories on what radio broadcasters are using in the production room and for production-related tasks. And Frank Foti, president of Omnia Audio, has an interesting piece about preprocessing audio in broadcast's data reduction environment.

— RW

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World Radio History

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Gemini's MP-3000X is not only a high-performance dual CD player – this monster of a player also plays MP3s. Now you can carry 150 songs on a single CD, or download the latest hot track and spin it immediately! **Features:** frame-accuracy; anti-shock buffer; selectable 4/8/16% pitch control range; jog wheel for quick searching and ultra-accurate cueing.

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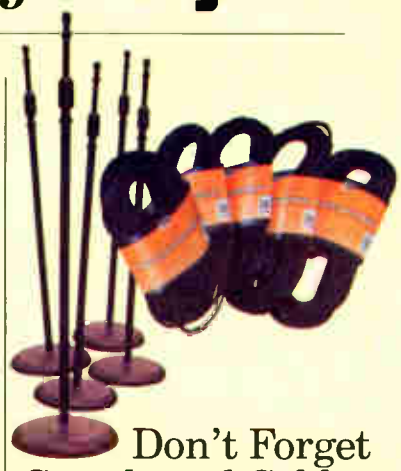

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World Radio History

WOR

▶ Continued from page 35

in 1978 (serial numbers one through five), though they are about to be retired.

Ray said now that the conversion to IBOC is complete, the station is focusing its attention on upgrading the production studios. But it is in the midst of finalizing details of the building lease and potential facility expansion plans; any major overhaul will have to wait. For now, the station will install analog Audioarts and Wheatstone consoles.

"Switching the production end over to digital is certainly in the cards for WOR, but it makes no sense to do it halfway in the interim."

The station's three on-air production studios and several off-line suites feature a range of pro audio and broadcast gear popular in the industry.

"External input sources include Denon CD and MD players, TASCAM and Denon cassette decks, Sony and Denon DAT machines, Comrex Vector POTS codec, Telos Zephyr ISDN codecs and the StarGuide satellite feeds," Ray said.

"We use Electro-Voice RE-20 and RE-27 microphones for the most part."

For audio compression, Ray employs Symetrix 528E voice processors. "We generally use very little compression, just enough to keep people from slamming the meters home," he explains.

For on-air playback and recording, WOR utilizes an ENCO DADpro MP-2 Digital Audio Delivery system with Digigram digital interface cards.

"On-air programming is fed from the board into the pre-processor, an Orban Optimod 8200-ST, for protection of the STL links out to the transmitter," Ray said.

"At that point, programming goes out to the transmitter site over our T1 Intraplex link, which provides a non-compressed 15 kHz-bandwidth digital signal."

The station also has a Moseley DSP 6000 and Moseley analog mono microwave links for backup systems. A dedicated analog landline between the studio and the transmitter site and a transmitter-site Comrex DXR ISDN codec provide additional STL backup options.

"And we have two hours of 'The Best of WOR' on DAT in case we have to abandon ship on Broadway," Ray adds.

Up and coming

Of the 19 stations that Buckley owns, WOR is the only one broadcasting in digital.

"The other studio facilities and most of our transmitter sites are all set to plug it in. When radios start appearing on shelves, the other markets will most certainly come online."

Right now those shelves are pretty bare; virtually no one can listen to the digital broadcasts as Ibiquity and pioneer stations navigate through the IBOC rollout phase. Ray anticipates the first consumer digital receivers will show up around Christmas. By next summer, he speculates, a decent variety of models should be available in stores and as installed options in new car purchases.

WOR is able to monitor digital broadcasts from the road through an Ibiquity test radio, which he jokingly describes as "half the size of a bus." A second receiver resides in the station's master control.

The New York metro area is a great place to put HD Radio through its paces, he said.

"In Manhattan and onto the New Jersey Turnpike, there are plenty of power lines to go under and bridges to cross. With the analog signal you get buzzes, whistles, fades and everything else. There's virtually no interference on the digital signal."

IBOC also is significantly more power-efficient than its analog counterpart.

"For example, our broadcast range extends about 95 miles towards Philadelphia before it falls apart. What's incredible is when you consider that it takes a full 50,000 watts to get the analog signal that far, while the digital signal only uses 1,500.

"In typical AM, we can transmit up to 10 kHz, but your typical AM radio doesn't hear much above three and a half, so the current limiting factor is the end-user's radio. IBOC over AM goes almost to 15 kHz, a dramatic difference."

Ray said listeners tuning in to the digital signal will pick up on the changes that enhance the listening experience.

Assistant Program Director Scott Lakefield, foreground, and Engineer Tom Kirk run the 'Joy Browne Show.' Computers, monitors and an analog board share the space.

"When the radio locks on to the WOR digital signal and switches from the analog, the sound just opens up and becomes much cleaner, for lack of a better term. And when we get a music bed or a commercial with music — we run a lot of spots for Broadway shows — it's like night and day between the analog and digital."

Speaking of night and day, FCC requirements limit all AM digital broadcasts to daytime hours. "Hopefully that will get worked out in the next couple of months," Ray said.

WOR has been a technological pioneer in radio throughout its storied history. "We were doing facsimile broadcasts of printed media back in the '50s, we were one of the first stations to incorporate a profanity delay, one of the first 50,000-watt stations in the country, one of the first to use a directional AM antenna," Ray said. "So it's just fitting that WOR is on the ground floor in the deployment and testing of IBOC."

Stephen Murphy is the studio editor of Pro Audio Review.

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World Radio History

Digital Radio Is Catching On

by Leslie Stimson

Radio World reports in depth on the rollout of digital radio in virtually every issue. Sometimes it's a good idea to stand back and see just where we are.

Satellite digital radio is a hot new product category for receiver manufacturers, hot enough to take on the CD for the consumer's attention in the car.

Now terrestrial radio is getting into the digital act with the debut of HD Radio technology on several stations this year. By the fourth quarter, the first consumer HD Radio receivers are expected to be available in stores.

For the novice: HD Radio is a brand name for digital audio broadcasting technology from Ibiquity Digital Corp. It allows existing FM and AM stations to use their licensed channels to broadcast digital versions of their programming.

The digital signals coexist with the analog, at least for now. In theory, the analog eventually could be turned off. The technology also would allow a station to use part of its channel to air new data services, allowing it to realize new revenue.

As described by Ibiquity itself, the digital signals are broadcast as "sideband" transmissions bracketing the top and bottom of the host analog signal to make optimal use of the spectrum allocation. The technology fights interference through a First Adjacent Canceller technology that differentiates between the digital sideband transmission and other analog signals that might be adjacent to the channel in order to suppress the interfering station.

Coding and power combining fight any multipath interference and sources of noise. This approach uses digital processors and algorithms to compare the quality of the two digital sideband transmissions, combining them to deliver additional power gain when possible and switching to the more powerful of the two otherwise.

Other features allow for uninterrupted transitions between analog and digital to avoid dropoffs that might occur due to bridges or other obstruction.

Consumers want many of the features that terrestrial digital and satellite digital radio has to offer — so says the Consumer Electronics Association.

Most consumers (94 percent) listen to the radio in their cars, and the majority of those (67 percent) believe the sound quality of their radios is not as good as that of CDs. According to a survey CEA released in August, consumers also are attracted to the ability of both terrestrial and satellite digital radio to display a variety of data such as song title and artist, traffic reports and, especially, weather updates.

Consumers in the 18-34 age group show a greater interest in digital radio than those 35 and older (69 percent vs. 56 percent). Forty-nine percent of consumers reported that they are somewhat or very interested in satellite radio that could provide CD-quality sound.

"This study shows that there is significant interest, and a very specific market demographic which is primed for digital radio and satellite radio services," stated Sean Wargo, CEA senior market analyst. "This is a very new industry, but clearly manufacturers and retailers can tap into an already existing group of consumers.

"The challenge for satellite radio will be selling consumers on the notion of paying for radio, since many consumers (50 percent) said they would not be willing to pay the extra fee for satellite radio service," Wargo stated. "However, history has shown, through the launch of cable TV in the '60s, consumers will pay more to receive access to higher quality and greater choice."

Cable is the model

Some companies are exploring a range of services to offer via addressable satellite radios such as remotely unlocking a car, remotely starting the engine and delivering customized data.

See DIGITAL, page 40 ▶

History has shown, through the launch of cable TV in the '60s, consumers will pay more to receive access to higher quality and greater choice.

— Sean Wargo, CEA

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World Radio History

Digital

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In November 2001, XM Satellite launched the first satellite radio service, soon followed by Sirius Satellite Radio in February of 2002. Since the launch of these services, CEA has tracked factory-to-dealer sales of more than 600,000 units of satellite radio modulators in the aftermarket, bringing nearly $100 million in revenue to the industry.

The demographic that buys Sirius and XM also own boats, planes and RVs. The satcasters have worked with manufacturers to develop radios for those applications as well as the traditional home, car and portable environments.

XM closed in on 700,000 subscribers as of June 30 while Sirius had a little more than 105,000.

While the satellite radio services entered the consumer market before the digital version of terrestrial radio, proponents hope higher-quality sound will draw consumers to purchase HD Radios. Cost is one differentiator between satellite- and terrestrial-delivered digital radio. XM and Sirius charge subscribers $10 - $12 per month for the service. That's in addition to the cost of the new radios, antennas and installation.

In contrast, all consumers would pay for with HD Radio is the cost of a new radio; there is no monthly subscription fee. Stations and manufacturers are licensing the technology from developer Ibiquity Digital Corp., the sole proponent of HD Radio.

The company hopes 300 stations will go on the air this year with its technology. In August, roughly 180 stations had committed to convert facilities this year and begin airing the analog and digital signals.

Kenwood hopes to ship the first receivers this month to stations already on the air with the technology. It hopes to ship radios in limited quantities to retailers in the fourth quarter and ship in volume to retailers in January after the Consumer Electronics Show (CES).

Ibiquity had hoped receiver makers could introduce their HD Radios earlier, but the technology rollout hit a snag this spring when the standards-setting body, the National Radio Systems Committee, suspended work on HD Radio. Members were not happy with the audio quality of Ibiquity's codec, PAC, on AM at low bit rates.

(Previously, Ibiquity had used AAC as its codec. When the company, formerly called USA Digital Radio, merged with former rival Lucent Digital Radio, it became Ibiquity and switched codecs.)

HD Radio market launch

In May, the NRSC said the AAC codec performed better on AM at low bit rates than PAC and said it was suspending standards-setting activities until Ibiquity improved the codec.

In August, Ibiquity revealed yet another new codec, called HDC. The codec is proprietary to Ibiquity, partly made up of patented technology that Ibiquity owns combined with Spectral Band Replication from Coding Technologies. The SBR is meant to enhance the performance of the Ibiquity codec at low bit rates.

Ibiquity President/CEO Robert Struble stated, "We've been working behind the scenes for quite some time on HDC and believe all of our commercialization partners will be thrilled with the audio quality of HD Radio. With the incorporation of HDC, our expectations are for a faster rollout among radio stations and receiver manufacturers."

NRSC leaders heard the new codec in private demos and said they were pleased with the improvement. They have resumed their standards-setting process for HD Radio.

While the FCC has authorized stations to go on the air using the digital technology with a simple notification procedure, it has yet to develop final authorization rules for HD Radio. That's why the standards-setting process is critical.

FM stations may go on the air with the HD Radio technology during the day and nighttime operation; AM is authorized only for daytime due to remaining nighttime interference questions.

You Read It Here ...

10 Years Ago

"The Electronic Industries Association announced ... that its self-imposed July 1 deadline for start-up of digital audio radio (DAR) systems tests has been firmly rescheduled for 'early October.'

"EIA also announced that NASA's Lewis Research Center, Cleveland, was chosen over a handful of other potential test facilities. About five systems are expected to be submitted to EIA for testing in Cleveland. ...

"EIA's plan ... includes testing and evaluation of in-band, satellite and out-of-band DAR systems. ... The current schedule calls for completion and evaluation of the systems by the end of the year, but recent activities have made the late 1993 completion deadline unlikely."

— "Time and Place Set for EIA DAR Test" by John Gatski June 9, 1993

World Radio History

GUEST COMMENTARY

Preprocessing Audio for HD Radio

by Frank Foti

The author is president of Omnia Audio/Telos Systems.

We live in exciting times.

Think about it. Communications and computing technology has changed the broadcast industry in so many ways. The PC and associated networks have dramatically affected how radio programs are produced and distributed.

Consider what we've observed in our industry over the last five years alone: DSB, HDTV and now HD Radio. The last time we've had innovation with similar significance was nearly a half-century ago when color television and FM stereo were introduced.

We have witnessed a lot of change in very little time. We're the lucky ones who get to have the experience of working with these exciting new technologies.

Over the past few years, as development and testing progressed regarding HD Radio, audio processing was one of the key topics of discussion. It became readily apparent that dynamics processing would figure in both the aural and technical performance aspects of the system.

Processing considerations are broader than just the audio chain creating the on-air signature. The HD Radio signal employs data reduction for transmission purposes. Thus, there are issues that must be dealt with at the content creation stage, as well as in the production studio. This is where our discussion begins.

Tools for the task

At Omnia Audio we are in a pretty good position to bring understanding to these topics regarding processing and production. We've been involved with audio processing for more than 15 years, and our transistor-sister, Telos, is one of the world's leading audio codec developers, as well as the company that introduced MP3 technology to the United Stated.

We've spent considerable time learning, understanding and devising how these two technical functions fit together. Before delving deeper, let's look at a few obvious issues.

First, all transmission media are not the same. Okay, this is obvious, but why do so many people think that using an old FM limiter will suffice to process narrow-band Internet audio? Or why do highly produced spots that sound kick-ass on conventional FM sound gritty and swishy-swirly in the bit-reduced environment?

This is what happens when using existing processing and production methods in the bit-reduced world, and it's not the same. It must be understood that coding artifacts are enhanced rather than suppressed when sticking with convention. This holds true, all the more, for HD Radio. (Speaking of convention, we'll use the term "HD Radio" or "HD" when referring to the new digital IBOC signal, and the phrase "conventional FM" with regards to what has been known as the FM analog signal.)

Audio processing can be a great tool in the broadcast environment. Sadly, it can be misused, too. To put it in simple terms, when it's abused on conventional FM and AM signals, distortion occurs. In the HD Radio realm, misuse will generate exaggerated coding artifacts. For more in-depth discussion on this aspect, point your browser to the following: *www.omniaaudio.com/tech/Audio_Processing&HD-Radio.htm*. A small segment of that paper appears here.

HD Radio must use fairly aggressive bit-reduction in order to maintain proper bandwidth over the air. At the time of this writing, the FM system uses 96 kbps and the AM 32 kbps. So the challenge of creating great sounding on-air audio is presented at the very end of the transmission pipe.

By the same token, this is the easiest point in the system to break the audio as well. Therefore, anything done earlier in the entire process can be magnified at this point.

There are many sophisticated dynamics boxes and plug-ins available, but in the HD Radio signal path they can create havoc. Moderation is the key.

Audio-chain processors are designed specifically for HD Radio. They have dedicated algorithms that manage the audio spectrum so that maximum quality is maintained, along with improving codec performance at this aggressive rate. Simply stated, the HD-R path is processed differently from the conventional path, as they both require specialized algorithms that are designed to support the tech properly.

Equally important, production techniques and procedures must be modified as well for the same reason. The changes in radio production for HD Radio are not that significant, but the results are. These involve how dynamics processing is used, content quality and the use of prior bit-reduced (transcoded) sources.

Toys in the rack

Let's break each of these down in greater detail:

Dynamics processing: This covers compression/limiting, EQ, stereo sound field enhancement and effects — basically all the toys in the rack, be it physical or PC-based.

Conventional broadcasting for FM and AM is basically a linear process. Within reason, what goes in is usually what comes out. Adding compression and EQ to "phatten up" a station promo or imaging element will print on the air in the manner it was intended. Using the same method in HD Radio may produce different results, and not always for the better. Adding density and EQ can — and more times than not, *will* — upset the operation of the encoding process in the HD Radio signal. This will yield coding artifacts that may appear as that annoying swishy-swirly sound and/or as added distortion.

Care should be taken to avoid using heavy dynamics processing such as high ratio limiting, clipping of any sort, as well as radical EQ curves when creating a signature sound. All of these functions will generate added coding artifacts. The worst offender is a clipper, as the harmonics generated by the clipping process can drive a codec crazy.

Stereo enhancement is another tool that needs to be avoided as it can upset the duality function of the joint-stereo parameter in the encoder. The stereo sound field should be left as it is. Any stereo image manipulation for effect should be tested in the main audio-chain processor, if at all.

There are many sophisticated dynamics boxes and plug-ins available today, and they work extremely well, unto themselves. But upon being added to the HD Radio signal path, they can create havoc. Moderation is the key.

Just as practice and experience aided in determining how much to process in the production room for conventional broadcasting, the same holds true here. The adage "less is more" rings true now more than ever.

Content Quality: This is significant as it plays into another old adage: "garbage in is more garbage out."

It's imperative to ensure that content is of pristine quality. Music and production libraries need to be of the highest possible quality. Any production or music service that provides content that has been independently sweetened should be avoided, as it's not really known what that sweetening was. Audio sources should be linear as much as possible. This reduces the amount of transcoding that occurs when multiple bit-reduced signals are passed.

When transferring audio sources, ripping CDs or dubbing elements, make sure that the audio I/O ports are capable of providing professional-grade audio quality. Many sound cards or computer audio interfaces are not designed for high-quality professional audio; sonic degradation results. This transforms into distortion and added artifacts in the HD Radio signal (and lesser-grade audio in the conventional signal).

Transcoding: This is the process of passing one bit-reduced audio signal onto another codec. It can be done with minimal degradation when the initial source is bit-reduced at a higher rate than the final coded pass. Because the FM system uses 96 kbps, any prior coding should be at least 256 kbps or higher.

This is a situation that is unavoidable in some instances — for example, the remote feed that arrives via an ISDN or POTS codec. In those cases, the source audio should be totally unprocessed, as it will be passed onto further data reduction at the transmission point. Any EQ should be kept to a minimum. These instances exist and we must deal with them. When source elements can be controlled, eliminate all bit-reduced content from hard-disk servers or play-out systems. Using a high-quality linear source will generate better performance, as transcoding is eliminated.

MP3 files should be used only in the event that a linear source is not possible at all. If an MP3 source is required, the bit rate should be as high as possible. The suggestion here would be anything above 256 kbps.

CDs ripped down to MP3 files should be avoided at all costs for music programming. MP3 files for news content are not as much of a problem as they usually involve only a voice element. But commercials, promos and imaging elements should be produced in the linear domain, without exception.

Naturally, as HD Radio continues to roll out and evolve, there will be plenty to gather from real-world experience. Products and applications are under development for producing in the data-reduced world. What was sonically possible 10 years ago in Codec Land has been surpassed by leaps and bounds. The progress doesn't seem to be slowing down, either, thereby allowing further improvements to the system as a whole.

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World Radio History

Radio Looks to the Heavens

by Chuck Taylor

As terrestrial radio programming continues its passage toward being more of a financial than a music enterprise, the sky's the limit for satellite radio. But down here on Earth, it takes more than innovative formatting to make the relatively new services fly.

Washington-based XM Satellite Radio and New York's Sirius Satellite, the two proponents competing for this innovative auto and home niche, maintain cutting-edge digital facilities, employing transmission chains that are redefining the way music reaches the masses.

After years of raising capital without a product to show for the effort, XM and Sirius are now projecting nationwide subscribers in the millions. XM leads with 692,000 signed on at mid-year; Sirius attests to 105,000 believers.

Each service is aiming to double those numbers by year-end, meaning that some 1.5 million consumers will have access to 100 channels of entertainment, talk and bartered programming from the likes of Discovery, E!, ESPN, CNN (all on XM) and NPR, BBC, C-SPAN, NBA and the Weather Channel (on Sirius), along with custom-programmed music showcasing a number of tasty niches in pop, rock, country, jazz, classical, era programming and more. Currently, XM is $9.95 a month, Sirius $12.95.

While the casual listener may envision an endless hall of studios for each company, modern technology allows on-air talent to study programming logs on digital workstations and to prerecord their voiceovers efficiently in the matter of an hour for a typical four-hour shift. Computerized trafficking then takes the lead, integrating the music and talent seamlessly. DJs are traveling with listeners in virtual fashion, innovating the concept of broadcasting as we know it.

Portable Controller for XM's SKYFi Service

XM

XM's chain begins with a custom-designed Dalet content management system, which contains 22 terabytes of storage capable of maintaining some 2 million audio clips. A series of workstations hosts each channel's prerecorded programming schedule, with up to 14,000 songs designated for each of the company's music channels. The systems also offer news content, Internet access, AP content and software to record and edit phone calls in-studio.

"With over 350 workstations, we're the single largest Dalet user generating the most number of logs," said Tony Masiello, XM's senior VP of broadcast operations. Remote studios in New York and Nashville (and bureaus in Boca Raton, Fla., Southfield, Mich., and Yokohama, Japan) are networked to the D.C. headquarters.

From there, XM employs the Klotz digital audio system, which interfaces as a routing switcher, with traditionally styled consoles, complete with signature faders and pushbuttons.

"It's what programming talent is used to looking at, only instead of a digital meter, they're seeing a flat screen," Masiello said. Commands are linked by fiber optic cables to PCs. In all, 3,500 inputs by 3,500 outputs serve 80 studios.

"Think of it as a giant digital audio engine," Masiello said.

The third element of the chain is the Encoda automation system, which acts as a sophisticated digital traffic system. "It sets the formatics of a show and keeps track of inventory. In a typical radio station, you'd have one channel to control. Here, there are 100. It's capable of processing just a few commands, such as switching to another studio at noon, or thousands for more complicated programming," Masiello said.

The three systems — Dalet, Klotz and Encoda — get the music from the studio (or from the company's live performance space) and headed onward. XM processes music before sending it through an aacPlus encoder, developed by Coding Technologies. The compressed signal is uplinked to the company's two satellites, which beam it back to receiver sets, along with artist and song title information on a graphic display. Some 800 terrestrial repeaters fill in blank spots from the satellite coverage.

XM's strongest automaker alliance is with GM, which recently equipped its 500,000th car with an XM receiver. By year-end, 44 GM models will offer preinstalled XM radios. Honda has made XM available on the Accord, Pilot and several Acura models; while Toyota, Isuzu, Infiniti, Nissan, Audi and Volkswagen also offer XM to customers.

In June, the company also announced an alliance with Broadcasting Data Systems

See SATELLITE, page 43 ▶

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World Radio History

Satellite

▶ Continued from page 42

for its programming to be tracked for inclusion on Billboard magazine's airplay charts. XM has also received innovation awards from Time, Fortune, Popular Science, Popular Mechanics and the Consumer Electronics Show.

"This has really given me the chance to start a new industry from scratch," Masiello said. "I've been able to put my stamp on it. It's a new way to do radio and entertain people, and that's exciting. It's familiar but it's pioneering at the same time."

Sirius

For Sirius, the chain also begins with music storage, which is contained on 7 terabytes of digital hardware at the company's Rockefeller Center headquarters.

"We have a network storage area that is accessible by all of the programming staff so that they can build their individual playlists," says Terry Smith, Sirius' chief technical officer. "Our Prophet Systems network allows us to make very efficient use of studio space."

Music is stored as MPEG audio, which is then decoded through play-to-air servers and processed through Orban gear, which oversees bandwidth shaping and equalization and perfects uniform volume for all songs and channels.

The signal then passes through a perceptual audio encoder, which compresses the music service to an average of 56 kilobytes per second per music channel. Thanks to an innovative system employing statistical multiplexing, each channel's audio consistently is measured and compared. At times a quiet passage might not require the full 56 kilobytes, while at others a fervent passage might need more, so the audio signal essentially has access to additional juice when needed.

"It can be as great as 70 kilobytes per second, which means that you end up with the same quality as you would get with a dedicated 60 or 70 kilobytes to each channel," Smith said. Talk channels are primarily fed through T1 lines, others via satellite, at 24 kilobytes per second.

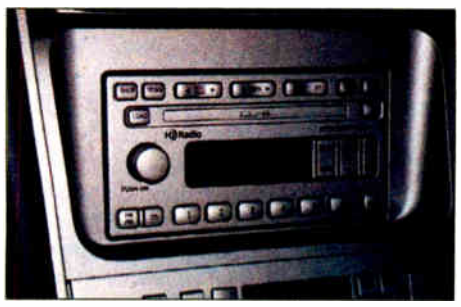


photo: Leslie Simson

An HD Radio Receiver in the Dash

The transmission signals are uplinked to Sirius' three satellites, which move above the earth in figure-eight, geosynchronous orbits. The company also has 105 terrestrial repeaters strategically located around the country. All radios employ a four-second delay to help with buffering.

Sirius has agreements to install AM/FM/satellite radios in Ford, Chrysler (including an arrangement with Chrysler's special-edition PT Cruiser that includes a factory-installed radio and one-year of service as part of the overall package), BMW, Mercedes-Benz, Jaguar, Volvo, Mazda, Land Rover, Dodge, Jeep, MINI, Volkswagen, Audi, Nissan and Infiniti vehicles, along with trucks from Freightliner and Sterling.

In June, Sirius announced two new plug-and-play sets from Kenwood and Audiovox. The Kenwood model requires a tape cassette player or audio port in a car's dash, while the Audiovox version plays over the FM receiver of an in-dash tuner.

And in a public relations coup, during the August power blackout in New York, not only did Sirius remain on the air with backup power capabilities, airing live reports from the streets of Manhattan, but it also enabled public radio station WNYC to return to the airwaves using its facilities.

The company also scored nontraditional exposure as the sponsor of NASCAR's No. 7 Dodge Intrepid R/T.

Chuck Taylor is senior editor/single reviews editor at Billboard magazine in New York.

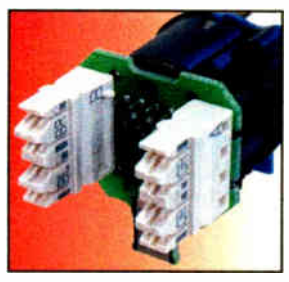
Inside the Sirius Studios

Unprotected RJ45 pre-assembled cable

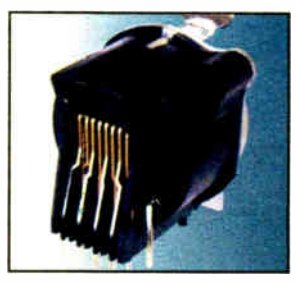
Pre-assembled RJ45 cable protected inside Neutrik cable carrier

Pre-assembled RJ45 cable inserted into Neutrik female receptacle

RJ45 cable carrier locks into receptacle for a secure, protected connection



Chassis receptacle available with IDC punchdown terminations & Cat 5E compensation



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World Radio History

NPR Prepares for HD Radio

by Rich Rarey

The author is the master control supervisor at NPR and managing editor for EUonline.org, NPR Engineering's Web publication.

When we are asked how National Public Radio will prepare for the coming of digital radio services to member stations, my answer is the same: anticipate what we know and prepare for the highly unexpected.

As I write in mid-August, we plan to demonstrate that NPR's Tomorrow Radio project can split the HD Radio (nee: IBOC) system and add a supplemental audio channel. If adopted as an IBOC option, this would provide the flexibility to operate a 64 kbps and a 32 kbps stream, each using the superior-sounding High-Definition Codec (HDC), giving each member station two digital streams.

The higher bit-rate codec would be for each station's digital simulcast of their main analog program, i.e. that audio content the station deems "higher quality." The lower bit rate stream should be well-suited for talk and conversation programming. This lower bit rate stream essentially is the same as used in AM member stations' HD Radio transmissions.

Regardless of how the station programs its streams, it's a mathematical fact that the streams will be highly data-compressed, and we're guessing that the audio content can't withstand much transcoding — that is, the audio will "break down" into an artifact-filled mess if the original audio is passed through digital system after system of MPEG-2, linear, analog, MP2 again and so on. The current Public Radio Satellite System uses a 256 kbps MPEG-2 dual-mono transmission scheme for delivering audio to the stations, and this hop isn't even the first transcoding that the NPR audio receives.

At HQ

NPR's Washington headquarters, built in 1992, once was sardonically referred to as "the last great analog facility" by a wag who believed that we'd all have a robust linear audio path to our homes by the 21st century. But it's possible that an analog facility may provide more flexibility and less transcoding than a pure digital one.

The NPR News floor contains four control rooms, each equipped with a now-10-year-old Pacific Recorders & Engineering analog console, either a model STX-34, AMX or ABX-26 console, and three Record Centrals, each with a smaller PR&E console, all still operating well within spec.

Voice work is done in front of Neumann U87 protected by either a Popper-Stopper or Parris Morgan's excellent X-Plosive windscreen. The Benchmark MDA101 preamps still perform very, very well. We do not apply processing to any reporter or program host's studio voice — thus eliminating the bother of re-creating processor settings as the talent works in different studios during the day.

Audio is routed around NPR using Thomson Multimedia's Jupiter series analog router. Its proof specs still show a nearly flat response with excellent crosstalk rejection and a very low noise floor.

Over the last few years, the 23-year-old MCI JH-110 analog reel decks in the control rooms have received less and less use, as the NPR corporate workstation system, Dalet, has made analog reels almost obsolete. While the JH-110s still perform within spec and are well-maintained, the scarcity of virgin 1/4-inch recording tape is the irony we'd not expected in the 1990s.

The consoles feed Benchmark model DA101 distribution amplifiers, the outputs of which feed the house router, the house FM system, the Systems Technical Center uplink router and the corporate Dalet workstation. Each control room has an online and standby Dalet workstation, the analog audio into/out of a Digigram PCX9 and PCX80 sound card. Running version 5.0d, the Dalet system records 384 kbps MPEG-2 dual mono at 48 kHz sampling (192 kbps per channel) and centrally stores the audio for production staff to access and edit as needed.

to solid-state recorders won't happen soon.

NPR engineers lament the lack of HHB PortaDATs, still the favorite DAT recorder among NPR technical staff for field recording, but regrettably no longer manufactured.

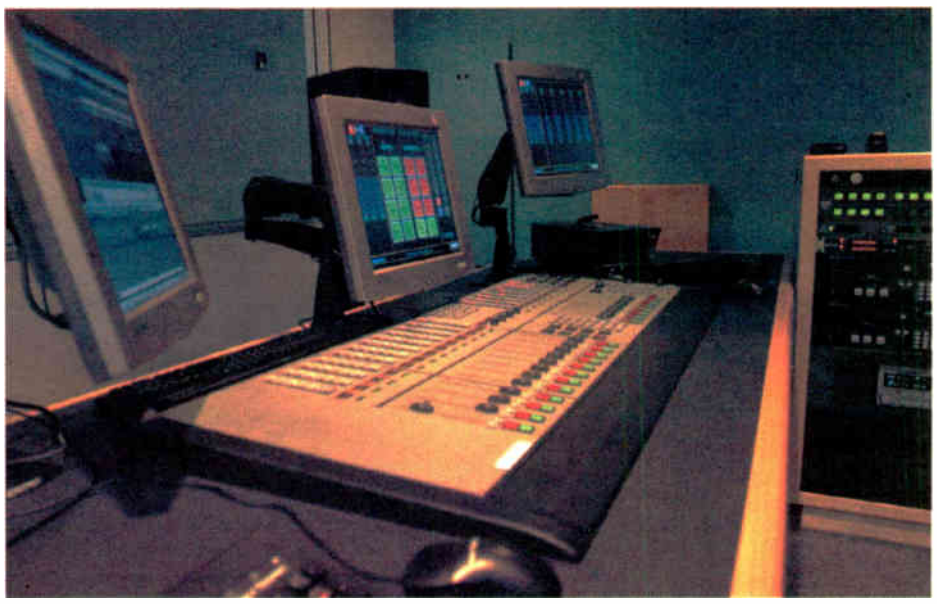
After air

Once an NPR News magazine program has aired, NPR replays it for the Midwest and West Coast time zones. Studio 2C is dedicated for these rollovers.

A Sony model 7030 DAT in chase mode (48 kHz sampling, linear) is the primary playback, with a Broadcast Electronics AudioVault backup (44.1kHz sampling, MP2 at 3.68:1 compression, JStereo) and a Dalet backup (48 kHz, 384 kbps MPEG-2, dual mono). These sources are selectable at the PR&E ABX-26 console, and are integrated with live hourly newscasts and live updates to the program.

The Sony 7030 DATs are well-maintained and perform well in chase. We use chase mode to force the playback to lock to a -02:00:00 offset, ensuring exact, to-the-second timing, but we realize that this fine mechanical linear-audio technology is becoming obsolescent, and some hard-disk-based linear playback system will be needed in the future.

On the fourth floor at NPR are the Music & Entertainment studios, three of



A Klotz Vadis DC II digital board interfaces with a digital network at NPR West.

The News Control Rooms have standardized sets of processing tools: Two channels of LaFont Cinema Filter Sets for notch/peak/rolloff tasks, Orban 622B Parametric EQ and dbx 160XT comp/limiters. Incoming material is fixed in the news Record Central and loaded into Dalet, generally with little audio compression or limiting, if any. Simple reporter pieces have their actualities fixed as they're mixed, usually with the reporter reading to actualities (as opposed to simply voice tracking).

Reporters love MiniDisc recorders for field use because of the random access for pulling actualities. By and large, they're disposable machines; when they arrive at the engineering shop, they're frequently too beat up to repair. We now specify Sony MZ-B100 recorders, but the shop's storage bins are full of beat MZR-30, MZR-55, MZR-70, MZ-B3, MZ-B50 and Sharp MT-15 recorders.

The MiniDisc's lossy encoding algorithm has given us pause for the HD revolution: portable solid-state digital recorders, such as Nagra's ARES-P, and Marantz's PMD670 are maturing nicely and Flash media are decreasing in price; but with NPR's overall economy in x-treme fiscal conservation mode, a widespread migration

which are equipped with Studer D950 digital consoles and Dalet 5.1 linear workstations with Digigram PCX822 and PCX924 sound cards. Two off-line editing suites offer Sonic Solutions workstations (one with No-Noise modules), now obsolete but still very fine.

Currently, a classical music program, "Performance Today," is produced to DAT (linear) and CDR (linear) for later uplink (256 kbps MPEG-2 dual-channel). Music and commercial CD production are performed in Studio 4A, a double-height, 2,600-square-foot studio with Studer D950S digital console and equipped with a Studer D827 MCH digital 48-track recorder, three TASCAM DA 78s, three DA98s, three TASCAM DA88s, three DA 78HRs and a Studer A827 analog 24-track recorder.

At NPR West, the new Los Angeles production facility, two weekday NPR programs are produced on Klotz digital consoles (Spherion control surfaces) and recorded into NPR West's Dalet 5.1 (linear, 48 kHz) system. Primary rollover playback is from AudioVault (48 kHz, linear). The Klotz core routes digital audio into and out of AudioVault and the Musicam USA

See NPR, page 45 ▶

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World Radio History

NPR

▶ Continued from page 44

Prima LT plus transmission codecs. Nine Prima LT plus codecs (384 kbps/48 kHz sampling/MPEG-2/dual-mono) provide five stereo bi-directional paths and six monaural bi-directional paths between NPR West and NPR HQ.

It's worth noting that NPR's Chicago, London and New York bureaus, the NPR San Francisco office and the NPR booths at the State Department and White House are connected at 384 kbps/48 kHz sampling/MP2/dual mono through Musicam USA Prima 110 codecs by a T1 or greater circuit. This not only saves serious money by not using an analog 5 kHz telco to these points and gives superior fidelity, but using the remaining bandwidth for other data, reporters at these remote locations have "local" NPR extensions and access to the NPR corporate network.

Processing audio

We've learned some lessons from our experience with NPR's two low-bit-rate PAC streams (24 kbps) on Sirius Satellite Radio and NPR's three higher bit-rate streams going around the world on NPR Worldwide (192 kbps), Worldspace (re-uplink the NPR Worldwide stream), Armed Forces Radio and Television Service (AFRTS) satellites and USEN-440's Japan cable:

Don't process the audio — Oh yes, everyone wants to sound loud, but the moment compression and limiting are inserted into low-bit-rate streams, the artifacts (swirlies, water-bubblies) will jump out and bite you!

We have eliminated all processing for our Sirius streams at the NPR side (transmission to Sirius, NYC is 384 kbps/48 kHz sampling/MPEG2/dual-mono using a Musicam USA Prima 120 on a T-1). We do process the other three streams (NPR Worldwide to British Telecom uplink is 384 kbps/48 kHz sampling/MPEG2/dual-mono on a Prima 110 to BBC London, thence linear to British Telecom's BT Tower, thence encoded (192 kbps) and multiplexed with other streams and send to the suburban uplink) using an Omnia on the NPR Worldwide and AFRTS streams (AFRTS: Comrex MusicLine at 128 kbps stereo to AFRTS headquarters, and thence around the world on AFRTS' distribution satellites and their shortwave transmitters).

We use an Aphex Compellor on the monaural USEN-440 stream (64 kbps, L2 mono to USEN-440 Japan, thence redistributed by home cable distribution).

Don't use lossy compression formats until the very last moment — Audio professionals and reporters are surprised when they're told NPR discourages audio contributions in MP3 format. "But it sounds good," they sputter, "and the files are soooooo small."

Well, yeah, it sounds good, but the audio breaks down after it's transcoded in the normal course of business. Higher-bit-rate MPEG-1, Layer 2 ("L2") holds up much, much better. Linear audio (WAV, AIFF) is better still. If you are using lossy compression formats, a higher bit-trate and sampling rate can help preserve the audio.

Don't transcode — There are several transcoding points that we know about. The first comes when a file is received by either e-mail, FTP, Web or real-time ISDN (128 kbps/L2/dual-mono on a Zephyr Classic/Prima 120/220/Dolby FAX/CDQ-1000) or local dedicated analog telco circuit (5 kHz for in-town loops) or a dedicated digital circuit (typically on a Prima at 384 kbps/MPEG-2/48 kHz/dual) and is transcoded to MP-2/384 kbps/dual into the corporate Dalet system.

Additional transcoding happens when the audio is edited, laid up and played out through an analog console and fixed while mixing. It is then rerecorded into the Dalet system.

More transcoding takes place when audio is played out through the analog console for air, and is sent to the uplink (256 kbps/L2/dual). Then we don't really know what happens, because it is up to the individual NPR member station to handle the audio as it needs to. At a number of member stations, the audio is recorded, transcoded again and sent to translators and repeaters, and eventually, the listener.

Stations that have translators and repeaters beyond the limited HD reception contour likely would continue to use their FM analog channel to get signals to those repeaters and translators.

Use the straightest path — During NPR's special-events coverage, I used to daisy-chain streams for our operators' convenience. Once, while listening to our Sirius satellite return audio, I switched the Sirius source to direct from the studio, and was amazed at the improvement. Fewest DAs, fewest router crosspoints, least pieces of wire.

Now all streams listen to the studio's output, wherever possible.

Don't worry about phoners; they sound great at low bit-rates.

Sure, and if all our audio was band-limited like a phoner, we'd never have this discussion. That does mean that a little low-end EQ and brightening makes phoners sound better, and doesn't seem to add artifacts.

Don't forget mono compatibility — When an AM HD Radio listener gets beyond the primary contour, the 32 kbps stream will drop to 20 kbps, and the sound field collapses to monaural.

Beyond that, the HD receiver will probably blend to the analog AM signal.

In the FM band, listeners will hear the HD signals blend to the analog FM signal. I can visualize two scenarios: either the FM licensee will have no stereo pilot signal to boost coverage in fringe areas, or there will be acceptable stereo FM coverage until fringe areas and the mobile listener will hear picket fencing, mono and eventually static.

See NPR, page 46 ▶

World Radio History

Choices in Digital Production Mixers

by Ken R.

Several related trends have intertwined in recent years: an increase in software-based editing programs, the move from analog to all-digital signal paths and, lately, the need to develop ergonomic control surfaces for the cool new production software. Where we are now is in transition.

Some people are using analog mixers to record to computer. Others have some digital components in their studios such as DAT machines and CD burners, but still record on multitrack reel-to-reel machines. Still others use digital tape-based multitracks and run the mixes through an analog board onto a computer. Then there are the all-on-computer folks who are finding that mousing around is not very convenient for mixing.

Different strokes

Nika Aldrich, senior sales engineer at Sweetwater Sound in Ft. Wayne, Ind., sees a few digital board customers, but admits that most of his buyers are now recording and mixing with computers.

"Some people buy digital boards to replace an analog one or upgrade an older digital board," he said. "And some people just don't like the menus and mice associated with computers. But even some of the new mixing boards are really more like computer workstations."

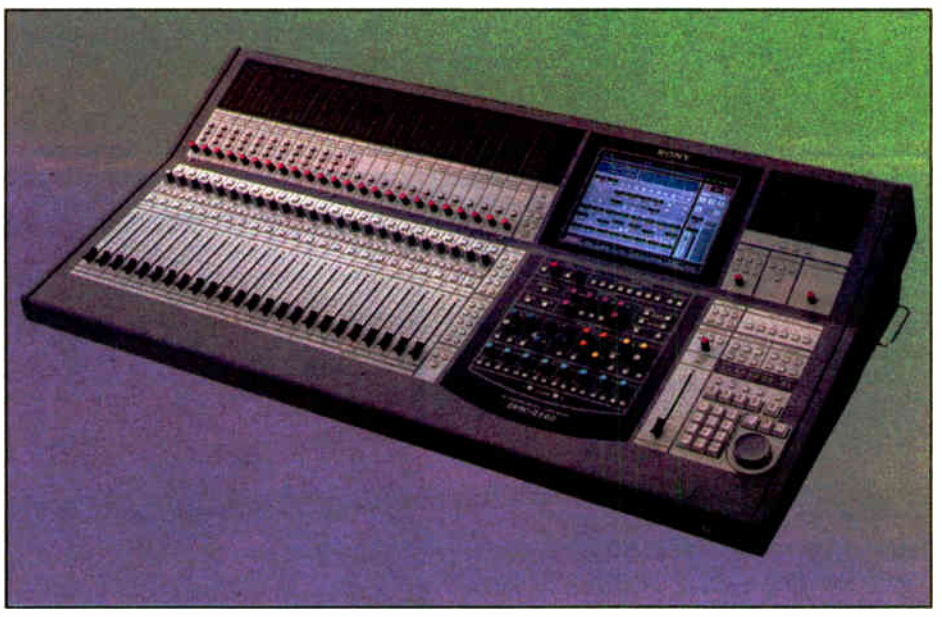
Aldrich said the vast majority of commercial production is done with sound-card-equipped computers with dedicated software (plug-ins) to control the EQ, compression and effects.

John Vitale, national sales manager for Full Compass Systems of Middleton, Wis., said many people use small digital boards because they are easy to take out for on-site recording.

"But the new trend we see is people buying control surfaces for their software," said Vitale. "Mackie makes some and so does TASCAM."

Makes and models

One of those portable digital mixers is the DMX-P01 by Sony. It retails for about $2,800. A backlit LCD panel allows it to be used in low-light conditions such as a club or concert venue.



Sony DMX-R100

Any settings can be recalled at the touch of one button, a common and helpful feature.

Sony also makes a project studio digital board called the DMX-R100 for about $16,000. This one has touch-sensitive motorized faders and an SVGA touch screen for navigation. It is based on a larger mixer that is being discontinued, the OXF-R3, which sold for hundreds of thousands of dollars.

TASCAM has a powerful yet affordable digital mixer, the DM-24. It features 24-bit, 96-kHz audio with effects and

See MIXERS, page 47 ▶

NPR

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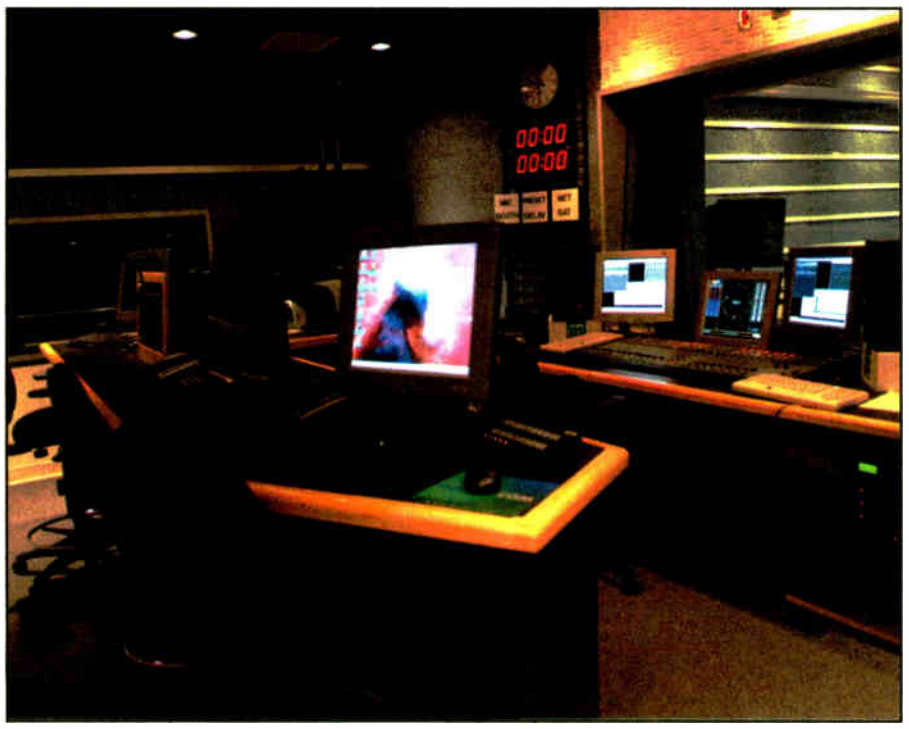
Please realize that the touchstones listed here are goals. It's not practical in real-life broadcasting to achieve them all without becoming obsessive-compulsive or compromising programming delivery.

NPR is looking forward to improving our handling of our audio; later this year a complete conversion to Dalet 5.1 (linear) is anticipated, as well as investigating codecs with aacPlus from Telos Systems, and the really cool linear audio-over-IP in Musicam USA's NetStar product.

We also are encouraging audio contributors to use higher-bit-rate formats, linear where possible, and where practicable, to not use MP3 files at all.

Our goal since 1970 has been to provide the cleanest, purest audio to our member stations. The fundamental goal hasn't changed.



A view of Control Room B at NPR West, looking into Studio B and Production Room 4.

World Radio History

Mixers

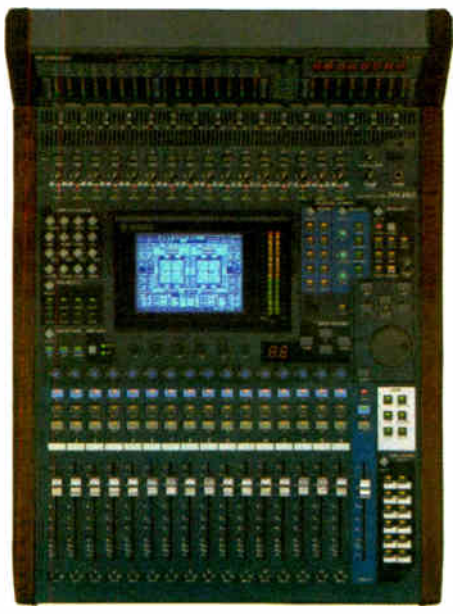
▶ Continued from page 46

dynamics. Surround sound is supported and an automation scheme is part of the package. It retails for $2,400 to $2,900.

The same company has an even less-expensive model, the TM-D1000, with a list price of $1,299. It is designed for home and project studio use and has an eight-track configuration that is expandable to 16. With a memory designed to hold 128 snapshots of your settings, it is suitable for commercial work. Effects include a stereo pair of reverb, chorus, delay, flange and more. A simple board for basic needs.

Soundcraft makes the 328XD digital mixing console, sold in some places for about $5,000, although it has been seen for considerably less. This one has moving fader automation and the control surface is made easier by the E-Strip design which really is a horizontal channel strip for EQ and aux sends. The console provides up to 42 inputs for mixing.

Yamaha has long been known for a wide line of musical and electronic products. Its DM2000 (using firmware upgrade V1.20) is a professional 24-bit, 96-kHz board with effects, integrated DAW and machine control and a flexible bus and patching system. It has dynamic and scene recall with 100-mm motorized faders.



Yamaha DM1000

One of its unique features is individual channel name display. Just hold down the "SEL" key and you can see a channel name up to 16 characters that you have entered. Why didn't someone else do this a long time ago?

You can expect to pay close to $20,000 for this baby. The 02R96 is a digitized version of the venerable 02R. It sells for $9,000 to $10,000.

Yamaha introduced the DM1000, a much smaller version of the DM2000. It still has 96 kHz audio on all channels, surround monitoring and lots of effects. You can rackmount it for live sound reinforcement. The board itself is around $5,000, but you may wish to invest in the meter bridge ($900) and side panels ($300/pair).

Ya say ya don't *have* $5,000? Well, my friend, Yamaha has a smaller model, the 01V96, that will only set you back $2,200 to $2,500, depending on the retailer. It includes 16 analog channel inputs and eight digital, enough for many applications. There is still a 99-scene memory, a slew of 96-kHz effects, compression, gating, EQ and even delay in this "small" model mixer.

And if you still can't afford that, Behringer parked the DDX3216 at under $2,000. The 3216 offers a lineup of DSP effects along with a choice of I/O, analog or digital.

Mackie is a firm started by musicians. The company's D8B 8-Bus Pro Mixer has been discontinued in its original form and has been replaced with the D8B-I/O, which comes with input and output capability not included in the original D8B. This new incarnation is listed at $7,000 but will probably sell for closer to $6,000.

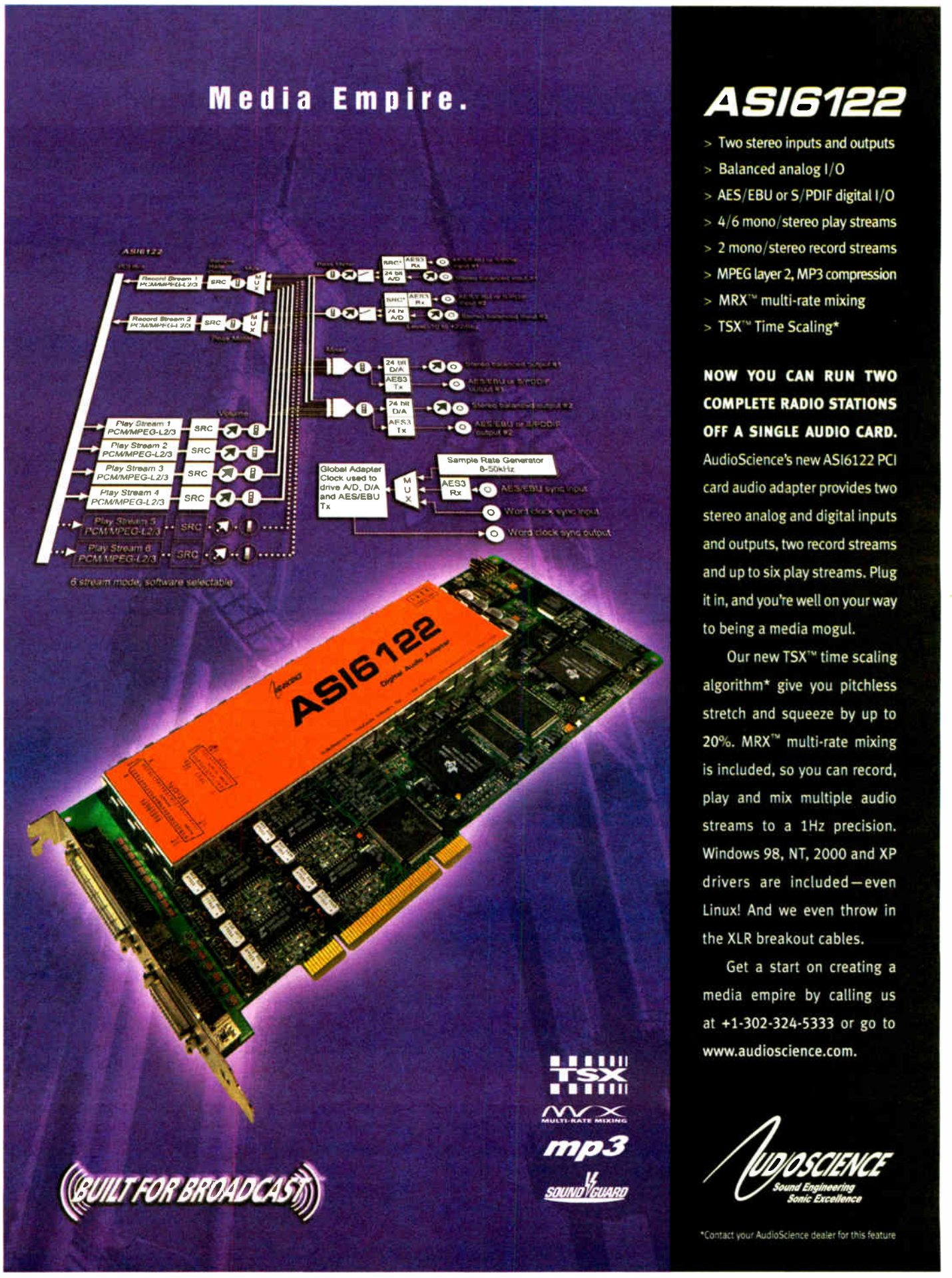
Another company with roots in music production is Roland. Its VM-7200 is a system that sells for under $10,000 configured for 40 channels. You get your basic automatic faders, 100 scene locators, total recall, MIDI controllability, 24-bit effects and more. It's modular, which means you can expand up to 94 channels. Included are the patented COSM speaker modeling and mic simulation and the ability to create 5.1 surround mixes.

Klotz Digital's Vadis DCII digital audio production console will also work in postproduction. It's configured to your needs: eight to 24 faders. You can connect a large number of these together via fiber optic cable and a single CAT-5. Depending on your needs you can pay between $7,000 and $70,000, according to Chris Crump, director of sales and marketing for Klotz.

There are some enormous and fabulous digital boards that cost in excess of $100,000 that fall outside the scope of this article. These are made by several companies including Euphonix, AMS Neve and Solid State Logic.

TASCAM DM-24

Ken R. is a former broadcaster and jingle producer who specializes in audio restoration of vinyl and tape.



World Radio History

Software Editing: Better, Cheaper

by Ken R.

In his book, "Focus: The Future of Your Company Depends on It," Al Reis wrote, "Things don't converge, they divide."

Where once there was only Digidesign Pro Tools, now there are not only several different flavors of computer-based digital audio workstation, but there are also systems by Syntrillium, Sonic Foundry, Steinberg, SADiE and others that are giving broadcasters and recording studios a lot of choices.

Some software packages are cheap and cheerful; others are more expensive, with commensurate functionality.

Dime or a dollar

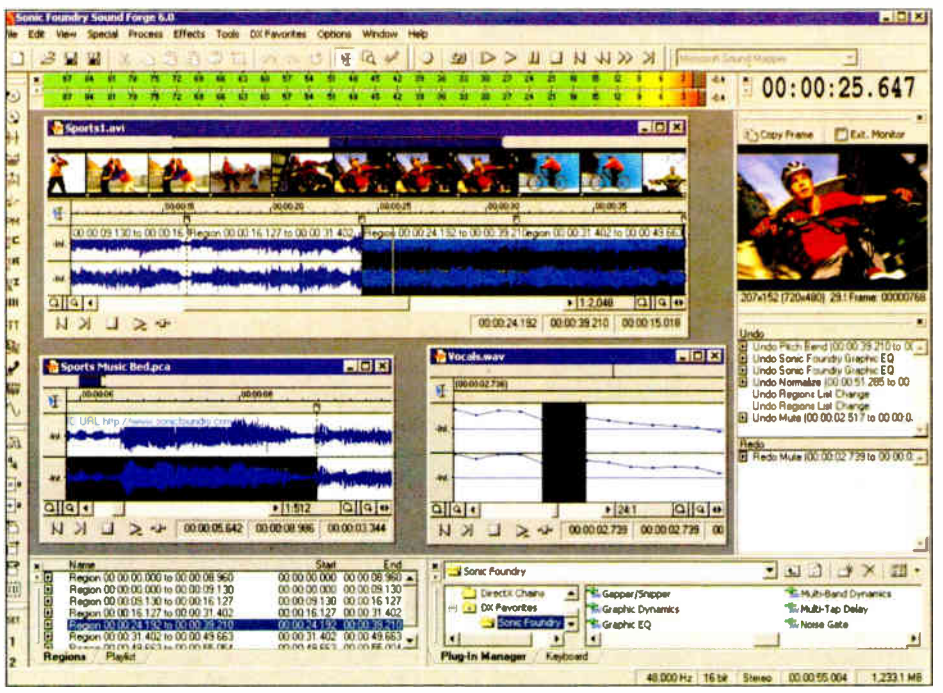
If all you need is simple editing, you may not even have to pay for software.

A number of manufacturers provide packages free with the purchase of hardware or sound cards. One example has been Syntrillium Software's Cool Edit Pro, which has found a home in many radio production rooms and project studios, often bundled with a sound card.

Now available is version 2, which features an eye-opening 128 stereo tracks (depending on the muscle of your computer), 45 effects, 32-bit processing and the ability to create surround sound mixes. Syntrillium recently was purchased by Adobe and Cool Edit Pro is being repackaged as Audition. It can be purchased separately for under $300 (*www.adobe.com*).

Another freebie is AudioDesk, a stripped-down version of Digital Performer from Mark of the Unicorn (*www.motu.com*). If you buy any MOTU hardware, you get this one included, but for Mac users only. An upgrade to a full-featured version is available for $395.

MOTU's Digital Performer retails for $795 and it's a complete package, including 24-bit/192-kHz recording and real-time 32-bit effects processing. It's not just another two-track editor, either. You get up to 64 stereo busses, automated mixing and as many tracks as your computer and imagination will allow. There are also some neat effects like tube simulation and reverb.



Sonic Foundry Sound Forge 6.0

Another real-time two-track editor is from TC Electronic (*www.tcelectronic.com*). Called Spark XL, it is available for about $500 and has just about everything you could want. This package has editing, dynamic controls, filters, tape delay, EQ, audio restoration/modification tools (including the dreaded Sonic Destructor) and CD burning all in a one-window (sorry I had to use that word) approach. You can even edit the audio from QuickTime movies.

And staying with products for Macaholics, BIAS Peak 4 was introduced at the NAB convention this past April (*www.bias-inc.com*). It's a stereo waveform editing application that will now accept plug-ins. It processes your audio with a new streamlined graphic user interface and will burn CDs too.

Refinements to this updated software include a convolution-based reverb algorithm, a compressor/limiter VST plug-in and enhanced mixing capabilities. Most retailers will sell it for less than the $499 suggested price.

Emagic's Logic platform is a platform with a dedicated band of users (*www.emagic.com*). Like most others it is a full-featured multitrack platform with tons of DSP effects. Usually available for under $600, Logic works with Emagic's powerful lineup of software synthesizers.

Over on the Windows side is Sonic Foundry's Sound Forge 6.0, which retails for $350, although some of the larger retailers will cut the price to $300

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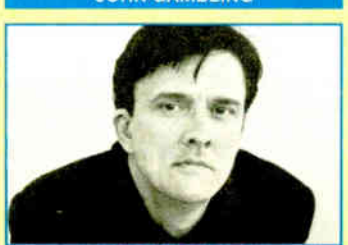
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World Radio History

Software

▶ Continued from page 48

(*www.sonicfoundry.com*). With this one it is possible to edit files nondestructively down to the sample level. There are 35 real-time audio effects with more than 200 presets to speed things up. Another plus: you can work on one file while another is being processed. The creative among us will enjoy playing with the time compression/expansion, flange and distortion features. There is no end to the way you can ruin a perfectly good piece of audio.

If you want to integrate audio and video, check out the same company's Vegas 4.0, which lists at about $500. Both products work seamlessly with Sonic's popular ACID loop program/format. It should be noted that Sony recently acquired these Sonic Foundry platforms.

Two often-overlooked Windows platforms are Cakewalk (*www.cakewalk.com*) and Samplitude. Cakewalk's SONAR program is a full-featured multitrack program that interfaces well with the company's ample music production program lineup.

Known for its easy-to-learn (and use) interface, it can usually be had for under $500. Samplitude has bounced around with uneven distribution, though it seems to be available these days from its owner, Magix (*www.magix.com*) and a U.S. distributor, X Vision Audio (*www.xvisionaudio.com*). Starting at over $500 for the Classic version, Samplitude was one of the first multitrack DAW programs to interface natively with video and surround sound formats.

Steinberg North America (*www.steinberg.na.com*) offers Cubase SX for about $800. It's available for PC and Mac. Because of the MIDI functions included, this one can be used for regular audio production and music applications.

The same company offers audio restoration tools such as declicking and denoising for those problematic recordings. The baby sister to SX is Wavelab 4.0, a two-track editor for Windows which sells for about $600. If you have a bigger budget, the powerful Nuendo ($1,295) platform should get your attention. Platform-agnostic, Nuendo does most everything from simple two-track mixing to multitrack 7.1 surround sound for movies. Steinberg also has an extended family of software synthesizers, naturally available in the company's native VST format.

Pro Tools three ways

The big daddy software/hardware package is Pro Tools from Digidesign, a part of Avid Technologies (*www.digidesign.com*). The entry-level set-up is called the Mbox, which goes for about $495 retail. It's a two-channel mixer that connects to your USB port.

"Someone could take it on a plane with a laptop and mix a record," said John Vitale, national sales manager for Full Compass Systems. "You can plug in a microphone and record a guitar or keyboard one track at a time and then mess around with it using Pro Tools technology."

The Digi 002 is a full-blown Pro Tools digital workstation that can be used in a desktop situation. It's about $2,495. It comprises an 8x4x2 mixer and has analog, digital and MIDI I/Os. The Digi 002-Rack version is $1,295. It has all the features without the control surface.

On the third hand, those with a bit more to spend are invited to check out the HD Series from Pro Tools, which can be fully configured from $20,000 to $100,000. This is the big one with every feature you could imagine and some that haven't been invented yet.

The high end

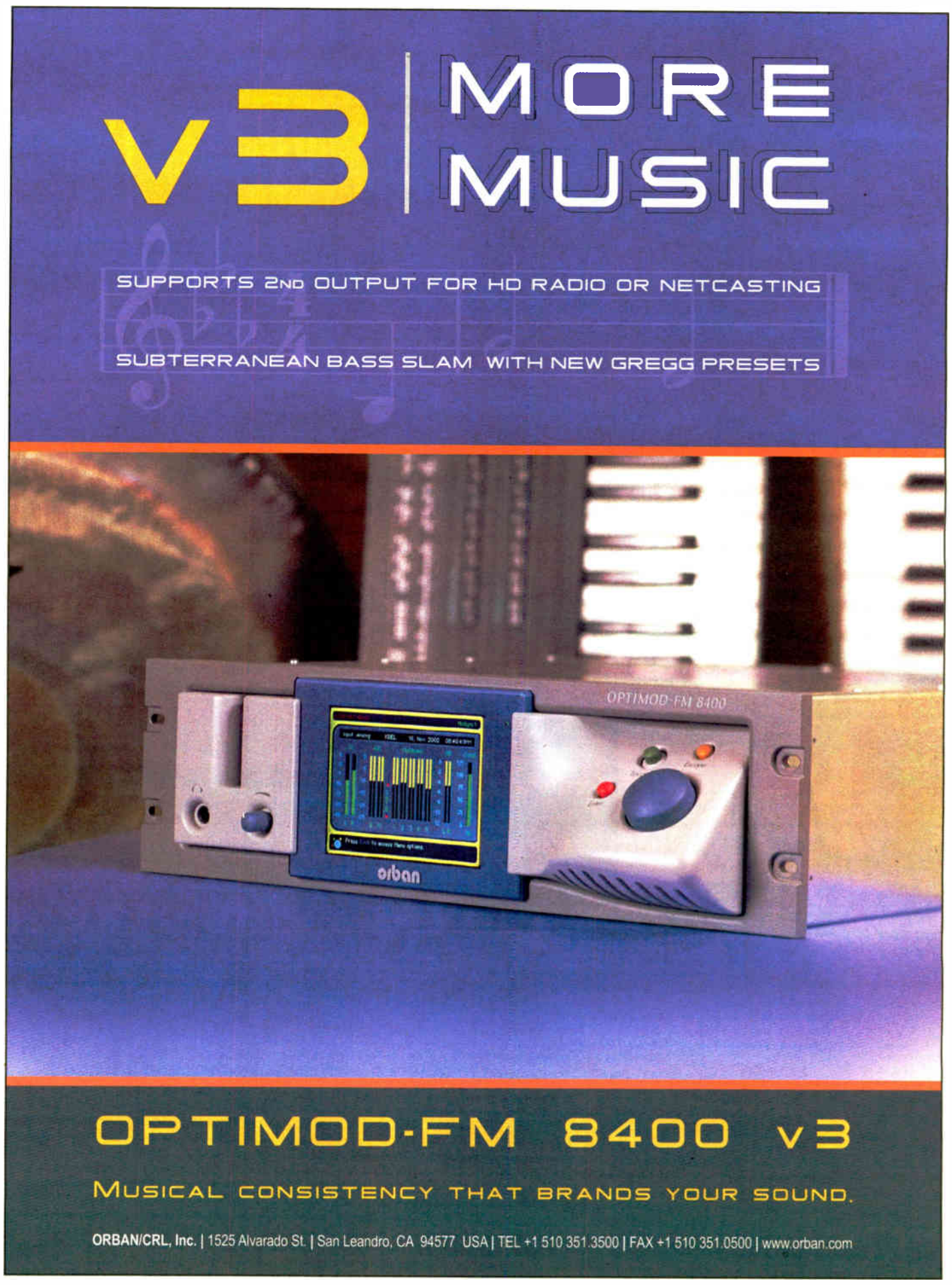
Another high-end editing system, SADiE (*www.sadie.com*), has come down a great deal in price over the last five years. This British company with offices in Nashville has made a huge splash in Europe and is popular with audio perfectionists in the United States. SADiE supplies the computer, the software and all connections.

The company offers two PCM systems, the PCM4 retailing for $6,750 and its big brother offering eight-track editing, the PCM8, which sells for $9,750. If you require Direct Stream Digital (DSD) technology to create the new Super Audio CDs (SACD), try the DSD2 (two-track editor) for $10,750 or the DSD8 for $18,750. These are turnkey systems. Plug-ins are available for audio restoration through SADiE's partner, Cedar Audio. There is also full DirectX support.

Also at the Windows high end but fully compatible with any modern digital production facility is the Merging Technologies PyraMix system (*www.merging.com*), starting at around $2,000. The PyraMix Virtual Studio boasts the Mykerinos processor/accelerator card for working at 192 kHz or with 7.1 surround sound. PyraMix also interfaces with video (NTSC, PAL or HDTV) productions.

Orban's Audicy is out in the latest incarnation of this proprietary turnkey DAW system (*www.orban.com*). Version 3.0 adds major DSP effects while maintaining the platform's dedication to the broadcast niche, including onboard Orban Optimod compression.

"The question that buyers ought to ask themselves when selecting an editing software/hardware combination is, 'How is everything going to work together?'" said Senior Sales Engineer Nika Aldrich at Sweetwater Sound. "People will actually pay more to get a system in which the software and hardware are integrated. They just don't have time to fuss with it."



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World Radio History

Source Gear for the Digital Studio

by Ken R.

Cart machines are pushing up daisies. Turntables gather dust in back rooms. And for the most part, those old rotary pot consoles are only viewable in museums.

Today's broadcast studios are filled with a new breed of digital devices. A sampling:

Westlake Village, Calif.-based 360 Systems developed Instant Replay, a hot key audio player that jocks can use for drop-ins and prerecorded bits. It has a small footprint and access to 1,000 cuts from a friendly looking surface with a lot of buttons. Until recently, this box primarily was a playback device, but now the company has created the "Dash-E" version that adds basic editing functions to adjust heads, tails, fades and levels. However if you want real editing on the fly, 360 Systems offers Short/cut 2000, a two-track editor.

HD-360 Instant Replay

"It really replaced the reel-to-reel or cassette for recording, editing and playing back phone calls in the studio," said Gary Beebe, special projects engineer at Broadcast Supply Worldwide.

Short/cut 2000 offers cut-and-paste editing with waveform display. Files can be transferred to a Mac or PC. The Instant Replay with editing functions (DR554-E) has a list price of $3,250; the Short/cut 2000 is about $3,500.

"The one drawback to Instant Replay is that when you hit a button to start a new event, it cuts off the previous event," said Beebe. "But on the good side, there are 10 banks of 50 buttons so each jock can have his/her own set of special cuts."

Beebe cited a new competitor in this field, Audion Laboratories with its VoxPro. Formerly the company only offered a Mac version, but the PC 3.2 is available now. It's basically a two-track telephone audio editor for quick tasks in the studio. If you only need the software, the retail price is under $1,000. If you would like the optional USB or serial port control panel, make that around $2,000. The system has an on-screen wave display so you can edit or censor your prerecorded calls using hot keys for instant playback.

MiniDisc still kicking

Consumers pooh-poohed it, but many radio stations swear by the MiniDisc format. These are mostly playback-only digital devices with limited editing capabilities, but newsroom reporters find them to be rugged and better-sounding than cassette recorders.

Beebe said his three most popular models are the TASCAM MD-350 ($699), the Sony MDS-E12 ($945) and the Denon DN-M1050R ($1,999), all of which record and play back. Of those three, the Denon has the most goodies, including extensive editing capabilities that make it suitable for the production room.

The Sony MDS-E10 is the non-pro (unbalanced) version of the MDS-E12. The latter also gives you a parallel remote control port, which allows you to wire it into your board and duplicate the front-panel functions.

The TASCAM MD-350 uses balanced and unbalanced connections and has a front-panel keyboard port for easy control.

Sony CDR-W66

"Sony makes a portable MD-based dictating machine, the MZ-B100 ($399), which is sort of the executive's Walkman recorder," said Beebe. "A lot of broadcasters who don't want to spend $1,000 are using these for the same purposes."

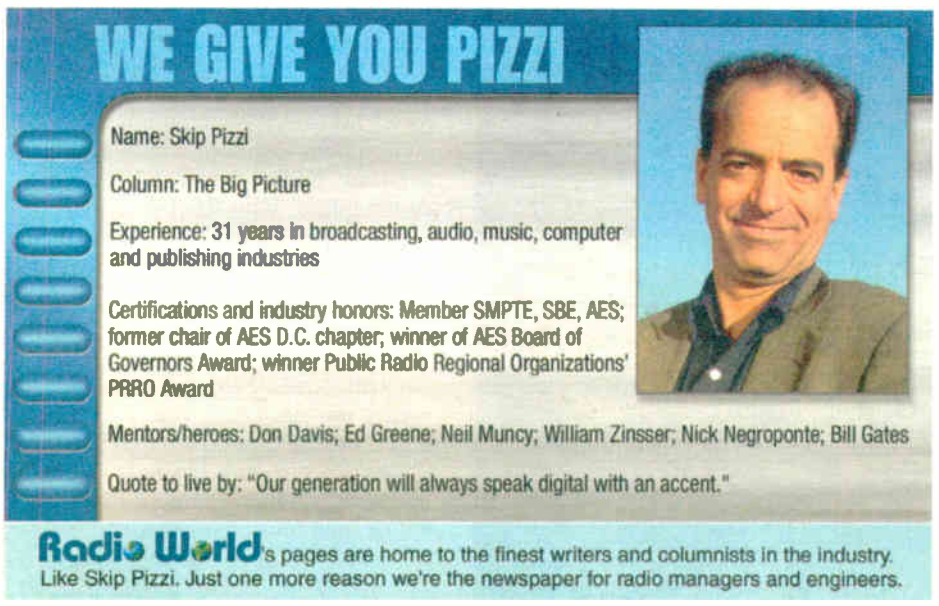
CD or not to CD

While many radio clusters have replaced cart machines with computer servers to hold music and commercials, there are a number of CD players out there in the field.

The Denon DN-C635 is a playback-only unit that is still in demand, retailing for $599. Denon has several CD recorders and combo units (CD recorder/cassette recorder), all rack-mountable. To burn CDs, check out Sony's CDR-W66 Rackmount CD Recorder. At $999, it has 24-bit A/D-D/A converters and some DSP functions. The cheaper CDR-W33 is available for around $700. TASCAM and Marantz offer several CD players and recorders, depending on your budget.

Denon DN-C635

TASCAM MD-350



World Radio History

Systems: One Size Does Not Fit All

by Ken R.

Across our great, fruited plain, one finds broadcast companies that own one standalone station, some that manage regional clusters and a handful of Godzilla-sized conglomerates overseeing hundreds of properties in dozens of cities.

But all must deal with essentially the same tasks every day.

Fortunately, diverse aspects of radio management such as traffic, billing, production, music scheduling and on-air sound increasingly are expedited by integrated software. But how can one product possibly work in all these circumstances?

The answer is that smart suppliers design software solutions that are scalable and modular. System products now on the market reflect these trends. While this market niche is far too big for any one story, here's a taste of products that have come to our attention of late.

Interface

Dallas-based Scott Studios Corp. believes that the user interface is what makes its SS32 system unique.

Richie Allen, regional manager, said this software has been evolving for 12 years and he feels it's the most user-friendly and intuitive of the products available.

"It's based on client and prospective client input as to what users really want, and in particular how they want to access their audio files," he said. "When you boil it down, every system has a hard drive and the bells and whistles, but it's the interface that makes the difference."

The Scott Studios SS32 doesn't include billing software, but it interfaces with a number of popular programs that can be imported.

"Our focus is the on-air and production side," said Allen. "The price of our system depends on what it needs to do. A small station taking mostly satellite programming is much simpler than a facility with all live dayparts and voice-tracking, so it's hard to put a price on a typical solution."

Asset management

Eric Richardson is product development director of Dalet Digital Media Systems, based in New York City. His DaletPlus Suite of Solutions is a package designed to address everything that happens within a radio station.

"If all you need is a single channel of music on a hard disk, there is no distinction between what we have and what others sell," he said. "We can all do some editing, scheduling and automation. But where our products distinguish themselves is with larger broadcast organizations that need to manage the complete workflow."

Richardson spoke of the entire life cycle of a music or news "asset" from the time it is created, through repurposing, through archiving.

"Our system is not limited to simple production and playlists. We have DJ-friendly tools for on-air but we also play very well with financial and accounting systems, other databases and content management. We could claim that our core business is as much asset management as it is production and automation," he said.

Dalet ties all aspects of a radio station together but specializes in the needs of larger broadcast groups.

Systems on the market reflect trends toward modularity and stability.

"How organizations work together, share and collaborate is our focus," he said. "Our bigger customers in Europe may have as many as 1,000 people on the same network using the same audio and databases, where the cost efficiency is enormous. Shared content is what's important now."

Another "whole station" integrated system is the DADpro32 from Southfield, Mich.-based ENCO Systems. Bob Boster, vice president of sales for the western United States, mentioned two concepts that are important to his firm.

"I think that first of all, we are more integration-oriented than our competitors," he said. "Now computer systems are required to talk to digital consoles, to send out added data for HD Radio, to communicate with RDS systems and the Internet. We address all of those issues."

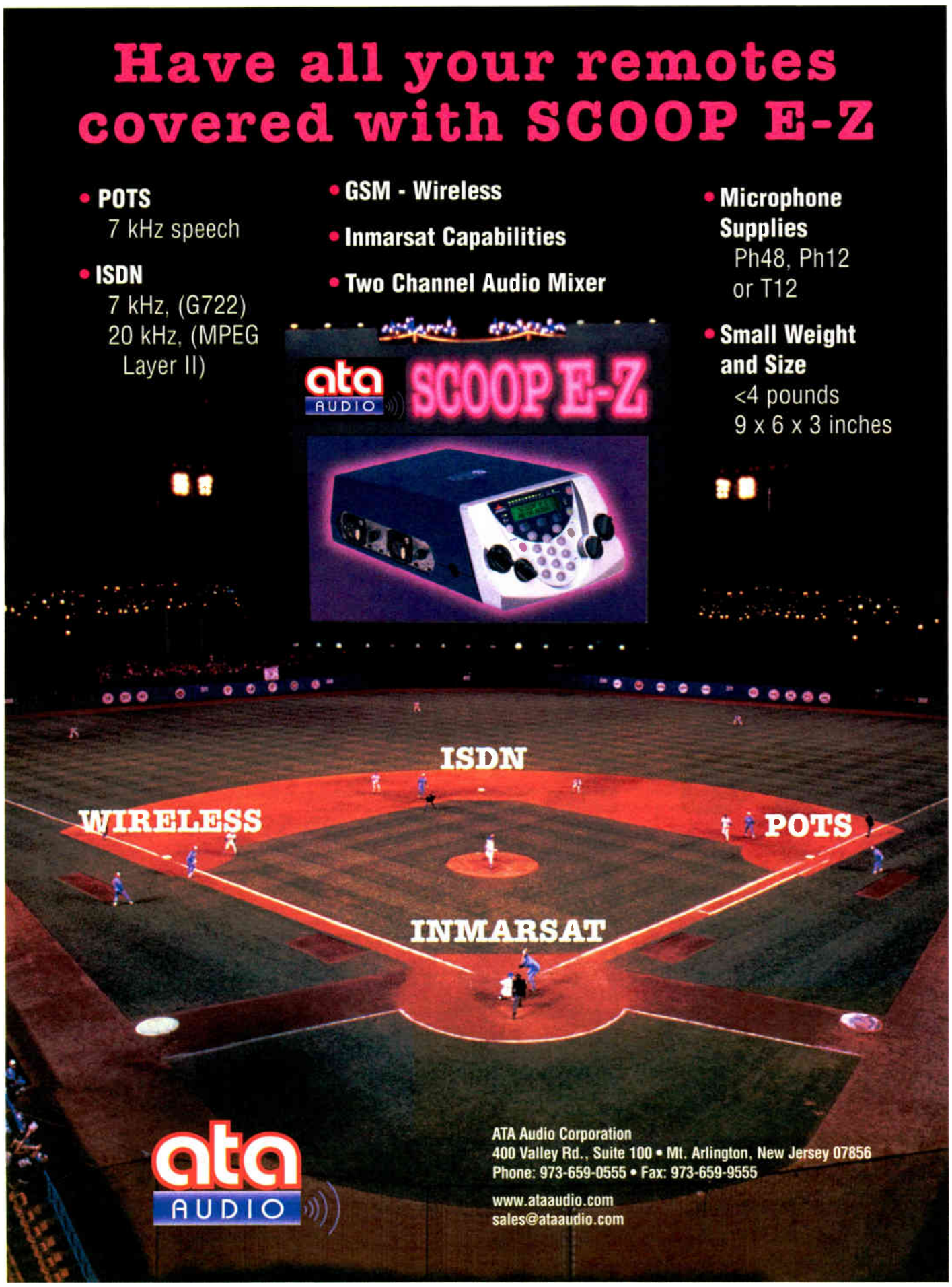
Specialized

The second point he made had to do with specialization.

"This is all we do," he said. "We don't own a multinational concert promotion group or 1,400 radio stations or a music library, so our core business is our only business, whether the application is radio, TV or sound installations."

From the folks who brought you

See SYSTEMS, page 53 ▶



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World Radio History

Systems

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Selector, the premier music rotation software which is now on version XV, you get Master Control XV, the on-air studio automation system from RCS in White Plains, N.Y. The Living Log feature of Master Control allows access to Selector and Linker (promo scheduling) for last-minute changes or log editing from any computer on the network.

RCS says it pioneered voice tracking for Master Control and since has introduced IVT (Internet Voice Tracking) from any sound-enabled computer. RCS also allows a big-picture look at multiple stations in the group over the Internet via Selector Enterprise data sharing.

AudioVault from Broadcast Electronics is a Windows-based studio system that can be configured for live, automated and satellite formats. Online networking is supported and several modules are available for specific tasks.

AudioVault's NewsBoss is a newsroom automation system that can accommodate from one to 25 users; AirBoss is a copy management tool and eStream processes a station's audio for the Internet.

OMT Technologies of Winnipeg developed iMediaTouch, an integrated system for voice tracking, scheduling and on-air functions. Operating with non-proprietary equipment on a Windows platform, iMediaTouch offers several optional features. IMediaLogger replaces conventional DAT and cassettes; iMediaAdCast provides for ad substitution and iMediaMultiStream is an encoder for the Internet.

Buffet-style

From the heartland of Ogallala, Neb., Prophet Systems Innovations introduced NexGen 2, a versatile package that can be purchased as a whole or by the module from the company's Web site. The package retails for less than $4,000 for the software only. Stations can opt to buy the turnkey version, which includes computers configured and good to go.

"We can bundle it and save the customer some money," said Jeff Zigler, senior manager of engineering. "Our MusicGen (music scheduling) software, part of NexGen 2, is free because we want to get it out there and let people see how good it really is."

Unlike some companies, tech support is manned live 24/7 from the Prophet Systems factory.

The PhoneTRAC module has interesting features.

"It's primarily used for weathercasts, traffic updates or any station feature where someone needs to get a voice on the air over the phone," said Zigler. "But you can also create a list of news actualities, and make it available to other stations in your group with varying levels of access controlled by you. Another use might be when a salesperson wants to retrieve and listen to a current commercial over the phone from a client's office."

The Prophet Systems NexGen 2 supports various types of repurposing of audio or printed material generated by the station. If a bit-rate conversion is necessary to get a clip onto the Internet, it can be done.

"You can buy cheaper software packages out there," said Zigler, "but if you do you get less software, and certainly less support."

D.A.V.I. D. Systems is a German company with an office in Manassas, Va. The vice president for marketing and sales for North America, Richard Doll, said that while his company is just beginning to make inroads in the United States, he already has picked up a number of important clients including Radio Free Europe, other government entities and public stations.

Integration is the key for more and more systems.

The DigaSystem BroadcastServer Concept from D.A.V.I.D. consists of a central database for manipulation, distribution and storage of assets, a planning/scheduling module, a studio delivery module, automated import of data from other systems such as music rotation software and the ability to link with RDS, the Internet and other destinations.

"We are very strong on asset management," said Doll. "As a part of this architecture, we have a sophisticated user administration so the client can specify what level of access is given to which user at each workstation."

Doll added that D.A.V.I.D.'s lineup "covers standalone solutions for correspondents as well as large-scale client/server applications for recording, storage, administration, editing, distribution and transmission of audio actualities and format elements."

Doll stressed his company's ability to take a particular piece of audio or video and repurpose it as needed. For example, a radio news story can be brought to the Internet site instantly, complete with text, audio, video and other data.

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World Radio History

USER REPORT

Nagra Ares-P Goes Hollywood

by Edward Tise
Sound/Recording Engineer
Motion Picture Industry

LOS ANGELES Choosing a **Nagra** Ares-P was the easiest decision I have made. I can't think of a professional recording device as mobile and secure as this elegant instrument from the Swiss firm Kudelski, a maker of portable audio recording equipments for 50 years.

The author interviews actor Jason Schwarzmann using the Nagra Ares-P.

The hand-held Ares-P is a self-contained solid-state recording system that gives professional results from a silent service-free package, all for the cost of a condenser microphone.

The Ares-P fits into your palm like a remote control, with the thumb free to nudge its 10 buttons — five for "transport" controls, such as record, play and stop; five to check or change the parameters. A backlit LCD displays vital signs, an event directory with take-tilting facility and menu settings. One red LED indicates Record mode and three colored LEDs indicate level. Automatic Level Control with programmable threshold and reaction time is provided.

Using removable PCMCIA Flash card technology, the Ares-P will record five hours stereo on a card (double in mono) housed inside the body of the unit. Seventeen recording algorithms are available that select various digital compression modes, as well as linear operation. Cards are removed and inserted into PCs with PCMCIA slots, downloading files at high speed through Ares Import software or Fat 16 Broadcast Wave Files. Recordings can be manipulated by a variety of editing programs. Cards are "erased" and reused many times.

The casing is constructed from aluminum and brushed with an anodized finish. It opens with a catch-and-hinge to access the Flash card, as well as a connector for installing software updates and the five AA batteries, which fit neatly in the lower half. Alkaline or rechargeable cells give up to three hours of recording. A 12V DC input provides recharging or external power. A stereo output with level control accepts headphone or line output connection.

While designed with the needs of journalists and radio reporters in mind, this little Nagra tool has become invaluable to me as a recording engineer for feature films.

Cross-over hit

My primary recorders are Nagra-D digital four-track machines, part of a comprehensive transportable system that includes multiple wired and wireless microphones for studio and location recording of dialogue and effects. Committed to a setup, this equipment may not be available to use on short notice for wild (without picture) recordings, such as atmospheres, sound effects, additional dialogue or voice-overs. The Ares-P is the perfect portable companion: unobtrusive, self-contained and reliable.

Press a button and the Ares-P begins recording without the danger of overwriting any previous recorded audio files. Instant replay of the last recorded file is available when the play button is pressed. Nagra-built mono or stereo electret microphone capsules can be screwed onto the 12-pin DIN connector for a compact all-in-one unit.

Recordings are crisp, precise and full of depth, with accurate airy stereo for atmospheres, and uncolored voice or spot effects recording in stereo or mono. A low-frequency filter can be used for wind or handling noise. The same input accepts a cable for one or two individual microphones (XLR), as well as stereo or mono line input connector.

or drive-based formats, it is resistant to shock, vibration, extreme temperatures and humidity. It has low power consumption and, being software-driven, requires almost no service backup. After extensive tests, the BBC recently ordered 350 units, continuing the trend of updating with the Ares-P in European broadcasting.

Here in Los Angeles, Stevie Wonder has one with a stereo mic, and uses it for everything. If I didn't already own one, that would be enough to convince me.

Stevie Wonder has one with a stereo mic and uses it for everything. If I didn't already own one, that would be enough to convince me.

The Nagra Ares-P is a unique digital recorder, which offers a new level of reliable operational autonomy for reporters and sound recorders in the field. With considerable advantage over R-DAT, MiniDisc

For more information, including pricing, contact Nagra in Nashville at (615) 726-5191 or visit www.nagrausa.com.

World Radio History

USER REPORT

Denon MiniDisc Suits WOR

by Thomas R. Ray, III
Corporate Director of Engineering
Buckley Broadcasting/ WOR Radio

NEW YORK Several years ago, WOR(AM) was using a digital on-air system for commercial playback and playback of refeeds on The WOR Radio Network. The primary recording medium in the studios was reel-to-reel tape, and DAT was used as a backup refeed method.

The newsroom was using MiniDisc for actuality playback. My introduction to MiniDisc was through the newsroom machines, which were manufactured by a **Denon** competitor. I liked the MiniDisc, but found limitations in the format.

Very soon, it became time to replace the DAT machines that were being used for network refeed backup. It was also time to start thinking about eliminating the reel-to-reel tape machines in the studios.

While I still had some misgivings about the MiniDisc format, we purchased several consumer-grade models from, once again, a Denon competitor. The format worked well for refeeding of network programs. The only issue I had was with its editing, for there seemed to be a limit of six to eight edits that could be made on a disk before the machine told us to buzz off.

It seemed that MiniDisc was not going to work out in the WOR facility.

A serendipitous encounter

At the NAB show that year, I approached Denon's competitor about the edit problem. They essentially told me to love it or leave it, and proceeded to ignore me and concentrate on their video customers. At this point, I resolved that I would have to pull MiniDisc out of the WOR facility.

Then I walked around a corner and stumbled upon Jim McGuinness of the New Jersey offices of Denon. There had been a mistake made with its NAB arrangements, and the company did not have a prominent booth. I found them in a corner of the Hitachi booth in the TV hall.

I noticed Denon's MiniDisc machines on display, and proceeded to tell Jim my tale of woe regarding the edit limitation of the format. Jim's response was, "What limitation?" He then proceeded to remove a MiniDisc from his pocket and started editing. After the 50th edit, I said "Enough, I'm convinced!" Talk about the ultimate in sales demonstration.

The opportunity to put a Denon DN-M991R into the WOR facility arrived not long after my return from NAB.

We had sent the MiniDisc deck used for news playback to the competition's repair facility about 2-1/2 months prior. It failed about 3-1/2 months after its repair, and the warranty was only good for 3 months. After returning this deck to the repair facility for evaluation, we were told the warranty would not be honored, and it would cost the same amount to repair it again.

model AFS-3 audio failsafe

FUNCTION: dual channel, adjustable length silence sensor

FEATURES: two audio inputs • relay ouput • optional status voltage output for signaling external devices • silence detection delay from 30 seconds to five minutes in 30 second increments • positive adjustment via rear panel rotary switch • front panel LED status indicators • front panel defeat switch • internal audible alert--continuous or pulsing • audio detect mode • silence alarm output is compatible with RFC-1/B telemetry input and requires only two wires

model DAI-2 dialup audio interface

FUNCTION: remote broadcast or emergency interrupt via telephone

FEATURES: telephone line autocouper and tone decoder • momentary or latched relays for control and audio switching • programmable relay output • front panel relay status indicators • telephone audio output • audio monitor input • AGC on audio feeds • balanced audio I/O • four logic level input triggers • seven DPDT and one 4PDT relays

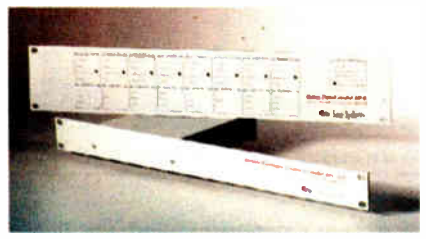
OPTIONS: CI-1 composite insertion module • DB-1 50ms delay board

model RFC-1/B remote facilities controller

FUNCTION: transmitter remote control via telephone

FEATURES: expandable from 8 to 64 channels of telemetry and control • programmable control activity by date and time • programmable telemetry alarms

OPTIONS: MA-2 modem adapter • PA-2 parallel printer adapter TS-1 temperature sensor • ACM-2 AC current monitor (tower light monitor) RS-232 serial data adapter • SP-8 telemetry and telephone line surge supressor



model RAK-1 intelligent rack adapter for RFC-1/B

FUNCTION: modem, printer output and battery backup for RFC-1/B

FEATURES: parallel printer adapter • modem adapter • backup battery • telephone line surge supression • front panel status indicators • sleek 1U chassis • available for new installation or as an add on accessory package for existing RFC-1/B installations *(use of the RAK-1 does not eliminate the need for the RP-8 relay panel)*

OPTIONS: SP-8/TO telemetry input surge supressor

model MBC-1 message board controller

FUNCTION: studio devices trigger custom messages on LED display

FEATURES: fifteen logic level inputs • selectable input priority • text and graphics can be combined in a single display • communications output can drive multiple displays • displays can have different messages on same input trigger • factory default messages for easy initial setup • works with inexpensive, attractive LED display

OPTIONS: OC-2 Optocoupler senses ringing telephone line

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After the 50th edit, I said, 'Enough! I'm convinced.'

I added those two numbers together and realized I could buy a DN-M991R, which has a full year's warranty, for the same price. I placed the order and the DN-M991R arrived shortly thereafter.

The news director adapted to the DN-M991R fairly quickly. He liked the rotary track selector on the front of the machine, as it made it easier for him to switch between tracks. The text labeling of his tracks by the newsroom led to his only complaint. The machine would display the track label for the first track properly, but would not display labels for others on the disk.

I called Jim at Denon and expected to hear that we were doing something wrong, or that they've never experienced this problem before. On the contrary, Jim said that this was a known bug and he was waiting for the first batch of replacement e-proms to correct the problem.

When he asked me if I would like to be one of the first to run the new firmware, I said yes. He said he would call as soon as the proms were in.

Jim called two weeks later and invited me to bring the deck to the Denon

See DENON, page 57 ▶

World Radio History

Denon

▶ Continued from page 56

facility in New Jersey, a veritable toy store for me. While I was playing with what Denon had to show me, the service department replaced the e-prom. Our news director, who had been skeptical that he would see any change in the machine, was pleased as punch.

Since the initial DN-M991R, we have added 18 others. To say that they have performed wonderfully is an understatement. We dust them out monthly, and, because the machines are in operation 24/7, we send them one at a time to Denon for drive and optic replacement and alignment once a year. We have never had one fail after coming back from repair.

They are used for backup of network refeeding and our automation's recording of Bill O'Reilly, program archiving and news actuality playback. Our producers and operators edit on them constantly and rarely have a complaint.

Sonically clean machines

One of the more popular features with our operators is that they can set the machine for single-track or continuous-play mode. For network refeeding, we run the machines in continuous mode, and for live, on-air production, the operators set the machine to single-play mode. The machine will stop and cue to the next track when it finishes one track.

While we generally run in stereo mode, we also utilize the ability to record the disc in either mono or stereo. We've had producers record two or three programs in mono on one MiniDisc. And while MiniDisc is a data-reduced format, we run program cuts off of it constantly, and cannot hear any artifacts generated in our IBOC signal. Sonically, these machines are clean.

Thanks to the adjustable auto-cue feature, there is no lag after hitting the Play button. This lets the user decide how close the machine will cue, not the factory.

Should you have impatient people in your facility who don't look before they hit Eject, setting Eject Lock on the DN-M991R prevents Mr. Clumsy from ejecting a playing MiniDisc. This is one of my favorite functions, for WOR had that very problem.

Interfacing to your console or automation equipment is easy, as the DN-M991R incorporates its major functions for remote control on a DB-25 connector on the back of the machine.

The DN-M991R has many features that we don't even use, including 10 "Hot Start" keys available via computer keyboard. Ten tracks on your MiniDisc can be programmed to start instantly by hitting the F keys on the keyboard.

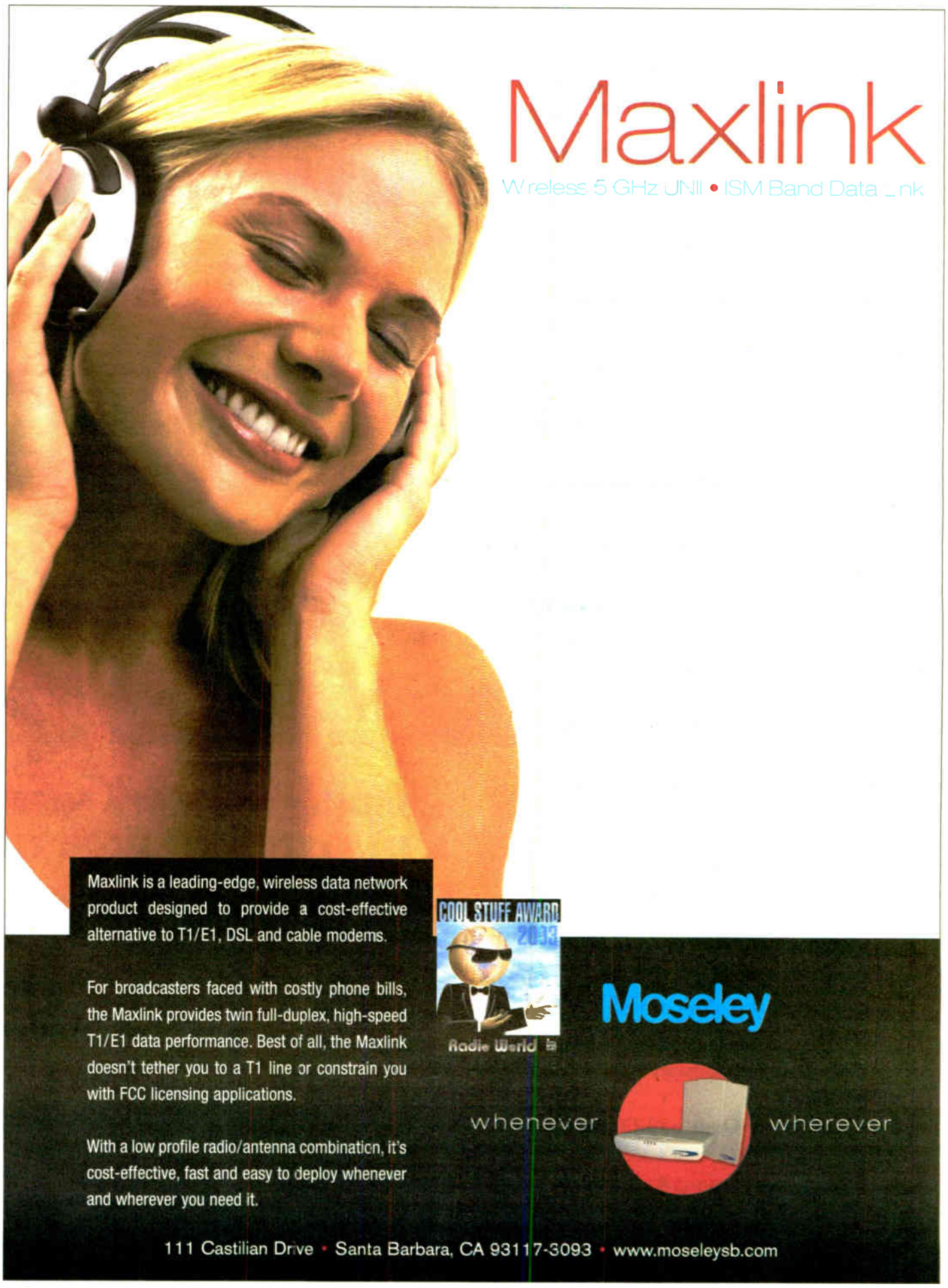
If your station pitches music up or down, the DN-M991R has the ability to pitch the playback speed up or down, +/-8 percent in 0.1 percent increments. We don't use this feature at WOR, but many music stations would find this useful.

On a maintenance note, Denon turns the laser assembly off when a disc is not playing in the machine. This gives a longer life to the laser assembly and cuts the maintenance cost. In addition, Denon's factory service reps are available to assist with any problem, and their service manual is complete and concise.

We have found the DN-M991R to have the best design and performance over its competitors. It acts like a CD or tape cartridge machine, and has nearly every feature you could want in a MiniDisc machine. We at WOR have no complaints about the units. Dust them out occasionally, replace their optics and deck mechanism when needed, and they do their job well. You can't ask for more in a MiniDisc machine.

For more information, including pricing, contact Denon in New Jersey at (973) 396-0810 or visit www.usa.denon.com.

WOR operators easily switch tracks with the rotary track selector.



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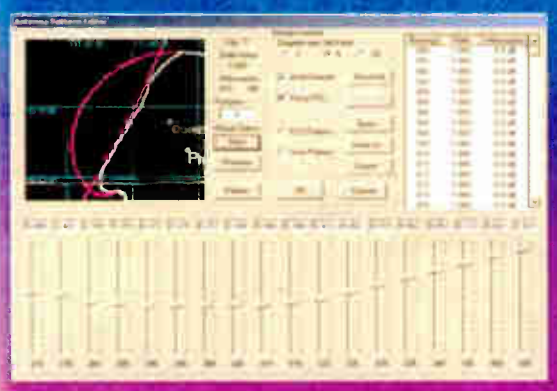

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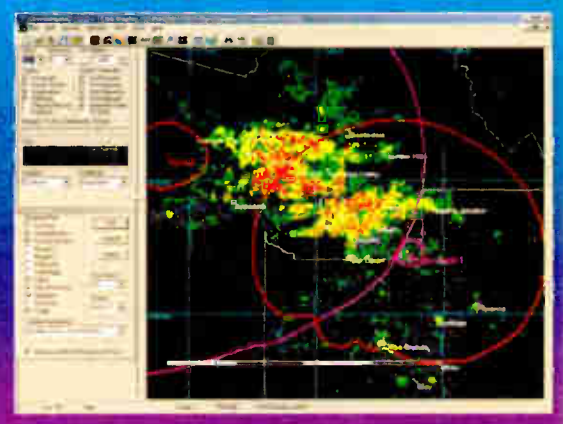

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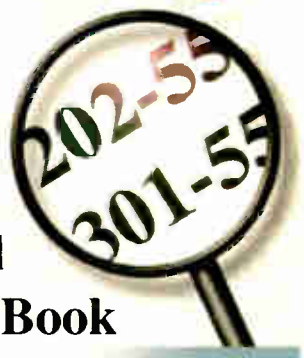

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World Radio History

USER REPORT

DMX-R100 Bridges Recording GAP

A Sony Console Facilitates Production for Chicago Audio Company

by Todd Busteed
President
GAP Digital

CHICAGO It's the center of the audio sweet spot. It's the routing hub of the studio. It's the ultimate on the blinking light scale for those that need to impress the clientele.

Bottom line: a lot is expected of the mixing console. At GAP Digital, an audio production facility near Chicago, we've selected the **Sony** DMX-R100 for two of our three rooms based on its strong automation capabilities. We've also been pleased with its overall performance.

Our main product is long-form audio drama, which encompasses everything from tracking actors, Foley, sound effects and custom music, to mixing and mastering. This all happens through the DMX-R100.

A tracking session formerly involved outboard pre-amps maximizing the quality of the recordings. With the installation of the R100s, we were surprised at how clean the pre-amps were, and quickly started using them for recording sessions. This allows the use of presets to quickly switch a studio to tracking mode, including compressors and gates in the signal chain, and any routing configuration needed.

This is made possible by the presence of a touchscreen-controlled router built into the DMX-R100. Just about anything can be routed to its destination, and that routing can be saved in the aforementioned presets. It took a few seconds for us to get our heads around the difference between snapshots and titles, the former being a subset of the latter, and understand the process for saving both of them. But once that was figured out, we gave ourselves the green light.

The layout of the console places one "channel strip" toward the right side, while the faders are on the left. An "access" button activates a channel, allowing the parameters to be adjusted through the channel section. At the same time, the touchscreen display shows the channel, and with a touch of a particular function on the screen, you're taken to a sub-screen that shows more detail of the one area, be it EQ, aux sends, etc.

Presets for EQ and dynamics settings can be stored in libraries for use on multiple channels. Using the touch screen, a compressor set for vocal recording can be applied quickly to input channels being used during that session.

Highlights and features

For us, each hour of tracking represents 20 to 30 hours of post. And that's where the automation gets a chance to shine. The first standout feature is the 100-mm touch-activated faders. The sensitivity and response make it easy to execute small changes with minimal effort.

The complexity of long-form audio drama demands a strong mixing environment.

The displays available during a mix include an overview of 24 of the 48 channels, or a comprehensive view of one channel at a time. In both, the fader position during the previous pass is displayed on the touch screen, although it's easier to see in the single channel view than the overview.

Options within the automation mode assure that you'll be able to create a work pattern to accommodate just about any project. Both Absolute and Trim mode allow changes to be reflected to the end. to the next move, from top to end, etc. Because anything can be automated, the process of applying a particular EQ to a track full of sound effects becomes as easy as doing a bulk level shift. Once you learn the status lights, you can tell quickly what's being written to where.

Sony has been publishing new operating system software releases on a regular basis. In the latest release, among other updates, the tolerance for bogus timecode was increased, reducing the likelihood of the automation jumping around due to dropped frames. An option was added to change the scale of the pan, allowing more-accurate placement of sounds

See SONY, page 60 ▶

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World Radio History

Sony

▶ Continued from page 59

within a sound field. Support also was added for a growing list of hardware accessories available for the console.

Constructive criticism

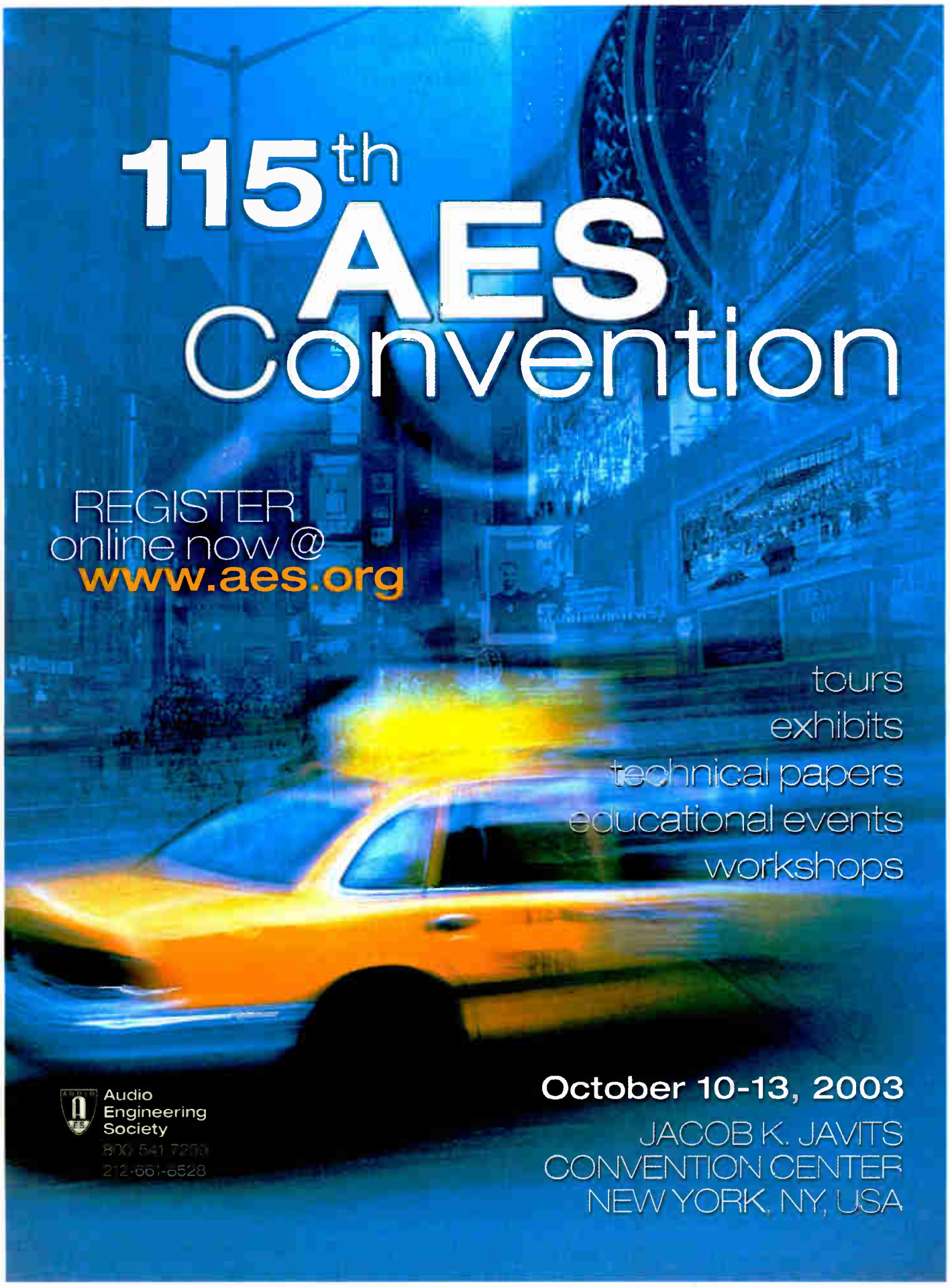
For us, the one miss on this console shows up when it's time to save mixes on floppy discs. A pair of USB ports on the back of the console have never been implemented. It's reported that QNX, the board operating system, does not support USB until versions later than what is used in the console.

There is automation edit software available from Sony that is not really an editor per se, but which some are using for file storage. Being a Mac-based facility, we've found it to be unusable for large files running under Virtual PC. To keep everything in the family, we do make a point of buying the Sony 50-pack of floppies from the local office supply store.

The author uses the Sony DMX-R100 console.

Aside from the storage issue, the board continues to perform well. Great sound, reliable automation, dynamic interface, surround support and comprehensive routing make it a real joy to mix on. Tech support is top-notch, making it clear that you have a large company behind your console. We would not hesitate to purchase another DMX-R100 should the need arise.

For more information, contact Sony at (800) 686-7669 or visit www.sony.com/proaudio.



TECH UPDATE

Marantz Offers Portable PMD670

The Professional PMD670 from Marantz is a compact Flash recorder that records various levels of MP3 or MP2, and uncompressed 48 kHz DAT-quality recording with no moving parts. The solid-state recorder offers one-touch digital audio recording capability of 74.5 hours on 1GB compact Flash cards or IBM Microdrives.

The portable tabletop PMD670 is touted by the company for its recording and playback versatility. It features a non-stop record function with four hours of battery life, or six hours when using NiMH batteries. Included is an EDL marking system for creating new files on the fly during recording, which provides file selection during playback. The PMD670 has variable-bit-rate recording with user-adjustable sampling rates from 16 kHz to 48 kHz.

Mehdi Alister, a vice president of D&M Professional Americas, said the unit is suitable for courtrooms, boardrooms, classrooms and other applications where an affordable portable audio recorder is helpful. He cited its digital audio quality and long-recording capacity.

After a recording is complete, the user

The PMD670 features non-stop recording and an EDL marking system.

can connect a USB cable to the unit and the recording will appear as an external drive on the computer. The file is selected and the audio transferred to the user's computer in seconds, instead of real time.

Marantz said the unit's lockdown panels secure the recording-setting switches and media door from accidental changes in the field. Record and mark functions also can be operated via wired remote control.

The PMD670 includes a USB connection that allows it to be linked to a PC or MAC for file transfer. When thus connected, users can drag and drop recorded files to the hard drive without the disadvantages that come with real-time delay, MiniDisc or DAT recording. The optional PMDEdit software facilitates EDL recognition, file management and editing.

For more information, including pricing, contact Marantz at (630) 741-0957 or visit www.marantzpro.com.

World Radio History

USER REPORT

Nera's M4 Makes the Connection

KIIS(FM) Puts WorldCommunicator to Use for Remote Broadcasts in Major Market

by Brian Clark
Broadcast Engineer
KIIS(FM)

LOS ANGELES My first encounter with Imarsat's technology was with a "B" terminal (Nera Transportable), which I had rented from **Mackay Communications** when I was responsible for a radio broadcast aboard an aircraft carrier, the USS John F. Kennedy, during its maneuvers in the Persian Gulf in 1999.

At that time, I only had a week to select and acquire the appropriate equipment, become an expert on the system and ship the gear overseas. After making several phone calls and sending numerous e-mails to many satellite providers, I was led to a company called Mackay Communications.

The Mackay representative who answered the phone understood exactly what I was referring to when I asked about V.35 and "U/S" interfaces for ISDN use. Mackay's technical support staff was fast to respond to phone calls and helpful.

Codecs across the water

Mackay recommended that I use the Nera Transportable for this application. I must admit that I was a bit apprehensive because I had never used a system like this on dry land, let alone set one up on an aircraft in the middle of the Persian Gulf. I was amazed that I didn't have to realign the dish at all.

> I have received numerous calls from technicians saying, 'Can you come out with your M4 and get us connected?'

My needs are a little different than most users of this system. Instead of connecting to the Internet, I was connecting two audio codecs thousands of miles apart. Both applications are similar in that a user is sending and receiving data between two points. The broadcast from the carrier went smoothly and I was encouraged by the reliability, speed and clarity of the connection, as well as the ease of integration given the limited preparation time.

Since that time, I have developed a great relationship with Mackay through my current contact, Patrick Fisher, director of satellite services. I received a call from Patrick in 2000, and he suggested a new land-based system called the M4, better known today as the WorldCommunicator, developed by Nera Satcom. This device is a laptop-sized satellite system that gives the end-user a 64 kbps wireless ISDN channel (or 128 kbps by linking two units). This was exactly what I was looking for, so Patrick arranged for a personal demonstration. When he arrived and set up the M4, we ran through a simulation of my application.

Remote control

As a broadcast engineer for Clear Channel's Los Angeles KIIS(FM)and KHHT(FM) radio stations, one of my duties is to coordinate and execute remote broadcasts. Often the station program director requests a broadcast from a location with only a few days' notice, eliminating the option of the two-week turnaround required by most phone companies to establish an ISDN circuit at the site.

With Nera's WorldCommunicator, on the other hand, installation time depends only on how "long" it takes to remove it from its protective pouch. I merely have to connect my Telos Zephyr audio codec to the M4's RJ-45 "S" interface and I can immediately dial into my station's ISDN line from the front panel. Within a few seconds, a connection was established and I could hear audio from my broadcast studio in Burbank, Calif. After that demonstration, I asked Patrick how fast I could get one of these systems.

My use of the WorldCommunicator for remote broadcasts has not only been an asset to our radio station, but has assisted many other stations throughout the United States. Since my company purchased the system, I have received numerous early-morning phone calls from technicians saying, "I'm at this restaurant setting up for our morning show broadcast and the ISDN line is dead, can you come out with your M4 and get us connected?"

Hail to the Chief

The most noteworthy assignment using Nera's WorldCommunicator was when our San Diego affiliate, station KOGO(AM)

See NERA, page 63 ▶

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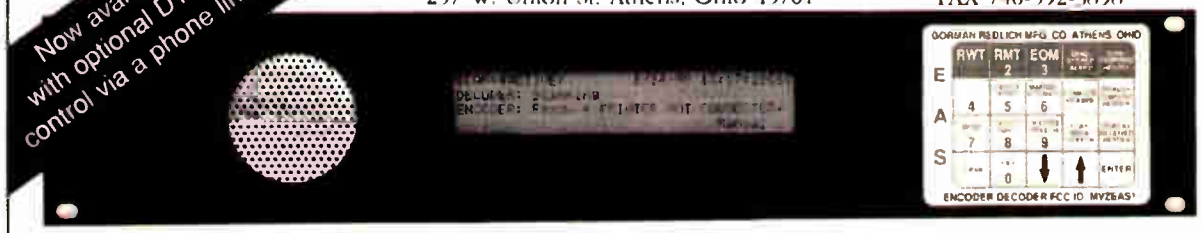

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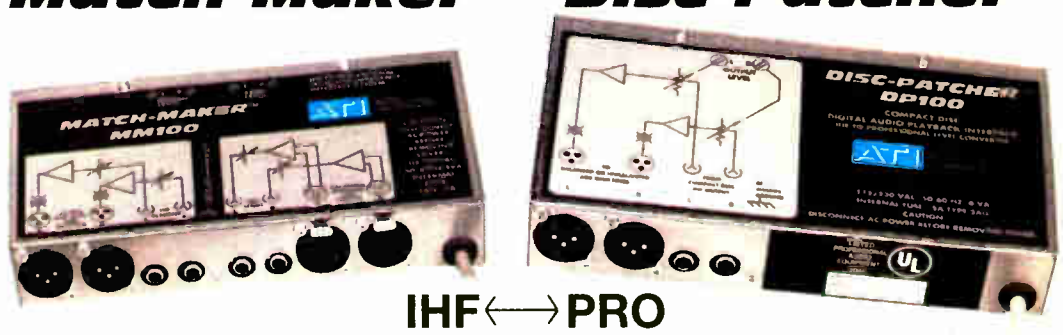

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World Radio History

Nera

▶ Continued from page 61

and KMYI(FM), requested that I coordinate the broadcast coverage of President Bush's speech on-board the USS Abraham Lincoln on its way home from the Persian Gulf in May 2003. This involved managing the satellite uplink for Clear Channel's 1,200-station cluster.

The major challenge was dealing with all the White House restrictions on board the vessel. We had to do most of our work on the hanger deck with a limited view, so portability and ease of setup were critical. Once it was close to speech time, I was able to quickly move the WorldCommunicator into position on the flight deck, where the president would conduct his speech. The radio broadcast was once again a success, and received by millions of people throughout the United States.

I can't say enough about the positive results from broadcasting via the M4. The WorldCommunicator and the Imarsat system ensures that radio broadcasters can produce their shows, despite challenging circumstances, such as reporting from the middle of nowhere, and without concern for lengthy set-up time or high monthly costs. This enables us to respond to spontaneous newsworthy events.

For more information, contact Mackay Communications in North Carolina at (919) 850-3000 or visit www.mackaycomm.com.

Phil Farrar of KOGO(AM) and Kristi Jagger of KMYI(FM) use the M4 to broadcast commentary after President Bush's speech aboard the USS Abraham Lincoln in May.

TECH UPDATES

HHB Portadisc Aids Field Work

The Portadisc from HHB is a portable MiniDisc recorder suitable for radio, television and film audio acquisition. It records on 74- or 80-minute MiniDiscs and includes a balanced microphone input circuit with switchable phantom power and limiting/ganging options. The Portadisc runs on eight rechargeable AA nickel metal hydride batteries, supplied with the unit. A universal 100V-240V charger is provided.

Connectivity includes RCA phono line outputs, headphone jack and coaxial and optical S/PDIF digital I/Os. A USB interface for real-time transfer of files to laptop editing systems is of use to radio journalists. This feature enables the production of finished news pieces in the field. Basic editing functions are available on the Portadisc itself.

The Portadisc MiniDisc Recorder From HHB

The machine is housed in a shockproof case with a large, illuminated display, monitoring speaker and backup microphone. A memory buffer prevents glitches from impacts. A feature for environmental noise monitoring applications is the auto start/cut function with adjustable threshold, particularly when used with the Portadisc's time/date stamp function.

Other features include automatic gain control, one-touch recording, lockable record level and key hold facilities.

For more information, contact HHB in California at (805) 579-6490 or visit www.hhbusa.com.

VoxPro PC Promises Easy Editing

Speed is a selling point for Audion Labs with its VoxPro PC digital audio editing software, which handles content development, distribution and management for radio stations.

The software provides on-the-fly editing for immediate turnaround and use on the air. It responds to computer keyboard commands and is used with an 8-by-10-inch control panel. It is available with USB or serial connectors.

The software imports and edits MP3, MP2, WMA and WAV files, and exports multiple files at once using most of the popular file formats. It features an archiving system that saves thousands of recordings, including "undo" and "redo" actions, which are saved for the life of each recording.

VoxPro PC software ships with VoxPro PC Network, which allows users to access accounts and files from VoxPro PCs on a station's existing network. Files are created and shared with other selected workstations, providing access to on-air files form any desktop or studio when on or off the air.

Features include scrub audio, the ability to record with the host in one channel and caller in another, stereo or mono playback, one button insert-record and opto-iso tally in record mode for on-air lights.

For more information, including pricing, contact Audion Labs at (206) 842-5202 or visit www.audionlabs.com.

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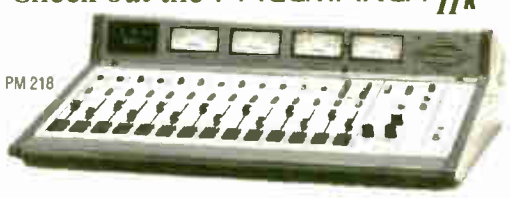

(PC Board revision taking place: new devices, greater slew rate, better signal to noise ratio)

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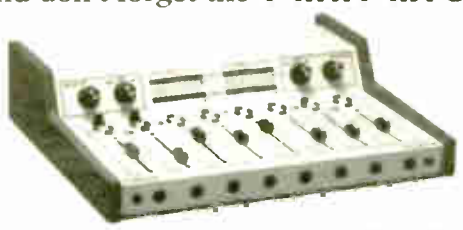

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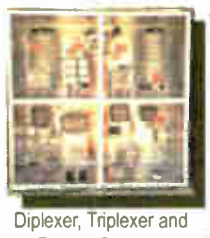

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RCA Dielectric BFC-4B FM 4 bay antenna, 97.1 MHz, removed from service 1998, FOB Dallas, $500/BO. Hue Beavers, KCIF-KPLX, 3500 Maple Ave, #1600, Dallas TX 75219. 214-520-4386.

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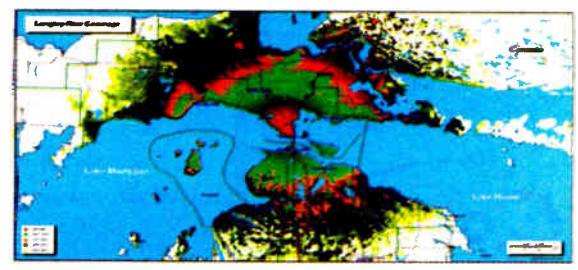

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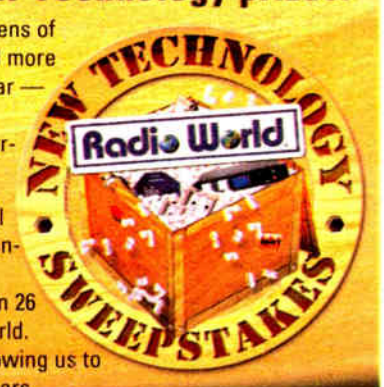

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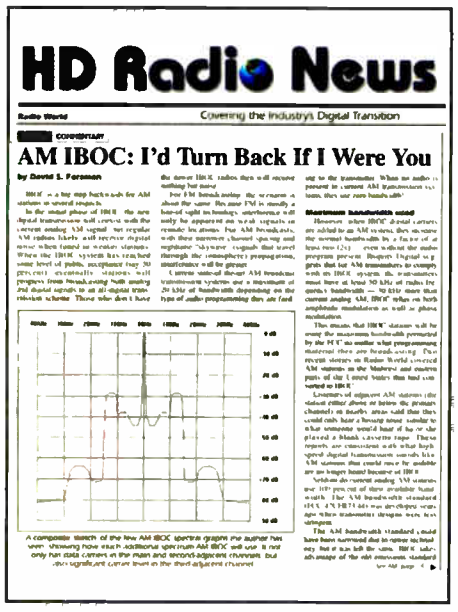
World Radio History

One Big 'Hissing' Contest

During the week of July 20, my wife and I were enjoying a restful vacation in Ocean County, N.J. I love to relax on the beach and tune around the AM band. Reception along the shore is normally very good for stations along the coast from Virginia to Massachusetts.

I had the pleasure of listening to a Long Island station on 1100 kHz. WHLI had clear reception and enjoyable adult music. I decided to seek out some news and sports programming. I came across a station on 920 kHz, WPHY(AM), a local ESPN affiliate. The signal was moderate in strength with good modulation. However, there was a noticeable, continuous *hisssssss* and other noises that made listening tiring.


HD Radio News

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AM IBOC: I'd Turn Back If I Were You

by David L. Foreman

I now realize that the noise was caused by an AM IBOC transmission on an adjacent channel, 930 kHz, WPAT(AM). Is this going to happen to all first-adjacent channels if more stations implement IBOC on AM?

After hearing the hissing noise produced by an AM IBOC signal to a first-adjacent station that previously had a clear signal, why would any AM owner want to use a system that creates so much noise to other stations? I do not have a radio capable of receiving the IBOC signal, and can't determine how much better or worse the digital signal was compared to the analog. The programming on WPAT was talk and very little music, so I could not determine the overall quality compared to music programming.

I work in radio engineering. My observations, however, are that of a listener: It would be very difficult for me to recommend the voluntary installation of any equipment that will cause noise to adjacent stations.

If all AM stations install this type of equipment, I guess we can have a big hissing contest.

David C. McCrork
Telford, Pa.

Make the Best of Analog Radio

While digital AM is an admirable concept, the band is unsuitable for "hybrid" digital/analog signals. With thousands of stations and limited channel spacing, there is simply not enough bandwidth to accommodate it. IBOC tries to overcome this problem but causes unacceptable interference, particularly with skywave signals. Yet its digital audio sounds no better than a low-bit-rate Internet stream.

Keeping the AM radio an analog-only medium isn't a death sentence. Technology has little to do with AM's popularity or lack thereof.

Many people don't listen to AM simply because it doesn't offer attractive programming. If they dislike AM's typical syndicated talk radio fare, they won't listen, even if it has hi-fi CD-quality sound.

And for the stations who do care about quality programming, C-Quam AM stereo made high-fidelity AM radio a reality over two decades ago. However, analog AM shouldn't be scrapped just because most AM receivers can't live up to this quality level. Indeed, should we kill stereo TV because the vast majority of TVs used today are still mono?

The ideal solution is to use digital receiver technology to provide superior quality from analog AM and FM. IBOC can't even match the quality that any good AM stereo or FM stereo radio can deliver, and this problem won't be easily or completely resolved.

So why not make the best of proven analog radio? That's a win-win situation for everybody, broadcasters and listeners alike.

Kevin Tekel
Webmaster
AM Stereo Web Site
Warren, N.J.

Disaster in The Works

Audio quality aside, the real problem with so-called "high-definition" AM is interference. It is the broadcast equivalent of throwing your trash over the fence on your neighbor's lawn.

HD AM takes up 2-3x the bandwidth of analog AM. With the AM band already badly overcrowded, that is a serious problem.

We like to listen to our hometown station, WLKM at 1520 kHz, when we're at our summer home near Three Rivers, Mich. Unfortunately, the digital noise produced by 50 kW adjacent-channel WSAI (1530) almost entirely wipes out our reception, from well before sunset until several hours after sunrise. The noise makes a raucous, "tearing" sound. Trying to listen to our local station on 1520 is like trying to listen while driving under a 750 kV HV transmission line.

I noticed when WSAI first began testing in HD Radio that the interference was plainly audible in the Chicago area during afternoon rush hour. My telephone calls and e-mail messages to the station about this problem went unanswered. The interference from WSAI damages reception on 1520 and 1540 kHz over a large part of the midwestern United States.

I fail to see the benefit of this system to anyone. As previously reported, 50 kW stations that now enjoy daytime coverage of 200-300 miles could see that drop by 2/3 in digital. AM radio has become the home of news and sports. Is that going to change if the audio quality improves by going digital? I doubt it, for people listen to radio because of the programming, not the transmission system.

AM stereo sounds great and causes no additional interference. However, it has failed to succeed in the marketplace because stereo is not that important for talk radio. With digital noise from HD Radio, I doubt I could have tuned to WKZQ to see how Michigan was affected during the recent blackouts.

AM radio serves a vital emergency communications purpose that will be greatly diminished if HD Radio is implemented. We should not allow ourselves to become solely dependent on cell phones and the Internet.

I am sorry to hear that the audio quality of HD AM is not living up to expectations, but I am far more concerned about the devastating effects of interference on station coverage, and what that will do to the choices available to the listening public (me).

I believe that if we could hear the effects of HD Radio transmission on the entire AM band all at once, the noise would be deafening. And if we were to listen on a digital receiver, the silence would be deafening because we would only hear a few signals that were strong enough to overcome the ambient interference. With digital transmission, once the error rate reaches a certain point, the game is over. It doesn't "hang in there" like analog does, and our listeners won't be able to, either.

I hope people realize what a disaster this could be, before it is too late.

Edgar C. Reihl, P.E.
White Pigeon, Mich.

Faith in Cam-D

I must join the growing chorus of AM broadcasters in support of Cam-D. Leonard Kahn has hit a home run with this.

Being a long-time "Power Side and Clear" customer, I have full faith that Cam-D will work. From what I have read, IBOC in its current configuration loses reliability at about the 15 mV contour. With Cam-D, you will enjoy 15 kHz stereo and data right to the 1 mV contour, after which your listeners will get 8 kHz stereo to the 0.5. The switchover won't be nearly as painful as IBOC and, as I understand it, if you currently use Power Side, the change is even easier.

AM stations using Cam-D will find their AM signal stays within the NRSC masking standards, will not interfere with first and second adjacents, will be more stable and even sound great on all the mono radios still in use.

I cannot understand why any AM operator who is not part of the Ibiquity partnership hasn't spoken up about the mess that IBOC will cause. Certainly all of us should be rallying around Leonard Kahn to get this through the FCC. We have already thrown our hat in the ring and committed our Detroit 50 kW to implement Cam-D, as well as our other stations.

It's up to us, the station owners, to get this problem fixed before it is too late. Do not wait for someone else to carry the water on this. Let's start making some noise, now.

Jonathon R. Yinger
President and CEO
The Christian Broadcasting System, Ltd.
Grand Blanc, Mich.

Skywave: End of an Era?

According to the Digital Radio Mondiale Web site, the "most used" data rate on MW is 26 kbps for 10 kHz occupied bandwidth. This is less than the 36 kbps provided by the Ibiquity system and, in my opinion, less than required for entertainment-quality stereo at 15 kHz audio bandwidth.

The basic digital modulation technologies used by DRM and the Ibiquity AM system are actually pretty similar (both are COFDM). As far as I can see, there is no great advantage of one technology over the other because they both draw from the same basic technological well and differ mainly in the details.

The only essential difference is where the digital carriers are located with respect to the analog carriers, if any. When used with an accompanying analog AM carrier, both require substantial extra bandwidth. Using the 4.5 kHz mode in DRM comes with a substantial penalty compared to Ibiquity, such as no stereo.

The industry is going to have to make a hard choice: continue with the status quo with an analog system that is really only appropriate for speech programming given consumers' audio quality expectations in the age of CD, or basically wipe out nighttime skywave reception in exchange for a system that provides quality that is competitive with analog FM.

There is no free lunch, and DRM is not a magic bullet. These choices aren't easy.

If I were running a successful major-market AM talker, I would want to retain the status quo because I was still profitable. But if I was losing money and couldn't afford to produce talk (or if my market was already saturated with it), I'd lean in the other direction.

The only thing that we, as engineers, can do is to lay the tradeoffs out on the table in an unemotional manner, and let the industry's managers choose which business model they want. I suspect that most managers would choose to improve quality in the coverage area they can sell and let skywave coverage become a relic of another era. After all, even truckers can get Sirius or XM these days.

Bob Orban
San Leandro, Calif.

How to Submit Letters

Radio World welcomes your point of view on any topic related to the U.S. radio broadcast industry.

Letters should be 100 to 300 words long; the shorter the letter, the better chance it will be published in full. We reserve the right to edit material for space. Longer commentaries are welcome but may not reach print as quickly.

Include your name, address and contact information, as well as your job title and company if appropriate.

Send letters via e-mail to *radioworld@imaspub.com*, with "Letter to the Editor" in the subject field; fax to (703) 820-3245; or mail to Reader's Forum, Radio World, P.O. Box 1214, Falls Church, VA 22041.

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◆READER'S FORUM◆

Tiny LPFM Expects Big Results

Just wanted to let readers know how things were going with the LPFM I've been helping. I wrote about it in this space some months ago.

The Equipment at the Nearly Complete WNHS(LP) Studio

Nearly a month remains before the station goes on the air. All equipment has been purchased and is waiting in boxes for installation, and we have a loaded Crown FMX250G ready to put on the air. The rest of the gear is top-of-the-line for analog (Audioarts R-5 board, etc.)

My design gives this station a lot of flexibility and an awesome sound. Being at 105.7 MHz certainly helps. If anything, that little station should sound better than the local small stations. The total investment is about $30,000.

I built into the design the ability for the school's superintendent, local police department or local volunteer fire department to call into the station and go directly on the air through their phone for school closings, emergencies or volunteer fireman recall. The EAS receiver automatically interrupts program audio for weekly tests or real emergencies from the primary station. I can call the transmitter for status, checks or adjustments, or it can call me. The antenna even has automatic de-icers.

The design includes 24-hour operation via BSI Simian system. Using Microsoft ADPCM compression, there is great audio on all the WAV files. I feel these are cleaner-sounding than MP3s.

There is a direct monitor of audition and program channels, via 70-volt lines, to the desks of the instructor and guidance counselor to prevent the abuse or ignorance of student DJs. Using Fiber Options bi-direction full-fidelity stereo audio, there are fiber tie-lines between the studio and each of the secondary schools using multi-mode fiber. Also, there is a direct hard-wired connection to the high-school gym and football stadium for good, clean, cheap remotes. I wanted to include a number of "real-station" benefits.

This is nothing extraordinary, but it's pretty damn cool for a little LPFM in a town of 4,000 people. These kids are going to have a great radio experience.

Dan Slentz
Volunteer Engineer
WNHS(LP)
Newcomerstown, Ohio

Reminiscing on An Original

Your piece about Simon Geller (Aug. 1) was as accurate as I have seen.

When Simon was ill, Ralph Karcher and I filled in for a month or so. We were on the second floor of a bank building. Geller's bed was right behind the transmitter, a hot plate next to it. On Thursday nights we could never make full power, because most of the city's electricity was being used to light the stores — at least, enough to keep us running a little low.

Simon had an altercation with the ASCAP and/or BMI people about not paying royalties. He said something to the effect of, "I haven't played anything written after the invention of royalties." He also had a problem with the AP or UPI people and told them to take their **** machine and get out.

He was fairly paranoid, suspecting people of wanting to take his license. He refused a good-faith offer by a company on a ridge to let him put his transmitter and antenna there for that reason.

"They Finally Got Simon Geller" was a front-page headline in Variety when the FCC refused a renewal. Many people turned out to support him, including announcers from other stations.

The station was oddball, but it was a breath of fresh air in the otherwise homogenized Boston market. He hated Gloucester, he hated the people who lived there, he hated the merchants and he especially hated the newspaper. He would say so right over the air. The result? People loved him and his radio station, sending money to keep it going.

When I returned to visit, a year after keeping the place on the air, he snarled, "Yeah, I remember you," and went back to what he was doing. I was so happy that neither he nor the station had changed.

Tom Carten
Wilkes-Barre, Pa.

Still Worth It

The NAB deserves credit for bringing the fall Radio Show to Philadelphia. Folks in the Middle Atlantic and Northeast say it's about time; they've not had a major radio convention in their backyards for more than a decade.

Now those managers should put their feet where their mouths are and go to the show. Unfortunately the attendance trend has been discouraging, no matter where the event has been held.

Turnout has been on the decline — from 7,680 in San Francisco in 2000, to 5,227 in New Orleans the next year, to 3,983 in Seattle in 2002. (These figures include everyone, not just fully paid registrants.)

That was a drop of 48 percent in the span of two years. Indeed, the high point of 2000 was an exception; setting that year aside, attendance has been dropping since at least 1997.

A spokesman last year said NAB was pleased with the 2002 turnout given the economy, post-9/11 travel concerns and the demise of the X-Stream component of the show. We suspect, however, that no one inside NAB is happy about this trend.

Radio World certainly is not, for we believe radio deserves its own convention. Yet market forces are relentless; and this trend is a consequence of consolidation, in our view. One owner with 100 stations will not invest the same time and money in sending his or her people to conventions as 50 or 100 separate owners would have.

The NAB board last winter instructed its staff to look into partnerships and other ways to improve the show experience. Officials at NAB *know* why people come to this convention: networking is a top priority, as well as learning about the effects of current issues on their jobs and businesses, new products and conference topics.

We'd like to see more fresh content for the technical attendees. Nevertheless, the exhibits are well worth visiting. NAB's tweaks to the event layout and schedule should help generate traffic. One NAB source said preregistration for technical sessions was up 40 percent. Big-name executives and talk radio talent will be a draw.

(We find it amusing that Infinity and ABC/Disney are no longer NAB members, yet these groups will allow the likes of Joel Hollander and Sean Hannity to take part as panelists.) The fall Radio Show can and should remain a part of our radio landscape. As we've stated before, the expectations for what constitutes a successful show must be reset. A session-heavy event with 10-by-10 booths and a few thousand attendees is still a useful convention. And we are happy to hear one NAB radio executive say, "It is imperative to us that the NAB Radio Show continues to succeed."

But managers must still take the active step of supporting it. At some point, declining attendance and the presumably increasing cost could force NAB to ask, "Is this really worth it?" And that would be a shame.

— RW

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