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Split Digital
 'Tomorrow Radio' moves ahead.

Page 12

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 Page 28

Radio World



March 1, 2004

\$2.50 The Newspaper for Radio Managers and Engineers

INSIDE

NEWS

- ▼ How Harris plans to manage broadcast upgrades in Iraq. **Page 3**

ENGINEERING

- ▼ Radio on the receiving end: trends in receiver design. **Page 22**



- ▼ Inexpensive backup solutions in Workbench. **Page 23**

STUDIO SESSIONS

- ▼ Ty Ford tries out the Digidesign 002 Rack DAW. **Page 31**



- ▼ Tascam makes the USB connection. **Page 34**

OPINION

- ▼ Kenneth MacHarg wonders where the quality in radio has gone. **Page 45**

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Harris, Sage Settle EAS Suit

by Randy J. Stine

KANSAS CITY, Mo. Remember Quad Dimension Inc., the company that claims to own some of the technology in the Emergency Alert System hardware? The case between Quad and an EAS device manufacturer and its distributor has been settled out of court.

The settlement involves a royalty fee to Quad for future sales. Sage Alerting Systems Inc. and Harris Corp. say broadcasters should not expect to pay more for Sage EAS encoders/decoders. Quad filed suit in U.S. District Court

for the Western District of Missouri in 2002 alleging patent infringement against Sage and Harris. Sage produces the Endec Emergency Alert System encoder/decoder, marketed by Harris.

It's unclear whether Quad plans to file suit against other EAS equipment manufacturers. A spokesman for TFT Inc., maker of the EAS 911 series of encoders and decoders, said the company has not had direct contact with Quad in five or six years.

A source familiar with the agreement between Quad and Harris said the small

See EAS SUIT, page 6 ▶

NEWS ANALYSIS

HD Radio's Rollout Reaches The Public

by Leslie Stimson

LAS VEGAS Now that HD Radios are in the marketplace, Americans can go into stores and compare for themselves between analog vs. digital, and terrestrial digital vs. satellite.

While satellite radios have appeared in special kiosks in many consumer electronics stores, retailers indicate they will place HD Radios on their so-called "big board," the wall of radios in each store, making it easier for the buyer to compare analog to digital.

Besides the promise of better audio, HD Radio proponents are banking on the words "no monthly payments" to motivate consumers.

Naysayers feel the rollout may be too late, that XM and Sirius Satellite Radio have gained a consumer foothold that will only keep growing. As the satcasters add services, they give listeners fewer reasons to go back to terrestrial radio, according to some industry experts interviewed for this article. The satellite companies' plans to add local traffic and weather to their offerings fuel this point of view.

Certainly the list of markets for which XM intends to create traffic channels is

See CES HD RADIO, page 7 ▶



Under New Owners, BE Eyes Future Products

QUINCY, ILL. Broadcast Electronics officials say an equity firm's acquisition of the company will give the broadcast systems provider the financial means to expand its HD Radio product line further and increase its presence internationally.

Thompson Street Capital Partners, based in St. Louis, joined with some managers at BE to acquire the company from Hoak Capital Corp. in late January. Financial details of the agreement were not released.

Broadcast Electronics President and CEO John Pedlow said the new equity partners would allow BE to fortify its

position in the marketplace with new products and services.

"Certainly we are heavily involved in the HD Radio initiative, from the transmission equipment side of it to data transmission. We have a whole array of products we are working on for wireless digital data. Having the new investment partner will support our ability to do that. This is going to be a good thing for the company."

Pedlow said BE has the advantage of controlling "both pieces of the equation" when it comes to supplying data transmission capabilities to radio broadcasters.

"We have the transmission hardware, but we also have a leading position in automation systems. We think that being able to link those two together to provide content for the HD Radio data channel is

significant for us. Data transmission is going to be a big part of what we do."

No structural changes in BE management is expected, Pedlow said, which means the company can continue to focus on growth.

"The most encouraging thing is that our new ownership is very supportive of us. Their marching orders to us (were) to keep doing what we are doing," Pedlow said.

BE employs about 135 at a 70,000-square-foot manufacturing facility and headquarters in Quincy, Ill.

Pedlow said several members of management at BE are participating in the new venture, but that Thompson Street Capital Partners is the lead investor.

Thompson Street Capital Partners is a relatively young firm focusing on mid-market investments and companies about

the size of BE. It looks for businesses that lead within their market sector and sectors that have growth potential, he said.

"They were impressed with our position in the marketplace and also where the radio market will head over the next five years considering the development of HD Radio," Pedlow said.

Data transmission is going to be a big part of what we do.

— John Pedlow

BE's relationship with Hoak over the years was "terrific," Pedlow said, but the fund was "very mature and nearing the end of their investment life and there were some things we couldn't do. We are on the front end of HD Radio development." Now, he said, the company can move forward.

Radio station engineers at WWDC(AM) in Silver Spring, Md., founded Broadcast Electronics in 1959. The company first produced cart machines in a garage at the station.

It moved to Quincy, Ill., in 1977 to take advantage of the central geographical location. BE entered the RF transmission business in 1979 with the introduction of the FM-50 exciter. It added the AudioVault line of hard-disk storage systems in 1990.

BE was acquired by Hoak Capital Corp., a private equity firm based in Dallas, in 1996.

— by Randy J. Stine

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NEWS	
Harris, Sage Settle EAS Suit	1
HD Radio's Rollout Reaches the Public	1
Under New Owners, BE Eyes Future Products	2
Modern Media for Baghdad and Beyond	3
We Salute Excellence in Engineering	4
RDLs Clements Succumbs to Cancer	5
Newswatch	5
HD Radio Receivers Emerge	10
HD RADIO	
Is Radio Heading for a Split?	12
Tricks of HD Radio(s) Revealed	16
WHUR(FM) Goes HD Radio	18
FEATURES	
Logitek Celebrates Silver	19
WiFi Makes Inroads in Radio Reporting	20
Who's Buying What	21
Radio on the Receiving End	22
Workbench: Inexpensive Backup Solutions	23
Gained in Translation	27
Treasure in the Attic: Radio Gets the Picture	27
Excellence in Engineering Award Nominees	28
STUDIO SESSIONS	
Digi 002, Rack-Ready for Broadcast	31
Tascam Makes the USB Connection	34
Big-Time Voices, Small-Time Budgets	36
How to Optimize Speech for Air	39
Designing the Cigar-Box Studio	40
OPINION	
Where Has All the Quality Gone? Letters	45-46

Modern Media for Baghdad and Beyond

Winner of a \$96 Million Contract, Harris Corp. Will Oversee Broadcast Upgrades in Iraq

by John Merli

Broadcast engineers and station executives in the United States may think of transmitters and other hardware when they think of Harris Corp. Yet in some of the 90 nations where it conducts business, including Iraq, Harris assumes a wider role of media activity with the added responsibilities of overseeing broadcast news and program content, and even print media.

In the second Iraqi contract it has been awarded since last fall, Harris announced it will receive \$96 million to "develop an existing but antiquated media network into a modern media organization" for the people of Iraq.

The overall project, known as the Iraqi Media Network, is ambitious: It consists of equipment upgrades, operation, training and programming for two radio and two TV terrestrial networks and one national newspaper for the Baghdad market and at least 30 smaller markets.

Until last April, Saddam Hussein and his late son, Uday, controlled these media outlets.

"This is a major 'win' for us," said Harris Chairman and CEO Howard Lance in an interview from his Melbourne, Fla., office.

"In the government systems business, we have a lot of expertise in applications of technology and in overseeing large communications technology programs for military and civilian agencies," ranging from the U.S. Justice Department to the National Weather Service to all four branches of the military, he said.

While several national news stories at the time of the January announcement referred to Harris as a "media company" and implied that it would be handling actual programming duties and local and national news coverage in Iraq, Lance stressed that Harris remains primarily an equipment supplier to the industry, here and abroad.

The Harris CEO said the company will rely on partners experienced in the region to carry out the media mission, especially Lebanese Broadcasting Corp. International, and Al-Fawares, a Kuwaiti company partly owned by Iraqis, which publishes the Arabic version of Newsweek magazine.

Local interest

Harris and its partners will have their work cut out for them if making the revamped media services popular among local citizens is any priority.

According to various news reports, Harris' predecessor in Iraq, Science Applications International Corp., a U.S. defense contractor, failed to stimulate viewer or listener interest because of the widely held perception that the U.S.-financed news and public affairs broadcasts in the months since major hostilities ended on May 1, 2003, was biased towards America and its allies.

"We rely on our partners here. Harris is not in these (program content) businesses and we would not want our regular customers to think that we are about to become another network. That is certainly not the case," Lance said.

"As you might guess, this is a rather

large project and Harris is sort of the leading contractor. The (U.S.) government is

Harris. We wanted to combine those capabilities from our broadcasting product, our transmitters and other hardware and software — and our various kinds of digital technology and studio automated equipment — all together for the Iraq



Secretary of Defense Donald Rumsfeld greets soldiers from the 28th Combat Support Hospital in Baghdad.

looking at one company for oversight: Harris. Right now our partners and we want to put in place the infrastructure for local news reporting and for newsgathering. We want to put in place a management structure similar to what you'd find in similar operations (elsewhere)," Lance said.

Keeping tabs

Congress, meanwhile, is keeping a close eye on the new media initiative to ensure that the \$96 million in taxpayer funding is earmarked for creating a press environment free of undo influence from any new Iraqi government.

Sen. Richard Lugar, R-Ind., who chairs the Senate Foreign Relations Committee, has been vocal about Washington's concerns and vows to keep close tabs on the project.

Also, interim Iraqi Communications Minister Haider Abadi recently told The Financial Times that he was not consulted on the project, and has threatened to attempt to cancel it in July when the U.S.-led Coalition Provisional Authority is scheduled to turn over power to a new Iraqi government.

Abadi said he appreciated U.S. efforts to get his country back up to speed in a post-war environment, but cautioned that Iraq should not turn over control of its press, even temporarily, to "foreign media."

In September 2003, Harris was awarded its first Iraqi contract to help set up a more modest terrestrial radio infrastructure, in association with the Voice of America and the Army Corps of Engineers. That fall project was the result, in part, of Harris taking the initiative three months earlier to set up a regional office to pursue business opportunities.

The company's multi-faceted Iraqi activities are prominently displayed on the home page of its main Web site, dubbed "Iraq Telecommunications Infrastructure Solutions."

Lance said the Iraqi regional office was set up last summer "to showcase the various levels of capabilities we have at

effort. We've had people 'in-country' in Iraq over several months and in neighbor-

ing countries."

Maj. Gary Tallman, an Army spokesman at the Pentagon, said the "Harris contract was awarded in a fair and open bidding process — transparent — as all such contracts. Harris met the criteria the best."

He said the Army is the "executive agent" for the contracting procedure. "We always make sure it's a fair and open process."

Tallman, who specializes in acquisition and logistics issues, said there were at least four other companies besides Harris that submitted bids, which are based on overall cost-effectiveness and other criteria. The Army does not release the names of losing bidders.

Although the latest \$96 million Harris contract initially runs for one year, it includes a provision to extend it for up to 12 months, which would grow the overall value of the mission to about \$165 million. Traditionally, Tallman said, such extensions are not uncommon, especially if ongoing work is found to be generally satisfactory and the chief goals of the mission have not been met in the initial time allotted.

"We're there to help the Iraqi people achieve something many of them have never had, at least not in recent memory," Tallman said. "The Harris Corporation and the Army Corp of Engineers, among others, now look forward to working with the Iraqi people to make all this finally happen for them."

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BOB MIKE ERNIE MATT

We Salute Excellence in Engineering

In this issue, I ask you to take part in saluting a handful of engineers who have made a difference in our industry.

The new Radio World Excellence in Engineering Award recognizes a special individual for excellence in U.S. radio broadcast engineering. Nominees, found on pages 28-29, were chosen by a panel of Radio World advisers, contributors, suppliers and other industry experts. The winner is chosen from among the nominees by your vote.

I asked the nominators to identify colleagues who represent the highest ideals of the U.S. radio broadcast engineering profession and reflect those ideals through their contributions to our industry.

Factors they considered included but were not limited to the candidate's engineering proficiency, certifications, project management skills, industry honors, service to industry organizations, commitment to mentoring, professional advancement, educational level and other achievements.

I now ask you to consider these factors as well, to visit our Web site and cast your selection for the person you feel most represents the excellence that we expect in our profession. We'll announce the top vote-getter during the upcoming NAB convention.

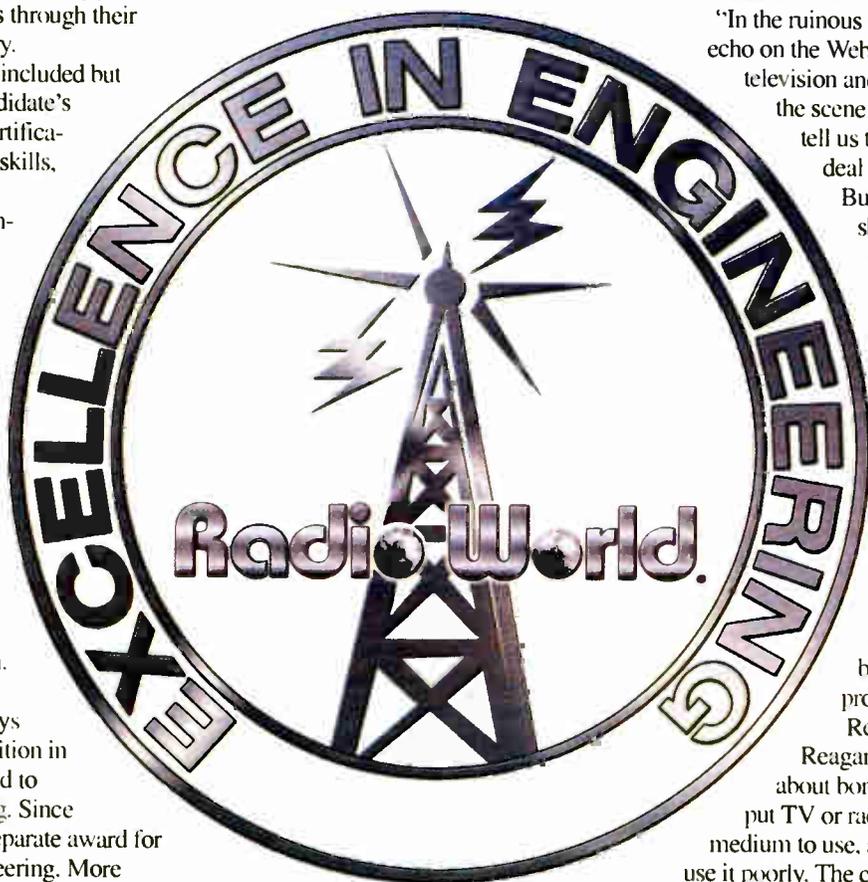
Why this, why now?

Engineers have not always enjoyed appropriate recognition in our industry; but I'm pleased to observe that this is changing. Since 1991, the NAB has had a separate award for achievement in radio engineering. More radio employers have stepped up their efforts to laud their top engineers publicly; for example, Clear Channel has just launched an engineer of the year award.

While Radio World bows to no one in our long-standing appreciation of radio engineers, we are overdue in formalizing that appreciation through an award of our own.

Are there other people who should have been nominated? Of course. Indeed, several well-known engineers declined their nominations for various personal reasons. And our selection process will want refinement. This first year represents just the beginning of our award program, and I hope you'll help me to improve it by sending me your suggestions as well as your votes.

I expect that the Radio World Excellence in Engineering Award will be a significant career honor for a broadcast engineer, as it truly reflects the approbation of his or her peers. Please help us salute these fine professionals.



Did you know that a directional microphone can topple a candidate?

OK, this might be an exaggeration; but I had to smile when the question of mic pat-

terns came up in the days after Howard Dean's "screech speech" in Iowa earlier in this presidential race.

In a blurb on Salon.com titled, "The Screams We Didn't Hear," one contributor stated that Dean had been "tripped up" because his Iowa speech came to us thanks to a directional microphone, a fact that was duly reported by ABC's Diane Sawyer.

"The mic is special because it blocks out background noise," the writer stated. "That's why, despite the full room of 3,000 shrieking, orange-hatted supporters, the only thing you heard on the Dean scream replays, car alarms and dance mixes was his infamous yell. . . ."

"In the ruinous wake of the speech and its echo on the Web, late-night TV, network television and talk radio, Deaniacs on the scene caucus night also tried to tell us that the scream was no big deal if you were actually there.

But it's all over but the shouting that will live forever on tape — and few will probably ever remember that a directional mic had anything to do with it." Those inclined to blame the media for their own candidates' gaffes might respond here with sympathy for Dean. I would reply, though, that if someone intends to use electronic tools, they'd best learn how to do so properly.

Remember when Ronald Reagan joked into a microphone about bombing Russia? You can't put TV or radio or any electronic medium to use, and then complain if you use it poorly. The carpenter doesn't blame his tools for his mistakes; a would-be president can't blame his microphone for what comes out of his mouth.

Our sympathies go out to Jim Scholefield, chief engineer at WAMC(FM) in Albany,

From the Editor



Paul J. McLane

N.Y., and his wife. They lost three members of their family in a fire that also destroyed their home.

According to the Poughkeepsie Journal, Scholefield and his wife Korrena Salerno and their two children were inside at the time with Salerno's mother and younger sister.

The couple's daughter and Salerno's mother and younger sister were killed, police said.

Scholefield was treated for burns resulting from rescue attempts, according to the radio station Web site. The Red Cross was assisting with the family's immediate needs.

A fund to assist the family has been established. For information, visit www.wamc.org or make donations to The Scholefield Family Relief Fund, c/o HSBC Bank, 899 Western Ave., Albany, NY 12203.

Thanks to Bill Draper, chief engineer of Clear Channel of the Hudson Valley, for bringing the relief fund to our attention.

Our friends at the CGC Communicator newsletter maintain a neat site of favorite URLs and Web cams, contributed by the likes of Kent Randles, Harold Hallikainen, Steve Blodgett, Marv Collins and Bob Gonsett.

Among the many interesting tools you will find are telephone technical information, units of measure, world time for all time zones, Web cams for Mt. Wilson, Yosemite Park and the studios of KIIS(FM), a Java slide rule and my favorite, the Java clock written in pencil.

See for yourself at www.earthsignals.com/add_CGC/links.htm

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◆ NEWS WATCH ◆

Tauzin to Retire

WASHINGTON Rep. Billy Tauzin, R-La., long considered a friend to broadcasters, plans to leave Congress. He informed House Speaker Hastert, R-Ill., he would step down as chairman of the Energy and Commerce Committee effective Feb. 16.

Tauzin held the powerful post since January of 2001. He will not run for reelection when his 12th term in Congress expires at the end of this year.

Fellow Republican Joe Barton of Texas has said he's interested in the chairmanship and told Reuters he

planned to meet with Hastert on the matter.

There were rumors for months that Tauzin intended to leave Congress to succeed Jack Valenti as president of the Motion Picture Association of America. A Tauzin spokesman steadily denied the rumors. In late January, Tauzin turned down the MPAA position and was said to be considering another offer from a pharmaceutical trade association.

In his resignation letter, the 60-year-old Tauzin said two recent hospitalizations helped him decide it was time to step down.

Clear Channel Gets 'Highest Ever' Indecency Fine

WASHINGTON As Congress sharpens its focus on broadcast indecency, the FCC proposed a \$755,000 fine for several Clear Channel Communications stations for apparently airing indecent material over several days. The fine was handed down on the eve of a congressional hearing on broadcast indecency.

The material at issue was aired in connection with the "Bubba the Love Sponge" program. The commission proposed the statutory maximum forfeiture of \$27,500 for each of 26 apparent indecency violations. The FCC called the amount the highest ever proposed against a broadcast licensee.

The Florida stations involved are WPLA(FM), Callahan; WCKT(FM), Port Charlotte; WXTB(FM), Clearwater; and WRLX(FM), West Palm Beach.

The proposed forfeiture includes \$40,000 for Clear Channel's apparent failure to maintain certain required documents in the public inspection files of these stations.

Commissioner Michael Copps dissented, saying the stations should have been slated for a license revocation hearing.

Rep. Fred Upton, R-Mich., chairman of the House telecommunications sub-

RDL's Clements Succumbs to Cancer

CARPINTERIA, Calif. After a three-year illness, Radio Design Labs director of marketing, Jerry Clements, died on Feb. 1, a few days shy of his 57th birthday.

A veteran broadcaster with stints in California, Wisconsin, Texas, New Mexico and other states, Clements was best known as co-founder of Radio Design Labs with friend Joel Bump, who remains president and director of engineering.

Cetec roots

Both Clements and Bump worked at KPRO(AM), Riverside, Calif., but not quite at the same time.

"I missed him by a few weeks, but we both knew of each other," said Bump. "He was an entertainer on the air, and I was an engineer."

Clements became a sales manager with Cetec Broadcast Group in the 1970s. When that company was sold in the early 1980s, he formed a broadcast equipment distribution business in California. Meanwhile, Bump became a consulting engineer and eventually moved to Hawaii, where he built and operated a Class C FM station.

Bump bought his station's equipment from Clements.

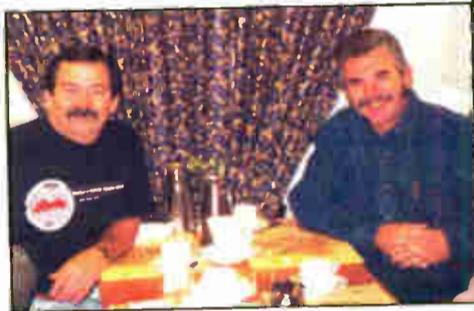
"We became good friends and had some common interests like exotic cars, fast boats and even snowmobiles," said Bump. "We always kidded about some day working together."

he," said Bump. "I really liked the way he did things, his devotion to the customer and his honest commitment. And he had virtually universal respect from our customers."

Person to person

Enjoying friendships was the driving force in Clements' life, according to his business partner of 18 years.

"He was equally at home in a biker bar as in a fancy lounge, because people were most important to him," said Bump. "In the early years of RDL we manned our convention booth our-



Jerry Clements and Joel Bump in Amsterdam, circa 1998

selves. Sometimes we spent the evenings with customers or distributors, but frequently we just took some picnic items back to our rooms, pulled our chairs outside and talked about our plans and expectations until the wee hours."

Clements' wife Connie joined the

'He was equally at home in a biker bar as in a fancy lounge, because people were most important to him.'

In 1986 that day arrived after the two talked about what they could each contribute to a new company.

"We were very enthusiastic about supplying products to the broadcast industry which just weren't being made by anyone," said Bump.

They started Radio Design Labs with a few specialty items. Bump was responsible for design and manufacturing.

"Jerry was the sales guy, and I must say that of all the people I have ever worked with, I never met anyone who was more genuine and thorough than

company at the outset and continues to work there. The RDL factory is in Prescott, Ariz., and the sales office where Clements worked remains in Carpinteria, Calif. With hundreds of products in its current catalog, many of them small, affordable audio and video modules, RDL plans no changes in the operation of the company.

"Jerry's positive attitude and caring spirit is a fundamental part of RDL that will always stay with us," said Bump.

— by Ken R.

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Proposes Indecency Task Force

SAN ANTONIO, Texas As it was hit with what a record-setting broadcast indecency fine, Clear Channel called on the FCC to form a "Local Values Task Force" to develop indecency guidelines "that would apply fairly and evenly" across all media platforms including radio, TV, cable and satellite networks.

Mark Mays, president and chief operating officer of Clear Channel Communications, said the task force should be convened under the auspices of the FCC, but that the industry has a unique responsibility to address the problem.

The task force would develop guidelines that balance First Amendment rights with local community values and eliminate confusion over what is and is not acceptable behavior on the airwaves.

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suit

from page 1

...e Harris is paying might have a ...g effect on Quad pursuing other litigation.

"It is very expensive to litigate intellectual property cases," the source said.

Some within the EAS industry wonder if Quad will recognize much of a windfall from the settlement.

"For radio and TV, the market is principally a replacement one," said TFT spokesman Darryl Parker. "Small cable systems and LPFM represent a slight growth potential. The government sector's activity is high, but funding is low."

Parker estimates the installed encoder/decoder and decoder-only market to include 7,500 radio stations and 1,200 TV stations. He noted that not every radio station is in compliance with EAS, with some stations lacking equipment and others having equipment that doesn't function properly.

'Small' fee

Quad's complaint against Sage and Harris stated that the companies were selling various "emergency alert systems and/or devices" that infringed upon Quad's patent for EAS.

The court had scheduled a trial date of April 2005, but the parties settled their dispute last fall. No details of the agreement were disclosed. In the original complaint, Quad had asked for an unspecified monetary amount in damages.

1822 model for around \$2,000.

The licensing agreement likely runs through the life of the patent, until 2011, the source said. Quad applied for the patent in 1991. Patents last for 20 years from the time the original application was made.

According to court records from the settlement, "All parties agree that nothing in (the cases) dismissal should be construed as an admission of liability or infringement by either party, and defend

the U.S. Patent and Trademark Office for its Storm Alert for Emergencies, or SAFE, technology. Quad's principals believe their patent claims cover the Emergency Alert System adopted by the FCC in 1994.

Broadcasters and EAS equipment manufacturers have since viewed the actions of the company warily.

Several EAS equipment manufacturers received letters from Quad in 1995 telling them they needed a licensing

nation certificate in September 2002, which resulted in some of its patent claims being amended. A source with the PTO said no further reexaminations have been requested.

Glenn Tallia, senior counsel for weather, satellites and research for NOAA, said the validity of the Quad patent has yet to be decided in a court of law.

"The court in the Harris case never had a chance to consider the issue. So we have no court decision yet that has looked at the patent to determine whether it is valid," Tallia said.

Tallia acknowledged that the Quad patent, as a result of having survived two reexaminations, might be viewed by some as being strengthened.

"You have a patent that has narrowed a bit from the original granted in 1992. So while it doesn't cover as much technology, it has faced scrutiny twice now and been allowed," he said.

Murmurs that the government should buy the patent from Quad have circulated throughout the broadcast industry periodically. Tallia said there were discussions between the two sides right after the patent was issued, but "those discussions never came close" to an agreement.

"Quad has never said the NWS is infringing on its patent," he said. "The technology we developed for NOAA Weather Radio was technology developed by the government. We believe Quad received a patent for something developed by the government. That is what we argued before the PTO."

Tallia declined to discuss the similarities between the two alerting systems.

Sources say intellectual property counsels for the NWS and the National Association of Broadcasters have examined the patent in the past. A spokesman for the NAB said the trade association has never taken a position on whether a broadcaster should pay the royalty fee to Quad.

Not much is known about Quad Dimension Inc. and its principals. The names of Mike Fessler, Daric Laughlin and Larry Ganzer are listed as inventors on the SAFE patent. Fessler is president of the company. Sources say Al Eckilson joined Quad as a business partner after the patent was issued.

Quad operates out of an office suite in Kansas City and shares office space with affiliated companies Primus Audio Pleasure, an audio equipment retailer, and Signum Corp., a hospital equipment supplier. 

By settling the suit, we have eliminated any exposure, however small, that our broadcast customers may have had as a result of the emergency alert equipment.

— Harris Legal Dept.

dant Harris Corp. shall not be stopped or otherwise precluded" from selling Sage EAS equipment.

"The lawsuit has been settled to the mutual satisfaction of both Quad and Harris. (Harris) accepted a license agreement under the Quad patent," said Quad spokesman Al Eckilson, who declined further comment.

Harris' intellectual property counsel said in a prepared statement, "Details of the agreement are confidential. By settling the suit, we have eliminated any exposure, however small, that our broad-

cast customers may have had as a result of the emergency alert equipment.

agreement to use the technology covered by the patent. Quad then sent letters to 1,500 broadcasters in early 1999 requesting they sign licensing agreements and pay a royalty fee of \$240 for 1999 and annual payments of \$180 beginning in 2000 to continue through the life of the patent. Quad has declined to answer the question of whether any broadcasters signed the licensing agreements.

The patent infringement lawsuit against Harris and Sage was the first time Quad attempted to defend its patent in court.

The U.S. Patent and Trademark Office twice has re-examined the patent, both times at the request of the National Weather Service. NWS uses encoding similar to Quad's SAFE called the NOAA Weather Radio Specific Area Message Encoding.

SAME also uses frequency shift keying to transmit codes that contain both a hazard message to be broadcast and the geographical region affected by the hazard. Officials at the NWS believe their system was developed first.

Sources familiar with Quad's patent say that when the company applied for its patent in 1991, executives submitted documents describing the SAFE and NOAA's SAME alert systems. Officials with the patent office found enough difference between the two systems to issue a patent to Quad for SAFE.

Quad was issued its second reexami-

The patent infringement lawsuit against Harris and Sage was the first time Quad attempted to define its patent in court.

A source familiar with the negotiations said the agreement calls for Harris to pay a "small licensing fee" for future use and not prior use of the technology. The source placed the licensing fee at around 5 percent of the sales price of Sage EAS equipment. Harris sells the Sage Endec

cast customers may have had as a result of the emergency alert equipment."

A Harris spokeswoman said there would be "no change in price of equipment due to the settlement" with Quad.

The case went back several years.

In 1992, Quad received a patent from

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CES HD Radio

► Continued from page 1

like a blueprint of the markets receiver companies told Ibiqity to target in its rollout. Criteria for those rollout markets included radio audience size, long commutes and previous high sales figures for consumer electronics.

Ibiqity's original targeted markets are New York, Los Angeles, Chicago, San Francisco, Miami and Seattle, followed by Atlanta, Boston, Dallas, Denver and Detroit. Stations have licensed Ibiqity's technology in more than 100 markets.

XM debuted its dedicated traffic channels for these cities on March 1: New York, Los Angeles, Washington, Dallas-Ft. Worth, Chicago, Houston, Detroit, Philadelphia, Phoenix, San Francisco, Tampa-St. Petersburg, Orlando, Baltimore, Pittsburgh and St. Louis.

Dedicated channels for Boston, Atlanta, Miami-Ft. Lauderdale, Minneapolis-St. Paul, Seattle and San Diego are to be introduced by the end of the year.

Ibiqity Digital Corp. President/CEO Robert Struble is unfazed by the satcasters' plans.

Americans will still be getting radio through their local stations, most of which will be operating in HD Radio long before satellite radio hits 10 percent penetration."

Another source, the head of engineering for a prominent radio group, said that although terrestrial radio's digital rollout is lagging due to the earlier codec problem, XM and Sirius are "forging some territory and terrestrial radio will be able to learn from their mistakes."

This engineer thinks price will be a motivator for consumers to buy HD Radios.

Quirky buyers

"The general population is not used to paying beyond the purchase price for most entertainment," the engineer said. "That's going to be a real factor as HD

Radios come on the market. The one-time purchase price will be a selling point."

Still another engineer involved in the HD Radio rollout from the manufacturing side said terrestrial radio would do well to pay attention to the satellite companies' limited use of commercials.

"The HD Radio rollout is happening as fast as it possibly can. We need to make this happen or we'll be left in the dust."

The news that satcasters plan to offer regionalized traffic and weather "will cause stations to clean up their act" as far as audio quality and commercial stop-set length, he predicted. "The days of long commercial stopsets are over."

HD Radio supporters said they will take note of the "churn rate" for satellite radio. How will new drivers react when

faced with paying for their subscriptions, something they may not have noticed bundled into their new car payments at first?

The satellite companies have said their churn rate so far is miniscule.

Terrestrial digital radio proponents are bullish, having invested years of time and money on the concept. They believe Americans will buy the new radios to gain better audio quality and for the telematics conveniences promised to stations. Several of those advances were demonstrated at this winter's CES convention, including traffic and weather with and without navigation systems, surround sound and the supplemental audio concept. (See stories, pages 10 and 12.)

The debut of the first HD Radios has been a long time coming, although See CES HD RADIO, page 8 ►

Retailers plan to place HD Radios on the so-called 'big board,' a wall of radios in each store.

"We knew that was coming. Satellite radio is here to stay," he said. "Nobody is saying now, as they did a few years ago, 'Satellite radio is not going to work.'"

HD Radio is part of terrestrial broadcasters' solution, he said. Just as satcasters are focused on building subscriber numbers, Ibiqity is focused on advancing station conversions.

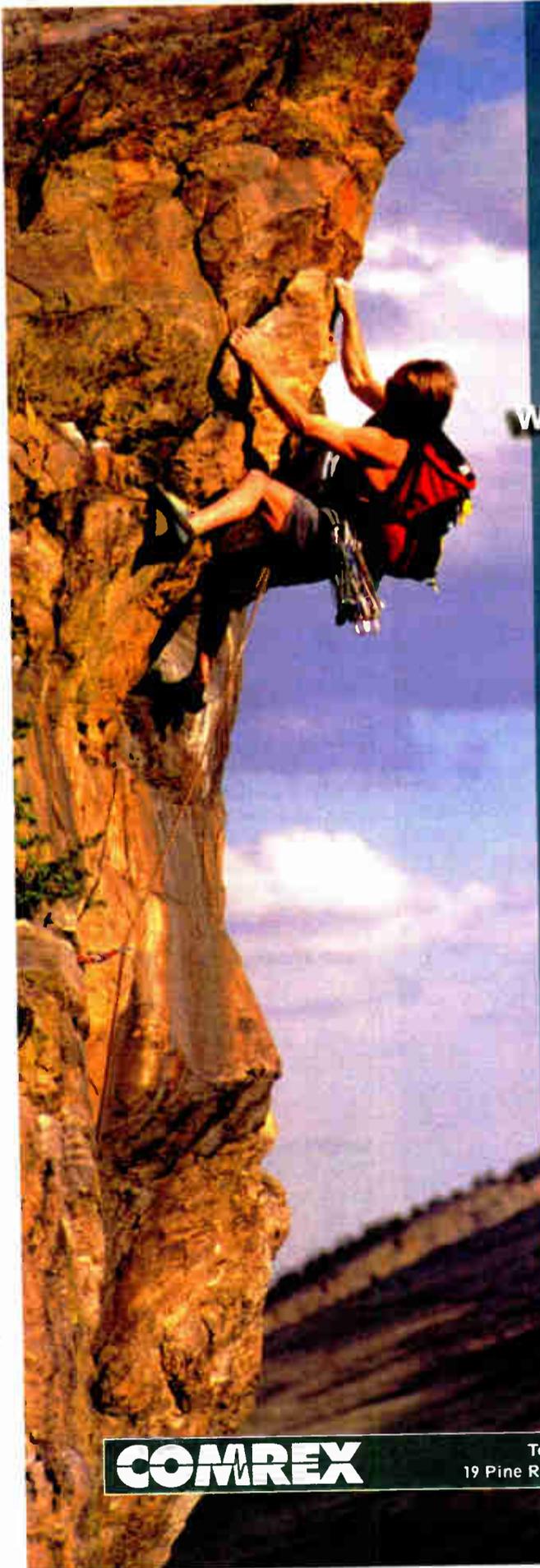
"Once you see product shipping, that says to a lot of manufacturers, 'This is real.'"

Ibiqity spokesman David Salemi said 80 percent of drivers listen to local stations, and they want to hear local personalities.

Several high-level broadcast engineers involved in the industry's decisions about adopting digital radio echoed this sentiment, noting that the satcasters' programming strategies to limit commercials, boost audio quality and offer local traffic and weather still result in a product lacking localism.

"Traffic and weather is not the start and finish of localism," said one head of engineering for a prominent radio group. "I am not convinced they can do as good a job as terrestrial guys."

"The market for satellite radio is projected to reach only 20 to 30 million total, after many years," said Mike Starling, NPR's vice president for engineering and operations. "So, even at that future date, the other 90 percent of



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CES HD Radio

► Continued from page 7

consumers won't necessarily care about past delays. After more than 11 years in development and a roughly six-month delay due to the codec quality issue, the first aftermarket HD Radios are on store

Radio technology, according to the company; approximately 75 of those are actually believed to be on-air with a digital signal.

Two stations timed their HD Radio conversion to coincide with the CES convention.

The first HD Radio purchased by a consumer sold in January to a 25-year-old in Cedar Rapids, Iowa. Nathan

also ran live audio and traffic data through a Broadcast Electronics HD Radio transmitter.

The station is sending its digital signal into a Shively antenna, separate from the analog signal and antenna. The station is broadcasting HD Radio under experimental FCC authorization, pending the agency's rulemaking on the use of separate antennas for digital service.

Meanwhile, last summer's codec problems seem to be moot as HD Radio supporters push forward with the rollout. In discussions with manufacturers, "The codec does not come up anymore," said Struble, since Ibiqity switched to its new, proprietary HDC codec.

At CES, FCC Chairman Michael Powell was bullish on digital radio. The chairman, Commissioner Jonathan Adelstein and several agency staffers toured Ibiqity Digital and XM Satellite Radio booths on the exhibit floor.

Powell told Radio World he believes Ibiqity's technology is sound and it's good for consumers, although he added, "We'll see what consumers embrace" of all the digital radio technologies.

The challenge for broadcasters, he said during a panel discussion with Consumer Electronics Association President/CEO Gary Shapiro, "is to migrate so that at least your product can be distributed in a digital form that will at least have the potential for interactivity, dynamic selection" and greater capacity.

"But you still have to use the raw materials to go into the digital future or you're going to end up in the ashbin."

For radio, he said, "Staying where they are is absolutely no solution for the future." ●



Photo by Leslie Stimson

Kenwood's Dan Petersen attends the unveiling of Ibiqity's HD Radios at CES.

shelves. Kenwood shipped product to retailers in January; JVC and Panasonic planned to ship home and aftermarket units this spring.

Kenwood also is working on a combined in-dash unit for HD Radio and Sirius, to ship this fall. By then, the industry also may see HD Radios in 2005 model cars.

Nearly 300 stations have licensed technology from Ibiqity Digital to use the HD

Franzen bought a Kenwood KTC-HR100 HD Radio tuner from the Ultimate Electronics store. He had it installed in his 2001 Pontiac Grand Prix. Franzen then tuned to Iowa Corp. station KZIA(FM), which has converted to digital.

Beasley Broadcast Group's Las Vegas radio station KSTJ(FM) converted before the show, saying it was the first to use data-casting for navigational purposes. KSTJ

AM Nighttime Digital 'Not as Bad As We Thought'

And what about digital AM at night?

Ibiqity has delivered final AM nighttime test results to an NAB committee working on the issue. Some engineers are worried about possible interference at night to neighbors from stations operating with a digital signal.

Of the AM nighttime feasibility and impact studies Ibiqity recently completed and delivered to an NAB committee working on AM nighttime digital issues, a committee member said, "It's not as bad as we thought."

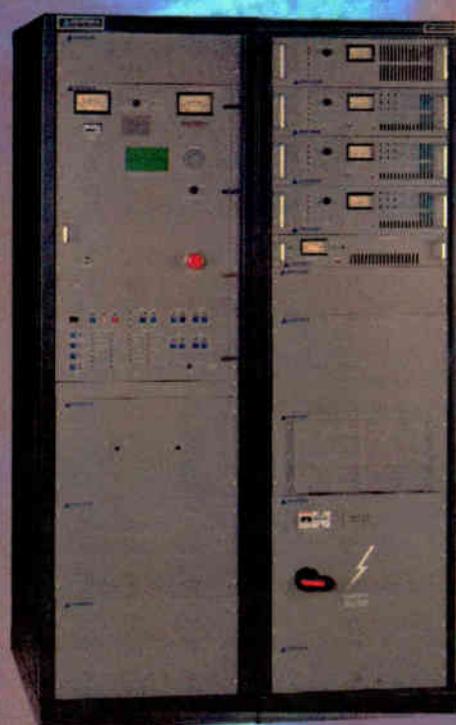
Several sources said HD Radio "is not a panacea" and does not fix every problem that exists with analog AM at night.

The NAB Radio Board recently voted that the improved audio quality at night with HD Radio "is well worth the predicted and limited reductions in analog coverage," according to minutes of the January meeting.

The NAB Radio Board asked NAB staff to relay its endorsement to the FCC. HD Radio proponents are hoping the commission will issue further operational rules for digital radio later this year.

— Leslie Stimson

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NEWS WATCH

Dielectric CFO Now in Charge

RAYMOND, Maine Dielectric Communications has turned to a man from the accounting side, John Capasso, as its president.

He was the company's chief financial officer and also has been serving as CFO for the Communication and Technology Systems Group of Dielectric's parent company, SPX Corp., a publicly traded firm with \$5 billion in annual sales.

Long-time Dielectric President Lew Kling, who recently had returned to that post after replacing Greg Langston, has retired, according to a company spokeswoman.

In the past year or so, Dielectric expanded by acquiring tower lighting company Flash Technology and tower construction/service firm Brookstone Telecom.

FCC Probes Super Bowl Incident

WASHINGTON The FCC is investigating the exposure of Janet Jackson's breast during the Super Bowl halftime show. Commission Chairman Michael Powell told the Washington Post he's personally directing the investigation.

The FCC asked CBS for a tape of the halftime show and sent a letter of inquiry to the network.

Powell said the agency would review the entire show to determine whether it violated broadcast indecency standards.

In a statement, the chairman said he was "outraged" by the incident, for which Jackson's fellow singer Justin Timberlake apologized. He ripped part of Jackson's costume and exposed a breast at the end of a song. He attributed Jackson's exposure to a "costume malfunction."

CBS has apologized as well.

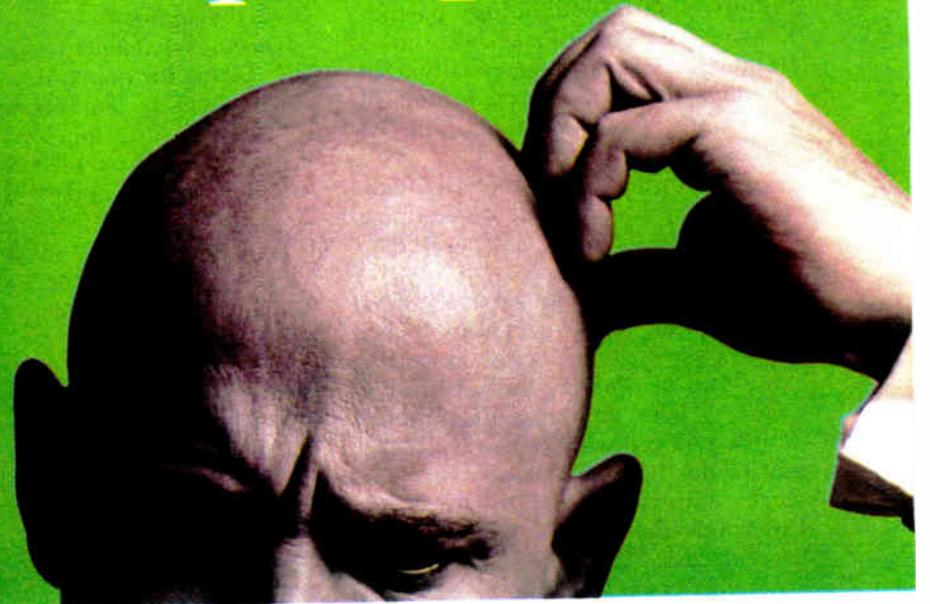
Powell stated: "Like millions of Americans, my family and I gathered around the television for a celebration. Instead, that celebration was tainted by a classless, crass and deplorable stunt. Our nation's children, parents and citizens deserve better."

Powell promised the investigation would be "thorough and swift."

Commissioner Kathleen Abemathy was "shocked and dismayed" and said broadcasters should have more respect for viewers. Fellow Commissioner Michael Copps urged the agency to act quickly.

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Omnia-6EX is also full of processing enhancements that result in yet more bass punch, yet more voice clarity, than the original Omnia-6. A sound so powerful and free of artificial constraints, you'll crave it for your station the first time you hear it.

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The new Omnia-6EX has enhanced processing for analog FM, and is ready for HD Radio with a second limiter section and digital output. Both FM and HD limiters and outputs are included as standard.

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HD Radio Receivers Emerge

by Leslie Stimson

LAS VEGAS Here come the receivers.

At the Consumer Electronics Show, Ibiqity Digital technology partners Kenwood, JVC and Panasonic showed HD products to be commercially available this year. So did Texas Instruments and Philips, whose chips are in the HD Radios.

Also showing a variety of HD Radio receivers in development were Alpine, Delphi, Fujitsu/Eclipse, Harman Kardon, Onkyo, Sanyo and Visteon.

The first HD Radio tuner, a Kenwood KTC-HR100, was expected to ship to retailers with stations located in markets rated 100 or smaller by Arbitron in January. The new digital tuner is designed for use with Kenwood Excelon and in-dash DVD/CD receivers and works with two dozen 2003 and '04 Kenwood models, including 15 introduced at CES.

Panasonic introduced a single-DIN-sized radio, the CQ-CB9900U integrated HD Radio/CD receiver. JVC showed a single-DIN HD Radio to be shipped to stores this spring.

Onkyo is developing several models of HD Radios for home use, as well as a plug-and-play add-on version.

Visteon and Delphi say automakers that buy radios from their companies are looking to release in-dash HD Radios in 2005 model years. Visteon engineer and DSP specialist Bill Whitehart said the company's OEM partners are enthused about integrating HD Radio with telematics.

"We started talking to Ibiqity four years ago. We believe our existing Mach DSP technology would work with HD Radio."

Ford and BMW are among Visteon's automaker customers.

Kenwood USA Executive Vice President Dan Petersen said the company

also is developing a single-DIN combined Sirius and HD Radio receiver for third-quarter release to retailers. It

"It's a nice enhancement, but I'm not sure it's that compelling in a car," he said.

Another engineering chief for a major group called surround an exciting concept. "It's another opportunity for a receiver manufacturer to incorporate technology to enhance the listening experience."



SRS demonstrated surround sound enabled by HD Radio technology in Ibiqity's booth.

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showed a prototype of the single box in-dash Sirius/HD Radio at CES.

Traffic and HD Radio

XM and Sirius weren't the only digital radio companies promising future traffic report capabilities.

Delphi, Navigation Technologies, Panasonic and Visteon demonstrated traffic applications based on HD Radio. Traffic information, provided separately by Navigation Technologies and TrafficCast, was broadcast live from KSTJ(FM) in Las Vegas.

A Starlink digital STL equipped with Moseley's new Ethernet module was installed at KSTJ(FM) to transport 44.1 digital stereo audio and live data to the HD Radio transmitter.

Delphi showed text-based traffic reports in a Pontiac Montana while real-time traffic information was overlaid on a Panasonic GPS navigation system enabled with Navtech maps and an advanced Visteon multimedia driver information system. "We believe HD Radio technology is excellent, not only for in-vehicle information, but for many other services," stated Martin Thoone, Visteon's global director, electronics product line team.

In addition to navigation, surround sound is making its way into the car due to a push from automakers.

The theory is that as consumers experience surround sound at home with their home theater systems, they'll want that same quality in the car.

Compelling?

"Expectations will be raised," said Neural Chief Technology Officer and co-founder Robert Reams. He also sees potential for stations to sell advertisers on the concept of producing their ads with surround sound.

"It's easier to mix in surround than in stereo."

One broadcast engineer for a major radio group told Radio World it remains to be seen whether consumers want to pay extra for the audio boost.

Ibiqity demonstrated SRS Labs Circle 5.1 surround-sound technology. The company is collaborating with Ibiqity to integrate and test multichannel encoding and decoding of SRS Circle Surround for transmission and playback of surround-sound content through HD Radio receivers.

XM featured Neural's 5.1 surround technology in its booth, and executives said XM has been using the surround concept in its audio since it launched. Sirius exhibited Dolby Pro Logic, which it says can be decoded by SRS and other decoder manufacturers.

There's some jockeying over which surround technology is better. XM claims its 5.1 is superior because Neural is using five discrete channels. Sirius disputed this.

Ibiqity had featured Neural's surround sound at the spring NAB convention. When asked about the switch, Ibiqity executives said the company is working with several surround technology maker, preferring to let broadcasters decide which they want to go with their HD Radio installation.

Neural Audio also announced the Spatial Environment Engine, a decoder processor solution to enable a surround-sound experience in automotive and home audio from a digital two-channel broadcast source. Using watermark embedment by the Neural broadcast processor, SEE derives spatial cues to render the spatial image intelligently, whether 5.1 original, 5.1 produced or original stereo.

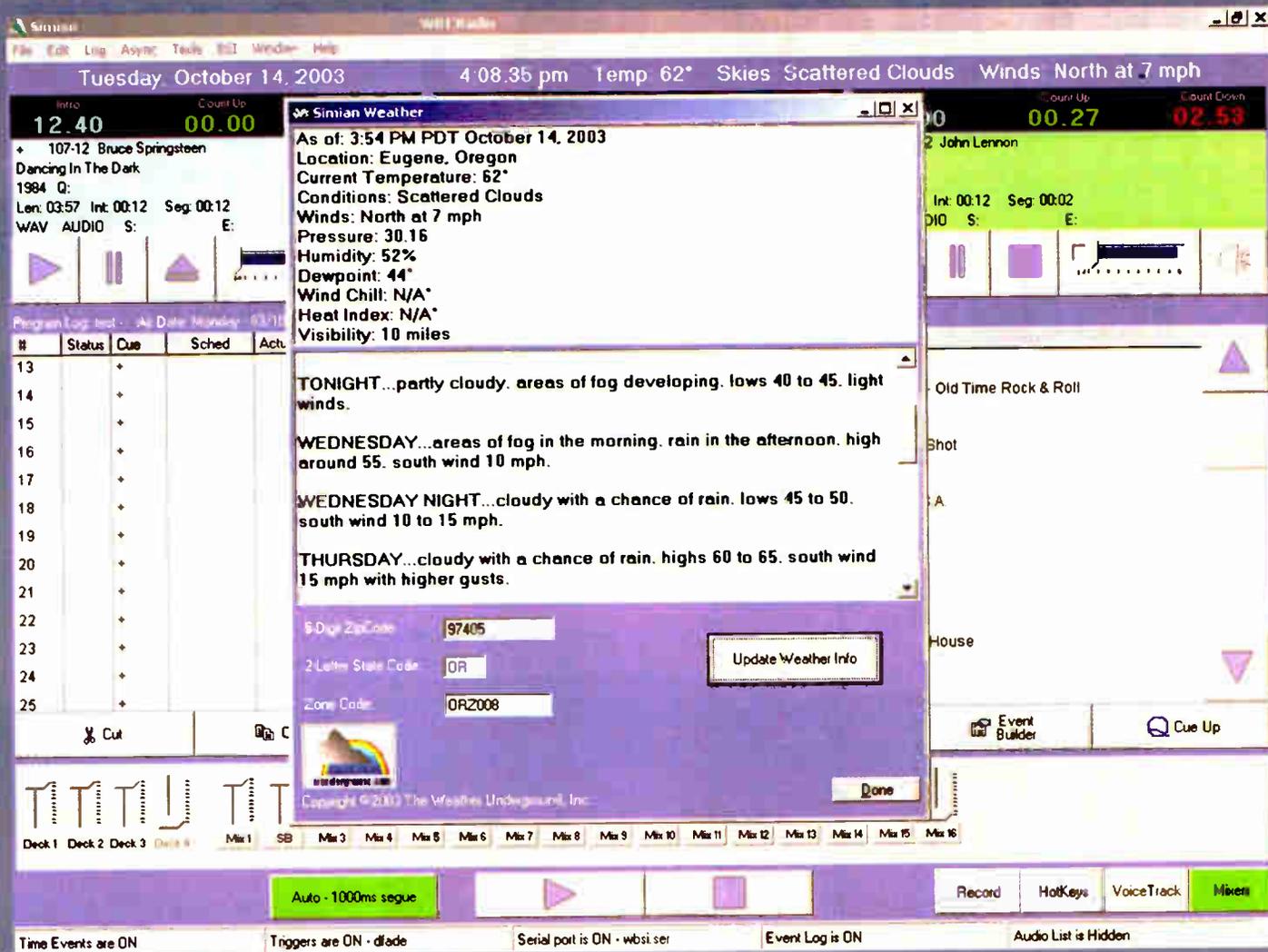
"Used in an automotive audio system, SEE intelligently expands the listening 'sweet spot' to include the entire passenger compartment," company executives said. "Neural's SEE is backward-compatible and can be integrated with existing decoders from providers such as Dolby, SRS, Lexicon and DTS."

Kenwood featured an HD Radio capable of receiving two digital channels, a demonstration of the so-called "Tomorrow Radio" supplemental audio channel. (See story, page 12.)

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NEWS ANALYSIS

Is Radio Heading for a Split?

Proponents Hope Digital Radios Have Supplemental Channels by Late Fall

by Leslie Stimson

Developers of the Tomorrow Radio project — NPR, Kenwood USA and Harris Broadcast — are pleased with test results of the supplemental audio channel concept for HD Radio. If plans go as hoped, the partners expect U.S. stations can begin splitting their digital signals into two distinct channels by late fall.

They've concluded, along with Hammett & Edison, which evaluated the results, that the service area of a secondary audio channel for digital stations would fall within the 60 to 70 dBu service area of a typical FM station.

"The coverage area is robust," said NPR Vice President for Engineering and Operations Mike Starling.

The concept is that instead of a typical station transmitting its digital FM HD Radio signal at 96 kilobits per second, that channel would be split into two digital signals, one at 64 kbps and the other at 32 kbps.

'Robust' coverage

The 32 kbps channel could be audio, data or a mixture of both, proponents said.

When asked if the secondary audio channel or SAC sounds as good as a digital channel that hasn't been divided, Starling said, "It wouldn't sound as good as if you had not split it up. There's certainly a tradeoff there."

"I think our experience is that the coding has improved to the point where these are really excellent results, even at the somewhat reduced data rate for the main channel down to 64 kbps and quite good

results for the 32-kilobit channel."

Kenwood USA's Director of R&D/Digital Broadcast Mike Bergman said, "You will not be unhappy with 32 kbps, depending on its application. If this is someone who has to have the absolute purest classical music reproduction, 32 kbps is not for that application. But mix-

tures of speech and music, certain music formats ... are going to sound terrific at 32 kbps."

What the partners wanted to achieve with testing was to determine whether the digital signal, when split, remains robust as far as coverage in a mobile environment.

"We were looking at listenable coverage. With a digital signal, there's a potential for dropout at the edge of coverage. We consider coverage to be the area where the signal was strong, running for long periods of time," Bergman said.

An occasional mute of the secondary channel would be tolerable to listeners, but for the most part, the service has to offer relatively seamless coverage, he said.

Unlike the typical FM transmitting an HD Radio signal, there is no fallback blend to analog for the SAC portion of the digital signal; there is an analog fallback for the 64 kbps channel, but not for the 32 kbps portion. Should the signal fail for the SAC, the receiver mutes that channel only.

Hammett & Edison's Stan Salek concluded there was 95 percent certainty of coverage within the predicted and measured coverage area for all four stations that were tested: KALW(FM), San Francisco; KKJZ(FM), Long Beach, Calif.; WETA(FM), Washington and WNYC(FM), New York.

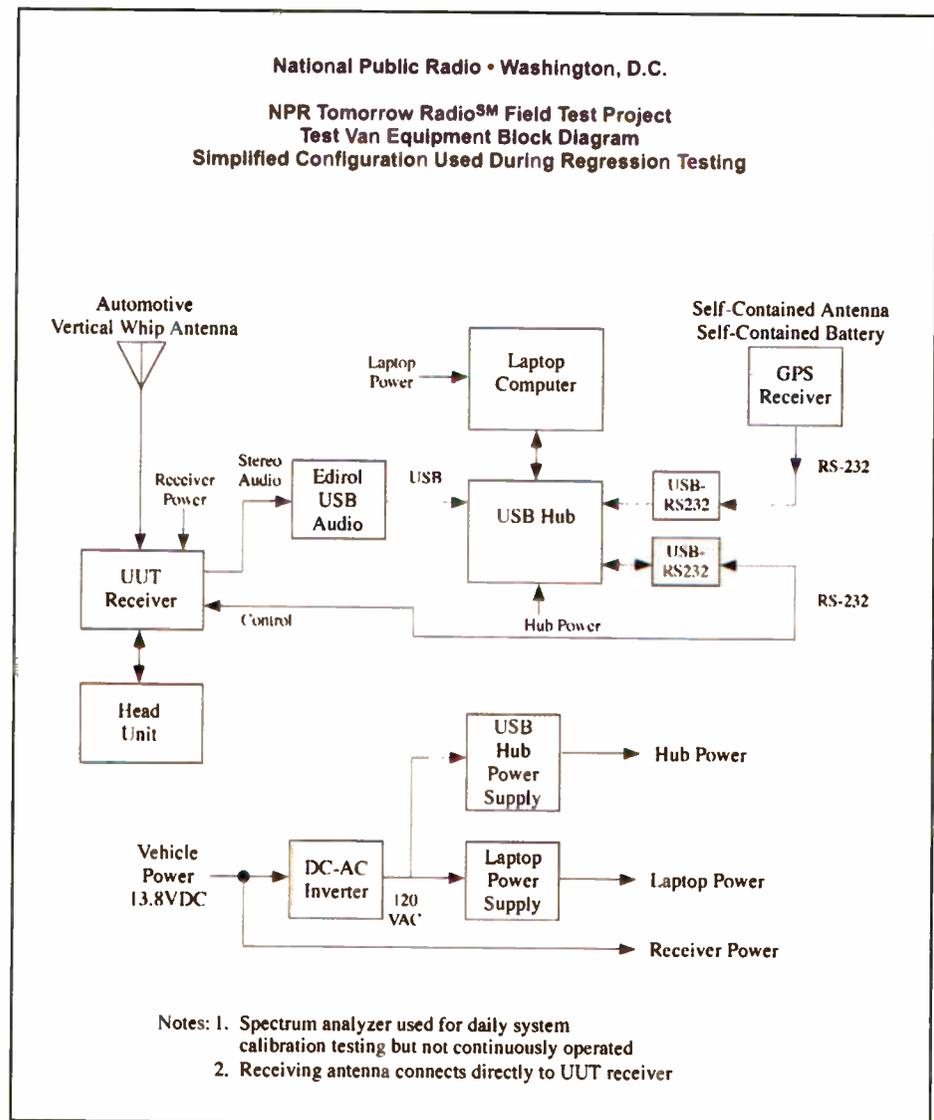
Different codecs used

New York City had 61dBu contour equivalent coverage and Washington had 64.9 dBu. "New York City is the really impressive one to me because they were only running 56 watts of digital power," said Starling, explaining that the digital power is 1/100th of the analog power.

He said that showed the SAC could provide reliable coverage to a potential 15.7 million listeners in that area.

The original tests were performed last summer with Ibiquity's earlier Perceptual Audio Coder. Regression tests were com-

See TOMORROW RADIO, page 14 ▶



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Tomorrow Radio

► Continued from page 12

pleted at the end of 2003 with Ibiqity's new HDC codec in two cities. The additional tests gave the partners a chance to correct deficiencies in the RF distribution network that were identified in the initial data-gathering scheme. A different, simplified configuration was used during regression testing (see diagram.)

The partners said switching codecs by itself did not change the results. Data differences during receiver testing were more likely due to long interruptions in terrain, a strong adjacent carrier or a long distance from the van to a transmitter site. The type of things that cause noise on an analog system also will cause noise on a digital system, they said.

However, "Some significant interference effects were noted from co-channel and adjacent-channel stations," according to the report.

"An anomalous in-band interfering signal was observed using spectrum analysis techniques on Washington, D.C., Test Route 4 (Highway 4) during original testing, but the signal was no longer present in recent regression testing," states Hammett & Edison in its report.

"Our data analysis showed that effects from adjacent-channel stations were observed at edge-of-coverage areas on Test Route 2 near Baltimore, Md., and on Test Route 5 near Fredericksburg, Va.

"Testing in other markets did not yield any significant instances of interference. In general, when the station's 60 dBu service contour was impinged by a strong in-band transmission, there was an observable effect that somewhat reduced the coverage area, which explains the reduced performance in the Washington, D.C., area as compared to the New York City metropolitan area. However, these effects did not dominate the test results."

To see the report, go to www.npr.org/euonline.

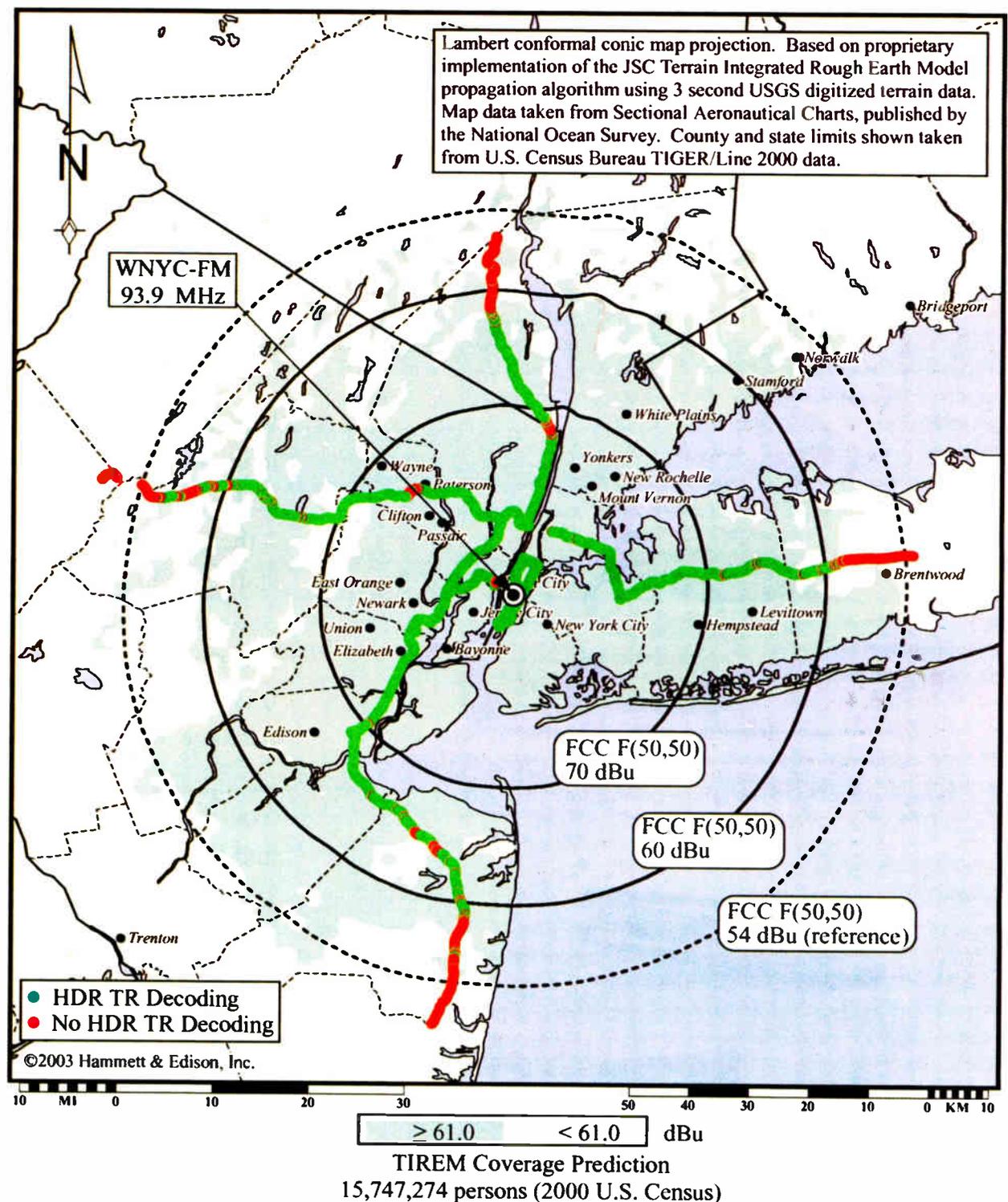
What next?

The partners hope stations can begin partitioning their spectrum for the additional channel by late fall. Additional steps must occur in order to make that proposed timetable.

The four stations used for SAC testing received experimental licenses from the FCC. Starling said proponents hope other stations will seek experimental authority for SAC broadcasts in order to explore what would be required to implement the

National Public Radio/Harris/Kenwood • Tomorrow RadioSM Project

New York City Metropolitan Area Field Test Results Final HDC and Tomorrow RadioSM Version



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Appendix D2A

Fee or No Fee for a Secondary Channel?

Still to be worked out in the Tomorrow Radio concept is whether commercial stations would have to pay a fee for creating the supplemental channel. Noncommercial stations are exempt from Ibiqity royalties for data services.

When Ibiqity developed its license agreements for broadcasters, it included a 3 percent fee that stations would owe the technology developer, a fee calculated from the total of any data revenues made by commercial stations in the future. Yet this was envisioned before stations began converting to digital and before the data possibilities with HD Radio seemed more viable.

When asked if the data fee of 3 percent still holds, or if it could be subject to discussion, Ibiqity Chief Operating Officer Jeffrey Jury said, "This is the model we are working towards today. But, having said that, we continue to work with the industry on the topic since the business models around datacasting are still being developed. So yes, it is up for discussion."

Broadcast engineering sources at CES indicated that whether there would be a fee and how much that figure might be for commercial stations could be contentious questions.

At its winter board meeting in January, NAB Radio Board members discussed the supplemental audio concept, some favorably, according to NAB; but a spokesman characterized the discussions as preliminary. The trade association has no position yet on the supplemental channel concept.

The Tomorrow Radio partners have met with some NAB staff members and said they received a favorable response, according to Michael Riksen, NPR's vice president of government relations.

— by Leslie Stimson

concept at various kinds of stations.

"It will take some logistic subtleties to work out getting that extra signal from the studio to the transmitter, for example," Starling said.

Some stations may need an additional STL to do a SAC broadcast, said Harris National Accounts Manager for Radio Lucius Stone. He said implementation costs also include an additional software load for the transmitter, assuming a station already has HD Radio software loaded onto its transmitter exciter.

Bergman likened the costs to do the SAC broadcast to "the cost of two laptops."

Harris also recommended the Neustar pre-conditioner for stations considering the concept, to pre-process the audio and make the codec's job of deciding what audio to keep or eliminate easier.

Harris had a SAC broadcast demo set up at the recent CES convention in Las Vegas. See TOMORROW RADIO, page 15 ►

Tomorrow Radio

► Continued from page 14

Vegas. Neustar was used in all three implementations, said Harris Applications Engineer Gary Liebisch. The first demo was FM HD Radio at 96 kbps with analog and digital signals at 94.5 MHz. The second demo was FM HD Radio at 102.5 MHz with the digital split into two channels, 64 kbps and 32 kbps. The third demo was AM analog and HD Radio at 36 kbps on 840 kHz.

Michael Riksen, NPR vice president for government relations, said the experimental authority that stations need now to operate HD Radio along with an SAC broadcast is an interim step. He hopes the FCC eventually will not require stations to apply for experimental authority to broadcast the split digital signals.

The partners presented test results to the National Radio Systems Committee at its meeting at CES, soliciting feedback before taking the results to the FCC. They had not yet turned in the final report several weeks later, although proponents have briefed some agency staffers about the concept.

"The FCC will then decide what to do in the context of a Further Notice of Proposed Rule Making," said Riksen. "The specific action we hope the commission will take is to eliminate the necessity of an experimental license to broadcast a supplemental channel, so that a broadcast of digital radio will, by itself, be sufficient for supplemental audio."

The agency may bundle Tomorrow Radio with other remaining HD Radio items still to be authorized, such as AM nighttime operation, in the further notice. Or, partners said, they may pursue the supplemental audio channel as a separate item.

Reading Services And the Second Channel

The Tomorrow Radio partners are in discussions with radio reading services to see whether HD Radio and the supplemental channel approach can be made compatible with such services.

Those services typically broadcast via existing FM subcarriers; the visually impaired hear the radio reading services on SCA receivers. Thus planners foresee a radio equipped to receive AM, FM, HD Radio, SAC and SCA signals.

Initial criteria likely to be considered for such a project would be cost-effectiveness, audio quality and whether another use could be integrated easily onto the chipset and into a finished product.

Bergman said approximately 12 million visually impaired people reside in the United States. Kenwood is experimenting with ways to make the radios easier for the visually impaired to use, such as changing the shape of the buttons.

Asked whether SCA capability would be compatible with Ibiqity's new HDC codec, proponents said that's unknown; more tests would need to be done at lower bit rates. Proponents said they're talking to Ibiqity about tests with multiple codecs.

It's also too soon to know whether surround sound would be compatible with a SAC broadcast.

— by Leslie Stimson

The further notice would have to be out this spring in order for the partners to meet their goal of allowing U.S. stations to split their HD Radio signals and offer these new services.

Bergman said receivers would be available when regulators are ready to permit it.

While commercial broadcasters seem to be taking a wait-and-see attitude, some public radio broadcasters are embracing the promise of another digital channel, saying the potential to offer more and different programming along with better audio quality makes a more compelling reason for consumers to buy digital radios.

How program it?

Scott Hanley, director/general manager of Pittsburgh's noncom

WDUQ(FM), a news and jazz formatted station, said, "Out of an audience of about 160,000 cume (Spring 2003), when I parse out the numbers about 130,000 listen to news, about 100,000 listen to the jazz. There is a lot of crossover, but also a significant number of people who seem to prefer one service or the other."

"By counter-programming a supplementary channel, we hope we can encourage a significant number of people with a strong penchant for one or the other of our major offerings to become early adopters."

Pubcasters are getting help in the form of matching grants from the Corporation for Public Broadcasting for their digital transition. Close to 50 noncoms are on the air or have

received matching grants to move toward implementation of HD Radio.

Last year, CPB doled out about \$3 million in digital transition grant funding. Just before the holidays, it invited applications for an additional \$6.75 million to assist noncom stations serving rural and minority markets.

Contained in an omnibus funding bill passed by Congress in January and signed by the president is an additional \$50 million in digital transition funding for radio and TV. Riksen said public radio is to get about 15 percent of that, or \$7.5 million.

Whether commercial broadcasters would pay a data fee to Ibiqity to broadcast a supplemental channel is undetermined.

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FIRST PERSON

'Tricks' of HD Radio(s) Revealed

Glen Clark Completes His Digital Tour of Three Markets in Four Days

by Glen Clark

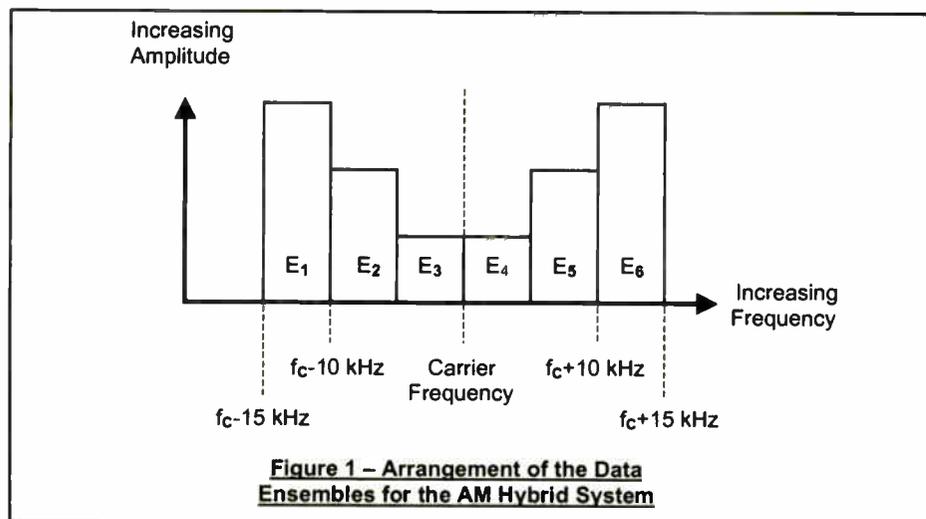
This is the second of two installments. In the Feb. 1 issue, the author wrote about installing a Kenwood HD Radio and described how it works: *1. I-tiqued AM and FM performance.*

NEW CASTLE, Pa. A number of stations, both AM and FM, have been on the air with HD Radio for many months. Ibiqity Digital has made custom receivers, not much different from traditional modulation monitors, available to stations that purchased an HD Radio exciter. But there was no way to tell how HD Radio would perform in

what you would expect. Scan mode will stop on every station and, even if the station is transmitting HD Radio, the receiver will ignore the digital portion.

In "digital only" mode, it will only stop on stations transmitting in digital that have a signal strong enough to decode the digital portion. If no digital signals are present in your location, the receiver will stay in perpetual scan mode, for hours perhaps, unless you interrupt it.

This can create a danger that isn't obvious. If you set it to scan and get distracted with another matter, traffic or a cell phone call, you can forget it is scanning. When it finally comes across a digital station 20 minutes later, your speakers suddenly will come



the mobile environment with a consumer-grade receiver.

With the recent release of Kenwood HD Radio receivers, broadcasters are free to listen to the signals of their neighbors who have implemented digital technology. For the broadcaster whose station uses HD Radio, he or she is now free to drive to the most important (or most troublesome) parts of their service areas and to observe exactly what a typical listener would observe.

Once you have an HD Radio installed in your vehicle, there are two obvious questions: Who is running HD Radio now near me? How does the sound quality compare to legacy analog? The Kenwood receiver can answer both of those questions easily, but there are two simple tricks that make it easier to answer.

Remember that the receivers were designed to be used by motorists, not as test instruments, so you have to trick it a bit. The electronics within the Kenwoods are excellent, but the user interface was designed to do listening, not exploring.

A useful trick

Oddly, there was no indicator on the front panel of the receiver that I tested (Kenwood KDC-V7022) that indicates when a station is transmitting in the hybrid digital mode. So the intuitive approach of putting the receiver in scan mode while watching to see the digital indicator light up isn't workable.

But there is a menu on the radio that give three choices: analog only, digital only or automatic. These modes work the same way regardless of whether you are on the AM or FM band.

In "analog only" mode, the receiver does

alive. Depending on where you left the volume level and how easily you are started, it can surprise you, especially if you are alone in the car.

In "automatic mode," the receiver will stop scanning on all stations and, if the station is providing a digital signal, will lock to the digital. If no digital signal is present, the receiver will lock to the analog.

The "digital only" mode makes it easy to see who in your area is transmitting in digital. If the receiver stops a scan when set to "digital only" mode, that station is transmitting in digital. Not all stations with HD Radio equipment installed are running it at all times. So this is a more reliable method than relying on the belief that a particular station is transmitting in digital.

Another trick

Once you establish who is transmitting digital at this moment, the next question that everyone wants answered is, "How much better does digital sound than analog?" Regrettably, there are no dedicated front-panel buttons that allow you to switch at will between analog and digital so that you can do an A/B comparison.

The choice of "digital only" or "analog only" is buried in a submenu and is not easy to get to while driving. The feel of the menus is more what you would expect to find on a Hewlett-Packard oscilloscope.

The controls do not lend themselves easily to doing an A/B comparison. But another trick gets you to where you need to be. These techniques were arrived at by trial and error and seem to work in most cases; but they are not guaranteed by the manufacturer.

Once you arrive on a frequency, it takes longer for the receiver to "lock up" on the digital signal than it takes to lock up on

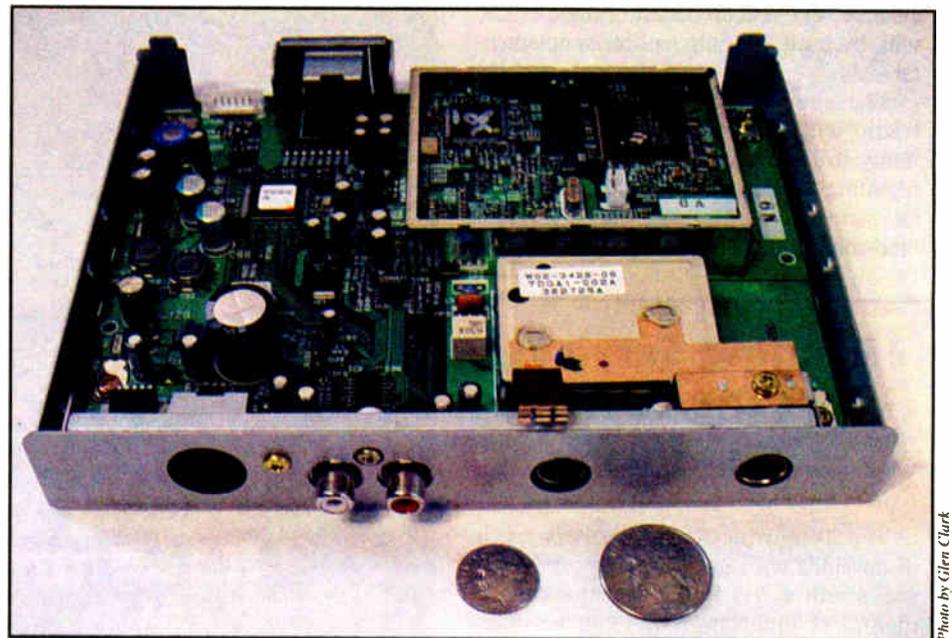
the analog signal. For analog, the average time seems to be under one second. For digital, the average time seems to be two to three seconds.

If you are listening to the station of interest, press the button that changes you one channel up the dial and then immediately press the one that changes you one channel down the dial. It isn't necessary to stay on the new channel long enough to lock up on it. It is only necessary to unlock the receiver from the first channel so that it has to reacquire. The technique is the same on AM or FM.

If you perform the press-up/down sequence, and you get a first tonal balance and, a moment later, you get a second (and better) tonal balance. The first was analog, the second digital.

This gives you the ability to head the digital and analog samples side-by-side. The analog portion will only be for about a second. But this seems to be adequate for making a comparison that your brain believes.

If you want another comparison, just repeat the process. Digital circuits don't wear out, so you can drive down the road continually performing the press-up/press-down sequence.



The Kenwood HD Radio expansion chassis is shown with the cover removed. The heart of the unit is the Texas Instruments digital signal processor chip in the upper right corner.

This is especially easy if you have the lip-stick-sized remote control in your hand. Rather than hunt for the buttons on the front of the receiver in a bouncing car, your finger finds them on the remote control easily without taking your eyes off of the road.

One other point of interest is the "reset" button on the front panel. This essentially is a "hard reboot" of the receiver in case you somehow lock the receiver in a strange mode from which there is no other escape. The reset button allows you to return to the original condition.

The button is small and recessed, so there is little danger of activating it by accident. But it does do some things that you wouldn't expect. It wipes out all of your station presets. Hopefully, future models will incorporate some non-volatile RAM here so that recovering from a lock-up condition doesn't require you to reenter your favorite stations.

Music is like art; whatever you find enjoyable is good. There is no "wrong" music to listen to while forming opinions about how HD Radio performs. However,

some cuts illustrate the clarity of digital better than others.

Generally, cuts with tambourines or cymbals are poor choices because they create a lot of midrange energy that can mask coloration created in the transmission system. A cut with a solo synthesizer riff, because the synthesizer has exceptional purity, is better at demonstrating the lack of coloration introduced by HD Radio.

The demo cut doesn't have to be industrial-strength Euromech. If you have the ability to select the demonstration music that will be played over the air, there are many good mainstream synthesizer cuts, like "White Wedding" by Billy Idol, "Walk Like an Egyptian" by the Bangles and "Sweet Dreams (Are Made of This)" by the Eurythmics.

The first 29 seconds of Van Halen's "Jump" (before the vocal) are worth listening to. So is the synth riff from 3:28 (when the high hat dies out) to the end. If anyone wonders whether these cuts are challenging, listen to the same cuts direct from the CD and then compare it to the output of an FM analog system.

Jackson Browne's "Cocaine" is worth listening to critically from start to finish if you ignore the lyrics and focus on the nuances of the instruments.

I should mention that I have had several e-mail responses to the first installment of this article. Several parties expressed doubt about whether the AM demos to which they

listened last April at the Las Vegas NAB convention were of "broadcast quality." For those who have only been only loosely following the evolution of HD Radio, I should make clear that the compression algorithm has been changed since last April. The sonic performance of the present AM system is worlds removed from, and better than, what was in Las Vegas last April.

Hybrid mode is interim step

Sending digital signals is easy. So is sending analog signals. Sending them both in the same slot of spectrum in a way that they don't interfere with each other is the hard part.

In the race to listen to HD Radio in the field and in manufacturers' booths at trade shows, it is easy to lose sign of the fact that, several years down the road, HD Radio performance will be markedly improved.

For economic reasons, most stations cannot convert abruptly from analog to full

See KENWOOD, page 17 ▶

Kenwood

► Continued from page 16

digital, as there are no receivers in the field. Until a majority of listeners have HD Radio-capable receivers, broadcasters have to continue to provide a legacy analog signal that can be heard on the "installed fleet" of analog-only receivers.

So the first step on the migration path to digital for most stations is the "hybrid mode," the simultaneous transmission of the analog and digital signals.

In the future, when analog receivers are to that day what 8-track tape players are to 2004, there will be no need to continue to transmit the analog signal. Broadcasters will be able to convert to full digital.

At that time, there will be two distinct factors that will make the sonic quality of the HD Radio signal even better. First, there would be no self-interference. That is, there will be no analog signal confusing the digital decoder in weak signal areas, so digital coverage will extend farther.

Second, when the analog signal is taken away as a source of interference to other stations on the channel, the power of the digital signal can be increased. This allows the digital signal to exceed the atmospheric noise where it previously did not. The result, again, is extension of coverage.

I had the opportunity to listen to the Ibiqity AM test transmitter when it was in full-digital mode. This was not planned. It was simply a coincidence that I was driving into the Baltimore area as Ibiqity was running tests. But the Kenwood receiver immediately recognized the full-digital protocol and switched into that mode. The audio quality was impressive.

Some broadcasters have proposed that a few AM stations may want to go to full-digital mode from the very first day. Stations that, because of limited coverage areas, now have no ratings or cash flow and have little to lose would be logical candidates. This may be the kilowatt day-timer on the edge of town that has had many owners, and even more formats, over the last decade.

There is the possibility that a full-digital AM station might capture the same kind of "cult mystique" that FM stations held in 1970. Without expectations for cash flow and profits, there would be opportunity to experiment with new music and new formats.

Additionally, a full-digital AM station might benefit its larger sister station by pulling more HD Radios into the market at an earlier date. If listeners know that there is a station in the market that already transmits the sonically-impressive full-digital signal, it could stimulate interest and digital receiver ownership.

Listening to AM HD Radio at night sometimes will produce results that, if you aren't familiar with the system architecture, can be puzzling. There may be places where you intuitively expect to be able to receive a digital signal and the receiver will not go into digital mode.

Conversely, there may be places where you intuitively don't expect to be able to receive a digital signal, yet the receiver instantly locks up in digital mode. A quick look at the AM spectrum layout can help to make sense of these puzzling results.

The sketch in the diagram (on page 16) shows the spectral arrangement of the AM digital system. There are six sets of subcarriers called "ensembles," each 5 kHz wide.

The power within the ensembles decreases closer to the carrier frequency.

Ensembles E_1 and E_6 in the figure are called the "Primary" sidebands. They carry the L+R information. The data in E_6 is identical to the data in E_1 .

In the event that E_1 is corrupted at a particular instant by an adjacent-channel station on the low side, the chances are statistically small that E_6 will be corrupted at exactly the same instant by an adjacent-channel station on the low side. Because the data in these two ensembles are identical, if either one of them is received correctly, the receiver can continue in digital mode.

Ensembles E_2 and E_5 in the figure are called the "Secondary" sidebands. They carry the L-R information. The data in E_5 is identical to the data in E_2 .

In the past, AM stations were most concerned about the size of their nighttime interference-free contour. While there is

some consideration given to adjacent-channel stations in the calculation of the analog NIF contour, the NIF contour value is determined mostly by the amount of incoming skywave received on the same channel as the station of interest.

When operating at night with HD Radio, stations will now be interested in a more complete picture of what skywave is arriving. One station may have a noisy channel, 10 kHz above its own frequency but a quiet channel 10 kHz below its own frequency. Another station may have two quiet adjacent channels while a third station may have two noisy adjacent channels.

Each of these situations will create a different mosaic of where the AM HD Radio signal can be received at night and where it cannot be received.

Finally, after years of waiting, broad-

casters and consumers finally can own a mass-produced radio that receives both AM and FM digital signals. There will be more models released by more manufacturers soon.

Broadcasters now can judge for themselves just what digital brings to the table. The performance that I observed in a mobile environment was impressive.

Realizing that HD Radio performance will improve further when the hybrid signal is replaced in the future by the all-digital signal, the decision of whether to implement HD Radio gets even easier.

Clark is a consulting engineer who specializes in AM projects. In a previous life, he designed the Texar Audio Prism. Reach him at glen@clarkcom.com.

Tell us about your own experiences with HD Radio. Write to us at Lstimson@imaspub.com. 🌐

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WHUR(FM) Goes HD Radio

by Leslie Stimson

WASHINGTON The theme from the movie "Shaft" with Isaac Hayes was the first song played by WHUR(FM) after it went digital. It had been the first tune aired when the station began broadcasting in 1971.

Howard University's "Adult Mix" music station is broadcasting in HD Radio and analog. The station created a special audio "logo" that proclaims it "Washington, D.C.'s first digital radio station."

Mayor Anthony Williams proclaimed Jan. 21 "WHUR HD Radio Day." Station executives were given a certificate from the city in a ceremony marking the switch.

FCC Commissioner Jonathan Adelstein, fresh from a visit to the CES convention, said at a ceremony marking the change, "We're proud to see WHUR bring digital radio to D.C. They're breaking new ground."

Adelstein predicted other terrestrial stations would follow suit. Radio must go digital because the future is digital, he said. Adelstein, who also is a satellite radio user, said one of the benefits of HD Radio is that it is free to listeners.

He congratulated technology developer Ibiquity Digital and its partners Harris and Kenwood for developing a way for radio to move to digital without disrupting analog signals.

The gear

Their hard work "made it easy for the FCC." He said the agency has had "a key role" in radio's digital future. "Thank you for removing the static from our morning commute."

Ibiquity Digital President/CEO Robert Struble called the commission's support of digital radio a good example of a public-private partnership.

WHUR is broadcasting its FM and HD Radio signals with a Harris

ZDD64HDC 28,000-watt solid-state FM digital broadcast transmitter using the Harris Dexstar HD Radio exciter.

WHUR is using low-level combining with a Harris solid-state transmitter. The HD Radio and analog signals



The system comprises four Harris Z16HDC transmitters combined to accomplish a total power output of 30 kW. The station replaced two older Z10s with the new system.

The program audio, a 44.1 kHz AES3 digital audio signal, is delivered to the transmitter site via a Harris Intraplex STL Plus, a T1-based STL, and then to a Harris ePal, where the audio is synchronized and distributed to the Orban Optimod 8200 FM processor and Harris Neustar HDC codec conditioner.

The processed FM audio is delayed through the Dexstar and feeds a Digit CD FM exciter. The pre-processed HD signal feeds the audio input of the Harris Dexstar FM HD exciter, where it modulates the digital carriers. The exciter's RF outputs are combined and amplified by the ZDD64HDC transmitter.

by WHUR, WASH and WRQX. The stations purchased the combiner and the antenna. The antenna had to be shoe-horned between two TV antennas, according to Dielectric National Sales Manager for Radio Products Matt Leland.

"We had to compress the distance between the layers (of the antenna) in order to squeeze it in between the TV antennas. Even routing the transmission feeding the new antenna was tricky. We had to lay out the system using 3-D computer models," said Leland.

All three facilities are switching to the antenna. Previously, the WASH antenna was on TV Channel 5's tower; WASH had to move when the TV station wanted to install a new, larger, DTV antenna. WHUR and WRQX were using older, separate antennas on the same tower.

The stations decided to free up space and gain leasing opportunities on the tower by sharing an antenna, Dielectric said.

GM Jim Watkins, who rose from the position of chief engineer, said WHUR is in the process of upgrading its stu-



WHUR GM Jim Watkins and Ibiquity President/CEO Robert Struble flip the switch, symbolically 'turning on' HD Radio.

are then fed into a Dielectric constant impedance combiner, where they eventually will be combined with analog signals from Clear Channel's WASH(FM) and ABC's WRQX(FM).

dio automation and studio console to make its entire air chain digital. He estimated the HD Radio portion of the upgrade cost approximately \$100,000 and the rest of the improvements, still

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Watkins hopes to add surround sound to his HD Radio system eventually.

Dielectric is installing new transmission line that will be shared by all three stations. The stations' signals will be fed to the Dielectric Cavity Backed Radiator Panel antenna. WASH is on the new antenna, the others soon will be.

The panel antenna has two levels of three panels each, all of which are used by all three of the radio stations. The antenna sits atop a tower shared

underway, add up to about \$400,000. The station needed a new transmitter and the economics of the conversion to digital made sense, he said.

Watkins hopes eventually to add surround sound to his HD Radio system.

The station's air staff is mentioning the changes to HD Radio to listeners, and the special HD Radio audio logo is used several times an hour.

NEWS MAKER

Logitek Celebrates Silver

by Kelly Brooks

Houston-based equipment manufacturer Logitek marks its 25th anniversary this year. President Tag Borland founded it with partner Scott Hochberg.

While Hochberg has moved on, the private company continues as a provider of digital products for broadcast. The company has 16 employees; it does not reveal its annual sales figures.

Borland spoke with Radio World Associate Editor Kelly Brooks.

RW: How did Logitek come to be?

Borland: (Scott and I) got interested in radio at Rice University, and we started in college radio. Afterwards, we both worked in commercial radio for a short time.

My training was in programming large computers, which was very boring. Radio sounded much more interesting. Scott had the same feelings. He was teaching at a local university. We went in together and decided to make audio mixing equipment because we liked radio — for no other good reason. ...

RW: What is your mission statement?

Borland: (Chuckling) Being a small company, we don't really have one.

Our mission is to manufacture technology-leading equipment in the professional audio industry. That's what we do.

We know radio the best. People have more needs for handling audio with the Internet and so forth. Our products take the ease of computers and apply it to the professional audio market, in order to make the computer age as easy as possible to get into for people buying digital equipment.

RW: Most entrepreneurs can point to one product or decision that really established the company. ...

Borland: We found out in the late 1980s and early 1990s that both the number of companies in analog audio and price margins were declining. There was lots of consolidation going on. We decided we had to make a change in direction.

Digital mixing boards seemed to be the direction where the next big thing was going. It would not have been a good business decision to make analog mixers for many more years. I wouldn't have been able to send my daughter to college selling analog equipment. ...

Had that not gone well, we would not be here today. We knew we made the right choice when we displayed our products and described our philosophy at NAB 1998. ...

RW: Any new directions now?

Borland: I can say that we are improving upon our audio mixer, making it into a good router. We will market that as a router for those who don't need mixing capabilities.

I think in a couple of years there won't be a separate routing industry, because routing and mixing equipment are so similar. Everyone will be operating combination units that are both ...

There was a German company also consolidating mixer and router technol-

ogy, but we were the first company in the United States to see that there would be such consolidation. The rest of our competitors soon unveiled products that were this new mixer/router combo.

With sales of 500-600 units in the United States, we are still leading the volume.



Tag Borland

RW: What do you see for the future?

Borland: In general, products are becoming more complicated.

We made the right choice in the 1990s, and I worry about not anticipating the next big thing. We spent around 20 percent of the last 10 years' gross income on development of product. ...

We moved from a distributor-based sales method to direct sales in the United States, because you have to be a company employee to process the knowledge needed to effectively sell the equipment.

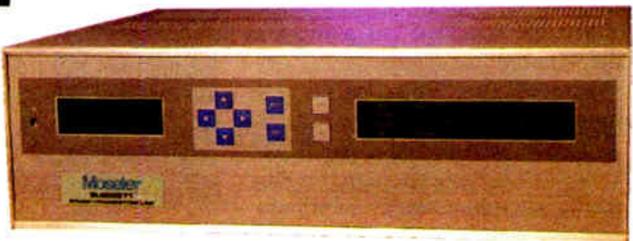
As for the future of digital, consumers expect radio equipment to have

the same progress that they see in the PC industry, expecting our equipment to do more and cost less with each year. Customers expect more features for the same amount of money. Nobody wants to spend any more; in fact they are spending less than what they would have spent 10 years ago. It will soon be cheaper for projects to be in digital than analog.

We are still in for a lot of consolidation and changes. ... There will be fewer manufacturers because some companies won't be able to keep up with the fast rate of change in the products.

If you can't keep current with new features, then you're uncompetitive and no one will buy your product. I see fewer companies selling complicated equipment, and fewer sales outlets and manufacturers. 🌐

Starlink SL9003T1 Digital T1 STL



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Opt for compatibility and convenience with the Moseley Starlink SL9003T1! The Starlink gives you digital transport of 20 kHz IBOC-ready program audio channels, voice channels for phones or data circuits for Ethernet, plus transmitter control, all over a single low-cost digital link.

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WiFi Makes Inroads in Radio Reporting

For the Roving Radio Street Reporter, It's Mostly Coffee Houses and Fast-Food Joints

by Craig Johnston

The cellular phone revolutionized radio news reporting by giving field correspondents the ability to file stories easily and economically from almost anywhere.

IEEE 802.11b — wireless fidelity or simply WiFi — may be poised to revolutionize radio reporting again.

In short, WiFi is wireless broadband Internet access; it works up to about 300 feet from the WiFi transceiver antenna. Scripts and audio files can be e-mailed back to the base station; or with special software at both ends, audio files can be transmitted directly.

While covering the John Muhammad sniper trial in Virginia Beach, Va., AP Broadcast Senior Correspondent Thelma LeBrecht used WiFi in the court's listening room to file many of her audio and broadcast wire reports.

"As soon as the judge ruled that Muhammad could act as his own attorney, I instantly could send a 'read-me' back to the broadcast newsroom, and the world editor had an update on the broadcast wire," said LeBrecht.

Another AP reporter, White House Correspondent Mark Smith, traveled with President Bush in Asia last fall. He was able to use WiFi to file his stories from the White House filing center in Tokyo.

As incoming president of the White House Correspondents Association, Smith has been a leading advocate of having WiFi access available in all White House filing centers during presidential travel.

And therein lies one of the rubs with WiFi. Early cell-phone service coverage areas were limited and spotty. The same is true for WiFi today: instead of being widespread, WiFi access is spread out.

And it's Balkanized. Think of early cell phone service without roaming.

Looking for hotspots

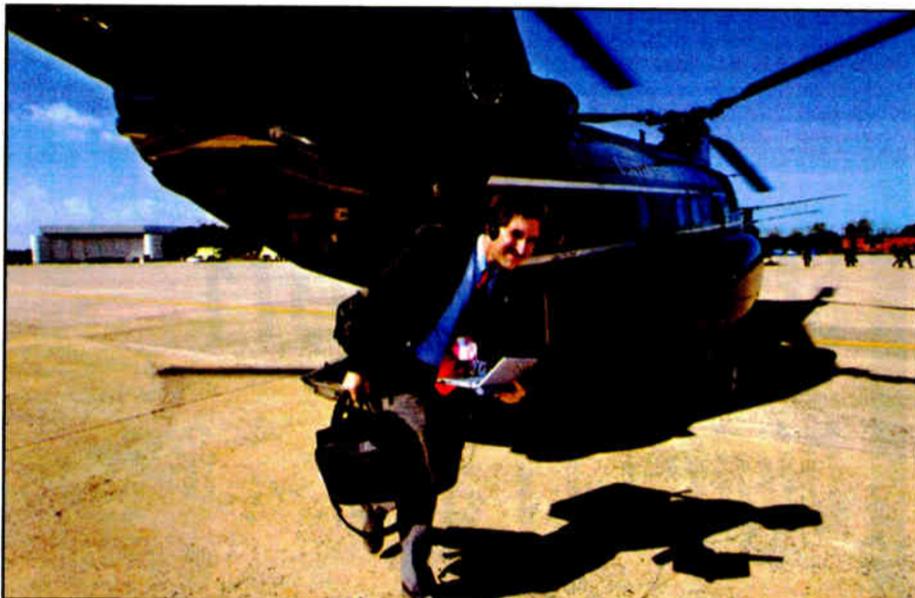
We did a search of WiFi access points, called hotspots, within two miles of our Bellevue, Wash., home office (www.pcanswer.com/hotspots.htm). We found six: one McDonald's, three Starbucks and two Tully's Coffee. The McDonald's and Tully's hotspots were on Cometa Networks, serviced by AT&T Wireless; the Starbucks were on the T-Mobile Hotspot network.

A third WiFi provider, Boingo, operates nationwide including in the Seattle area, though none of its locations showed up in

that particular two-mile radius search.

An account for one of the three providers won't work on either of the other two, though an AT&T/Cometa account will work at any other Cometa WiFi locations using other Cometa service providers such as iPass and Sprint.

"The industry will be forced by the



AP's Mark Smith used WiFi when he covered President Bush's recent trip to Asia.

users and the service providers to move toward roaming, and we all will embrace it," said John Balbach, director of marketing and communications for Cometa. "But at the moment the business case isn't strong enough. We're all focused on creating the networks."

There are a number of service options. With T-Mobile, the two plans that seem most likely to be used are \$9.95 per day or \$29.95 per month (on a 12-month contract). We found that in this local area, bundling a WiFi account with T-Mobile cell-phone service resulted in a \$10/month savings on WiFi.

As this article was written, AT&T Wireless had a special monthly rate of \$11.95. And there are specials available from some of the locations, where a coupon for a number of minutes of service is given with a purchase.

There are free WiFi service options as well. Expanding our search to a five-mile radius found a branch of the county library where WiFi access is free to those with a library card. Some restaurants offer free WiFi while dining.

And there is the chance that a user will find an unsecured WiFi network signal emanating from someone's home or busi-

ness. In some cities, WiFi prospectors leave chalk symbols on the sidewalk where they have discovered free, unsecured WiFi access. Legal use of such private WiFi networks is questionable, at best.

Filing, not live

But for the roving radio street reporter, it's mostly coffee houses and fast-food joints.

Before an image of a wide-awake but overweight correspondent starts creeping into your mind, note that WiFi service

WiFi Hot Spots By U.S. City

City	Hot Spots
New York	770
San Francisco	458
Chicago	265
Seattle	264
Austin, Texas	235
Washington	213
Atlanta	198
Houston	196
San Diego	189
San Jose, Calif.	187

Source: CNET

nection and transmission device, as well as provide functions like e-mail and script typing.

Prophet Systems has developed one such device, the NexGen PocketGen software for the HP iPAQ Pocket PC. Petschke and Jim Edwards, assistant engineer for the Clear Channel's radio cluster in Portland, Ore., both tested the PocketGen system recently.

In demand

Both Petschke and Edwards said they had the units up and running in short order, and put the PocketGen systems out in the field for use by radio reporters. For both reporters, it was their introduction to field WiFi use for filing field stories as well as to PocketGen.

Brian Calvert, reporter for KOMO, had an immediate reaction after his first



Prophet Systems PocketGen Software on an HP iPaq

works just as well from the parking lot outside a business as from a table inside.

Rich Petschke, radio technology manager for Fisher Broadcasting in Seattle, did a test for this article. He found filing stories via WiFi worked fine from his vehicle a hundred feet away from one typical coffee house establishment. The commonly understood limit is about a 300-foot radius from the WiFi antenna.

Petschke's test sent an audio clip as an uncompressed .WAV file back using the 802.11b WiFi standard. He found that clip took twice real time to transmit, but Petschke said a good MP3-compressed audio file could be transmitted at about one-quarter real time.

Doing live radio reporting using WiFi does not appear to be feasible because of the nature of sending packets of data over the Internet, which is WiFi's core technology.

A laptop PC with a built-in WiFi or PCMCIA WiFi card is one way to use WiFi for filing stories, although using a laptop as a field recorder seems cumbersome. However, new pocket-sized devices are coming to market that can act as recorder, sound editor and WiFi con-

day with the PocketGen: "I want one."

Michael Desmond, reporter for Portland's Clear Channel stations, noting the relative scarcity of WiFi hotspots in the city's outlying areas, said he would still have to rely on his laptop and cellular modem back in the truck for filing a lot of his stories from the field.

"But say I was in downtown Portland," said Desmond, "a situation where it would be useful would be if we had a protest and the president's coming, there's a bunch of protesters out there. I can record them doing their thing, and then just go close to a Starbucks ... just send it in from there without having to go back to my truck."

Aside from not having to return to the truck to file, WiFi's advantage over cellular for data transmission is transfer speed. WiFi equipment incorporating the newer 802.11g standard allows even higher data transfer speeds than noted here, while remaining compatible with older 802.11b equipment in widespread use.

A recently approved new wireless standard, 802.16, also known as WiMax, promises a 30-mile footprint of service

See WiFi, page 21 ►

Product Showcase



Model DAI-2 Dialup Audio Interface

- perform unattended remote broadcasts
- DTMF operated controller with relay outputs
- fully programmable output on any key press
- momentary and/or maintained relay outputs
- four logic inputs with programmable output
- balanced audio input and output with ALC

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more information: www.sinesystems.com



Companies with news of unusual or prominent sales should e-mail information and photos to radioworld@imaspub.com.

Signal Media chose Creative Studio Solutions to build and install a production studio in Little Rock, Ark. The studio uses a Wheatstone D-8000 console. Vision Quest Consoles supplied custom furniture. CSS made a Console Interconnect XLR Patchbay for production and used Stardraw documentation software. ...

Digigram installed an EtherSound network in Paris for Radio France's production of "Carmen" at an 80,000-seat venue, broadcast by France Inter Radio. The technology distributed audio from the front-of-house console to 16 loud-speaker stacks in the arena and a 100-volt audio system.

Norwest Productions, an Australian audio companies, used EtherSound for sound reinforcement at the Rugby World Cup ceremonies. ...

Moseley said its Maxlink 5.8 GHz bidirectional data link is used by Ralph Brancato, chief engineer at KCLC in St. Louis. The Maxlink is matched with an SL9003T1 T1 STL system to transport two HD-Radio AES digital stereo program channels to the transmitter and to backhaul a stereo pair to the studio plus interconnecting the transmitter remote control.

Dave Abdo, DOE at WKBE in Glens Falls, N.Y., uses the Maxlink with a T1 STL to transport news channels to the main studio from a remote site. ...

Logitek said a new Australian Broadcast Company facility in Ballarat uses a Digital Audio system. Logitek products are distributed in Australia by Maser Technology Group.

Separately, Logitek shipped orders to CBS/Infinity in New York (an Audio Engine and two Numix consoles for corporate headquarters in the Viacom building); NBC Radio, St. Vincent's and the Grenadines; and Calvary Chapel, Fort Lauderdale, Fla. ...

George Corso at WPOW(FM), a Beasley station in Miami, used a rented pair of Comrex Matrix codec/mixers and a GSM module for live broadcasts from last fall's World Series. Silver Lake Audio recommended the approach. ...

Wicks Broadcast Solutions signed a deal with Corus Radio to provide business system software and Control Tower

Reporting and Data Consolidation systems into stations in Canada.

Wicks also won a contract from Infinity Broadcasting to provide broadcast management and Control Tower systems for that group's 185 stations. And it won agreement from Regent Communications to integrate DeltaFlex 4 software into 76 stations. ...

Cox Radio added Broadcast Electronics Fxi 60 FM exciter in the Tampa Bay/St. Petersburg, Fla., markets. The exciter complete an upgrade project at FM stations WSUN and WWRM.

Separately, Susquehanna Radio added a sixth BE transmitter to its HD Radio equipment acquisition list, ordering an Fmi-703 HD Radio transmitter for WWWQ(FM) in Atlanta, along with an Fxi 60 exciter and HD Radio signal generator. ...



Comrex Matrix codecs with a GSM module helped WPOW(FM) handle three days of live broadcasts at last fall's World Series.

Prophet Systems Innovations

"We've identified our needs and we're absolutely convinced the solution is NexGen."

Gordon Carter
WFMT-Chicago

"NexGen is doing exactly what we expected. We're extremely pleased."

Clint Barrick
KOHM
Texas Tech University

NexGen "increases operation efficiency" and "allows our staff to be more productive."

Jim Clark
KBYI
Brigham Young
University-Idaho

"All I can say about MusicGen is WOW! MusicGen is the new, official music scheduling system for my company and syndicated programs."

Jason Davenport
Knight Productions

"I have used Musicmaster for 10 years and MusicGen is a lot easier."

Michael Isaacs
Menlo Atherton
High School

"When I showed PocketGen to our reporters - they wanted to know how fast I could get them one!"

Rich Petschke
Fisher Radio

NexGen Radio Automation

Our radio automation system, NexGen Digital provides several hardware and software configurations scalable to any size station, and flexible payment and purchasing options including buyout, monthly, annual and others, making it the perfect solution for colleges, religious, public, small stations and groups. Support and installation solutions are available that fit your needs and pocketbook. Updated product, development and support information is available online and via email bulletins.

PocketGen

by Prophet Systems



PocketGen News Mobility with PDA and Wi-Fi Shown with HP h5550 iPaq and professional microphone.

Hardware options are available.

* Copyrights are the property of their respective owners.

PocketGen software, the absolutely best way to transfer digital files from your remote location to your station. Our new PocketGen software with a wireless option provides recording to hand held devices with the ability to transfer files to NexGen Digital as well as many other automation systems. Send actualities wirelessly. Just record your audio and hit transfer. It's that simple.

MusicGen

With MusicGen, our music scheduler that works with most digital automation systems, anyone can schedule like a pro. MusicGen is easy to use, yet allows you to create the most complex music rotations. New features are being added constantly, and now include weekly automatic updating, so your software always has the latest features, like the ability to generate an MP3 playlist. Download MusicGen from our website and check it out for yourself.

WiFi

Continued from page 20 from an antenna location. However, it is likely to be years in its infrastructure rollout.

As for WiFi, wireless industry analysts offer optimistic reports on the growth in the number of hotspots. But unless carriers build the same sort of WiFi coverage infrastructure as cell-phone service itself, it doesn't appear WiFi will become the one-and-only way to shuttle audio and scripts back to the radio newsroom.

It does appear WiFi can become a valuable arrow in radio news' quiver. ...

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Radio on the Receiving End

New Technologies Are Forcing Radio Managers to Think Further Ahead

by Tom Vernon

It's enough of a challenge to keep up with the lightning-quick advances in broadcast technology, but radio station managers also need to keep an eye on developments in consumer receivers.

round sound to go the distance for three reasons: the ease with which surround sound can be put on conventional audio CDs, the widespread deployment of surround sound in home theatre systems, and the expected growth of HD radio.

Industry experts seem to have concluded



A Visteon receiver displays navigation information via HD Radio data.

Many innovations were unveiled at the recent CES show in Las Vegas, and they remind us that issues such as digital asset management, repurposing content and future partnerships between traditional broadcasters and newer wireless entities depend to a large degree on initiatives in the consumer radio market.

Many of these advances force us to rethink the very definition of the term "receiver."

One overarching trend that managers need to watch is telematics, the merging of computer and telecommunications technologies. As more bandwidth becomes available in both wired and wireless media, data and information streams are being added to the existing entertainment channels, offering the potential of new revenue streams for broadcasters.

Convenience vs. customization

Broadcasters contemplating trends in receivers should understand that there are two distinct groups of listeners, according to Michael Bergman, senior manager of digital broadcast at Kenwood. Those who seek convenience prefer to use radio as a background service. Many of these "convenience" listeners have purchased Sirius or XM satellite service.

"We expect that radio will re-energize older listeners with satellite broadcasting," Bergman said.

A different group of listeners prefer customization, and will download songs and create their own playlists to get what they want. MP3 car stereos with hard drives and digital audio players such as Apple's iPod or the Rio Cali are must-have items for this group.

Look for surround sound to come to radio in the next five years, following close behind HD Radio. "HD Radio carries surround sound better than FM," Bergman said, "because multipath interference can seriously degrade the surround sound signal."

While quadraphonic FM broadcasts and four-channel recordings failed to win consumer acceptance, Bergman expects sur-

round sound to go the distance for three reasons: the ease with which surround sound can be put on conventional audio CDs, the widespread deployment of surround sound in home theatre systems, and the expected growth of HD radio.

Industry experts seem to have concluded that both XM and Sirius are here to stay, and the medium is more than a passing fad. Dr. Robert Shoemaker, business line executive for the wireless business line at Delphi, said that his company has sold 1.8 million vehicular satellite receivers, most of them in the last year.

Looking forward, Shoemaker said that because music programming seems to be established, both satellite providers expect to be adding services.

"By integrating a video decoder into their receiver, Sirius plans on delivering movies and other entertainment media for the rear display common in many SUVs."

XM is considering the delivery of live traffic information and financial data over some of its unused bandwidth.

INR, or Integrated Navigational Radio, is under development, combining a conventional onboard navigation system with traffic information services. Shoemaker said, "A traditional navigation system displays the shortest path between points A and B, but an INR system will also look at traffic information and plot the quickest route based on current road conditions." Bergman cautions that some proprietary issues regarding ownership of digital maps needs to be worked out before INR can be deployed fully.

Fill 'er up

The wireless Internet, delivered via WiFi, will have a growing impact on the mobile receiver marketplace. When combined with hard-disk storage, it will be possible to download songs on the fly.

"At gas stations of the future," Shoemaker said, "you may fill your 'bit tank' with new releases at the same time you're filling your gas tank."

HD Radio continues to gain momentum. Bill Whikehart, technical fellow for digital radio at Visteon, said it is coming to car receivers in two waves.

"Core HD, which we have right now, delivers high-quality audio with text for artist, song titles and call signs. In the next wave, the additional data capacity of HD

will be used for other applications such as reporting traffic events in real time."

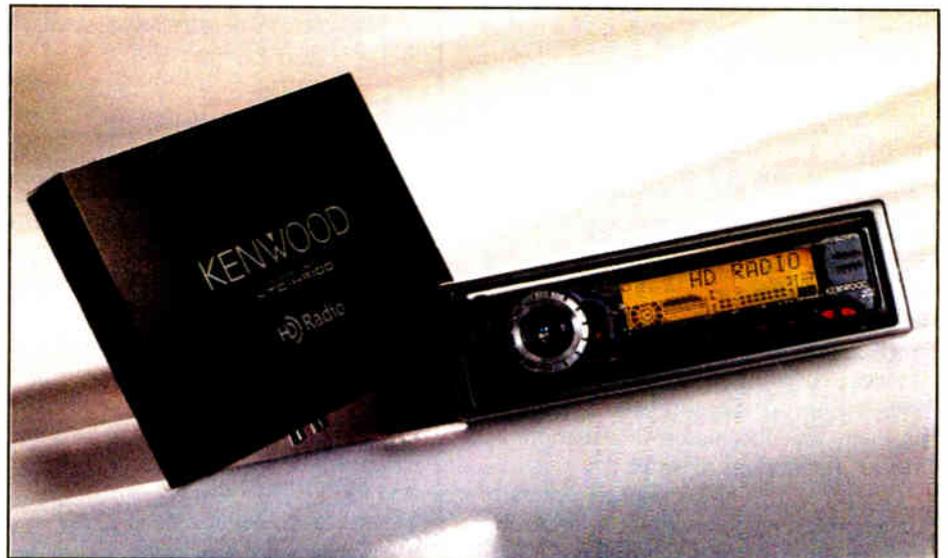
In such a system, Whikehart said, the exact location of a traffic event can be placed on a map along with a brief text description noting the nature of the event and expected duration.

Another application of HD Radio's additional capacity is to provide a secondary audio channel. Much of this new receiver technology will be manipulated via voice control, permitting safer, hands-free operation.

Software radio

Changes or uncertainties over transmission standards have hindered receiver manufacturers, who may be reluctant to commit to large-scale production until standards are finalized and a sizable market exists. Software radio alleviates many of these concerns, said Vanu Bose, president and CEO of software radio developer Vanu Inc.

"A software radio is a wireless communications device in which all of the signal processing is implemented in software. By simply downloading a new program, a software radio is able to interoperate with different wireless protocols, incorporate new services and upgrade to new standards."



Kenwood KTC-HR100 HD Radio Tuner and HD Radio-Ready CD/Receiver KDC-MPV5025

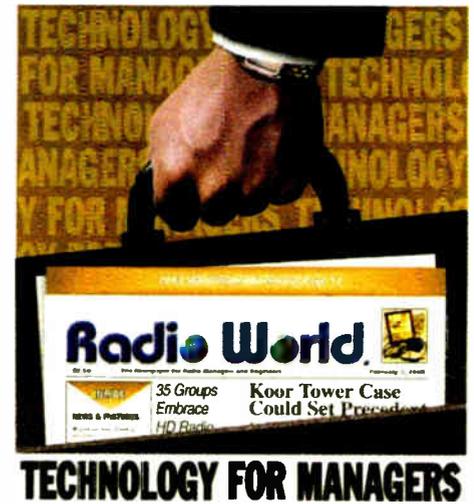
Software radio may be used, for example, to implement multimode AM-FM-HD Radio-XM-Sirius radios, or to handle specialized media delivery systems. Bose adds that this is a real advantage in car radios, where there is a five-year delay from design to installation. Using software radios, features that weren't available when the receiver was designed can be downloaded on the assembly line.

Another advantage of software radio is the potential for mass customization by downloading different standards into each car.

Digital abroad

Spurred by the recent war and interest in international news, sales of shortwave receivers continues to grow, both domestically and globally. International broadcasters, along with many European AM and long-wave stations, are transitioning to digital using the nonproprietary Digital Radio Mondiale technology.

DRM offers advantages over analog transmission such as enhanced audio quality and the ability to alter transmission characteristics dynamically to accommodate propagation changes. The technology is not without problems however, said Larry Magne, editor of



"Passport to World Band Radio."

"Shortwave radio's great advantage is that the signal always gets through, but DRM signals are easily jammed, so the future of the technology is uncertain."

Other difficulties lie on the receiving end. Radio manufacturers are faced with the challenge of designing affordable multi-mode DRM/analog receivers. Magne cautions that the vast majority of shortwave listeners are in developing countries, with little money to spend on high-tech receivers if their analog radios suddenly become obsolete.

Software radio technology might make multi-mode world band radios more afford-

able, but lacking Internet access, upgrading them would be extremely difficult. Without some forethought, the net effect of DRM to the international broadcasting community may be to alienate a large number of shortwave listeners and deepen the digital divide between developed and developing nations.

New meaning

The coming of ubiquitous 24/7 broadband delivery of digital content poses many challenges and opportunities for broadcasters. Most important, the term "receiver" must be redefined.

As more listeners, particularly in the critical 18-to-34 demographic, get their news and entertainment from a wireless Internet connection, new partnerships may be formed with local cellular outlets and ISPs. Broadcasters may revamp their facilities to offer traffic information to INR providers. Pre-packaged playlists for download may help radio broadcasters attract the "customization" listeners.

If delivery of programming information and content to PDAs becomes commonplace, both managers and engineers may need to become more familiar with programming environments for mobile devices. 

Inexpensive Backup Solutions

by John Bisset

I usually don't write here about a product I also sell through my "day job," for obvious reasons. But with permission of the editor of Radio World, I'd like to share information about a product that may give *Workbench*

step to executing a reliability plan that keeps you on the air. This topic, in fact, was discussed at the NAB Radio Show's Transmitter Workshop.

How much does this approach cost? It's cheaper than you might think.

Although you can piece this together

five-year warranty on the materials. The discounted price point on the 1-5/8 version is around \$500. The 3-1/8 kit runs about \$600.

This is cheap insurance when you consider the coverage a 30-watt exciter can provide. If you've got a newer 50-watt exciter, you're that much more ahead of the game.

of electricity.

Don't be lulled into complacency that this is just a summer "lightning" problem. Ice on power lines, or fallen trees laden with ice, make this a winter issue, too.

Let's say you don't have a backup transmitter, and you blow a hole in your plate blocker or lose a rectifier stack, or your tube bites the dust. Getting the exciter on the air quickly will make you a hero in the GM's eyes, especially when

she counts up the make-goods she can avoid due to your planning.

Having spares will help. I made it a policy that when transmitter parts failed, I bought two: one for now, the second to keep on the shelf for the next time. Perhaps you do the same. Stations with older transmitters can develop a nice spare parts kit as components fail.

The kit is available from the factory as well as major distributors. This includes BE, BGS, Broadcast Connection,

Geisler, Harris, RF Specialties and all the SCMS offices. Contact your preferred vendor and ask for the Emergency Cable Kit discussed here.

★★★

See WORKBENCH, page 26 ►



Fig. 1: An Emergency Cable Kit will get you back on the air with exciter power. The GM will appreciate your resourcefulness.

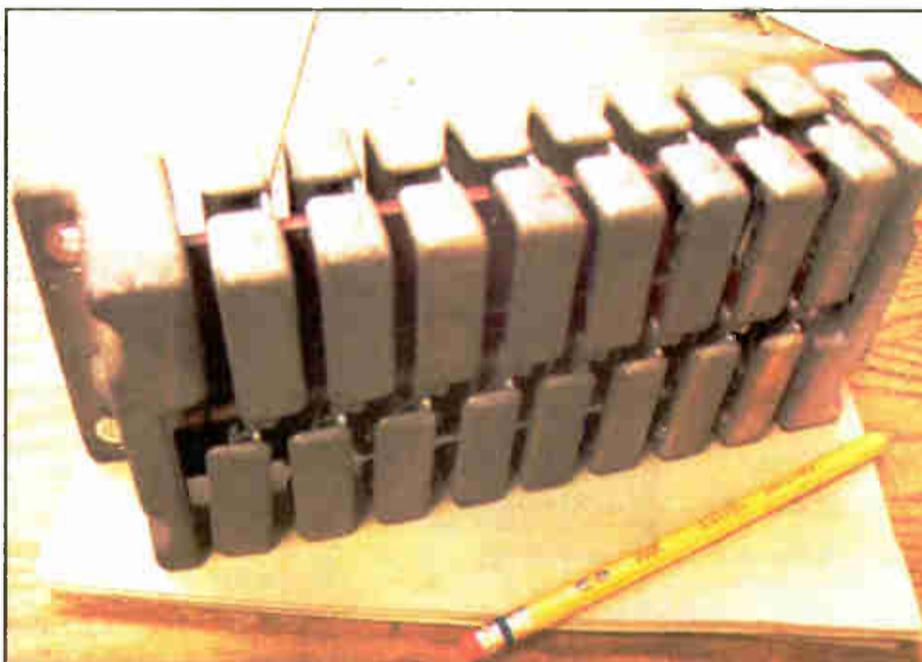


Fig. 2: A spare rectifier stack can speed repairs on a transmitter with a damaged power supply.

readers a bit more peace of mind.

Given the catastrophic calamities experienced by some engineers over the past couple of years, the topic of reliable backup systems is a popular one.

Simply having the means of getting your exciter on the air with a reducing cone and a length of 1/2-inch coax is an important first

yourself, Dielectric Communications, my employer, offers two versions of an Emergency Cable Kit for 1-5/8- or 3-1/8-inch EIA flanged line. The kit is available from the company or its distributors. It consists of a step reducer and 25 feet of 1/2-inch foam line, with Type N male connectors installed on each end. The kit has a

This doesn't sound like a lot of power, but when fed into an antenna 300 to 500 feet in the air, the coverage is amazing.

So when does such an emergency kit come in handy? If you don't have a backup site at a different location, and your transmitter operates on three-phase power, you're dead in the water if you lose a phase

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The makers of VoxPro PC now have a great introductory, two-track digital audio recording software package that can be used on any laptop or desktop PC using most sound cards, for fast, easy editing! VoxPro E2 lets you cut your audio and get it on the air right away, at a great low price! **Features:** records instantly in any mode; shows file most recently recorded in sound window ready to edit; imports and exports most popular file types including .wav and .mp3; records and plays back in stereo and mono; in two-track mode automatically separates host/caller talk-over with "Voiceslip"; much more. Get a FREE trial download now at www.bswusa.com!

Free trial download!

VOXPROE2 List 179⁰⁰ **149⁰⁰**

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Limited Edition Koss PRO4AA Headphone Only \$49.95!

Incredible Offer! BSW purchased this special production run of the classic Koss PRO4AA headphone especially for our customers. This time-tested headphone is still the choice of broadcast professionals, due to its rugged construction, comfortable fit and wide frequency response. Gel-filled ear cushions provide a complete seal, resulting in excellent isolation from ambient sound. Frequency response is 10 Hz-25 kHz; impedance is 250 ohms; cable is 10 ft. coiled, enters on the left side and is hard-wired with a 1/4" connector! Save \$30 over the standard model price and upgrade your classic PRO4AA headphone - order today! Limited availability. Bulk packaged without box or instruction manual.



PRO4AA-B List 99⁰⁰ **49⁹⁵**

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...will look a lot more like this stock photo we found if all of you immediately go to your computer and place an order online at www.bswusa.com.



Affordable Shure Condenser Mic

The Shure KSM27 is a side-address cardioid condenser microphone. The KSM27 has an externally biased, 1-inch diaphragm, extremely low self-noise, and an extended frequency response, with extremely uniform polar response and superior common mode rejection and RF suppression. **Features:** subsonic filter eliminates rumble from mechanical vibration below 17 Hz; switchable 15 dB pad; 3-position switchable low-frequency filter helps reduce unwanted background noise or counteract proximity effect; integrated three-stage pop protection grill; internal shockmount reduces handling noise.



KSM27 List 575⁰⁰ **299⁰⁰** **SHURE**



Affordable, Quality Voice Processor

The dbx 286A is an inexpensive way to get really great-sounding vocals. **Features:** studio quality mic preamp with phantom power; compressor; de-esser; patented high-frequency and low-frequency detail controls; high-pass filter; expander/gate; balanced mic and line inputs; insert jack; balanced XLR inputs; balanced 1/4" TRS outputs.

286A List 299⁹⁵ **199⁰⁰**

dbx



Flexible 32-bit Multi-Effects Processor

The powerful new Yamaha SPX2000 stereo multi-effects processor features Yamaha's new advanced "REV-X" reverb algorithm, generous effects and reverbs, and a 32-bit, 96 kHz DSP. A 5-color LCD backlight features different colors for different effects groups, and user banks are assignable. **Features:** 24-bit A/D-D/A; 3 levels of security locks; balanced XLR, unbalanced 1/4" AES/EBU I/O, BNC word clock input, MIDI and USB connectivity.

SPX2000 List 1,249⁰⁰ **999⁰⁰**

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(a \$614 value)

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no-nonsense unit with plenty of usability, the new Audioarts R55 console has 12 channels and 4 busses and offers a monitor module with program, audition, pre- and post-mono fader outputs, cue and much more. All audio connections are via DB-25 connectors, and the console features a 16-bus interbridge. These are crimp-style DB-25s, so no soldering is required, and they are included for easy installation. **Features:** built-in cue speaker/amp, program and audition busses plus two mono output busses. Right now, the console is available with your purchase. Hurry, while supplies last.

OR PRICE



DVD Player with RS-232

The rackmountable Tascam DV-D6500 is a professional yet affordable DVD player with RS-232 control, true progressive scan video and multiple-format playback capabilities, making it ideal for studio use. The RS-232 control offers transport control, machine set-ups, counter data, and disc format data. The optional 3500J wireless remote is also included. 2U rackmountable unit.

List 599⁰⁰ **499⁰⁰**

TASCAM

Small, Rugged Powered Monitor

The popular 6301BEAV by Fostex is a small, portable, powered monitor that delivers loud, impressive sound. Alone or in pairs it's great for any monitoring situation where space is limited but you don't want to compromise on quality or volume. Rugged construction assures reliable use. **Features:** magnetically-shielded speaker; XLR and 1/4" inputs; built-in 10W amplifier. Priced as each.



List 189⁰⁰ **179⁰⁰**

Fostex



Heavy Duty Mic Boom with Wire Channel

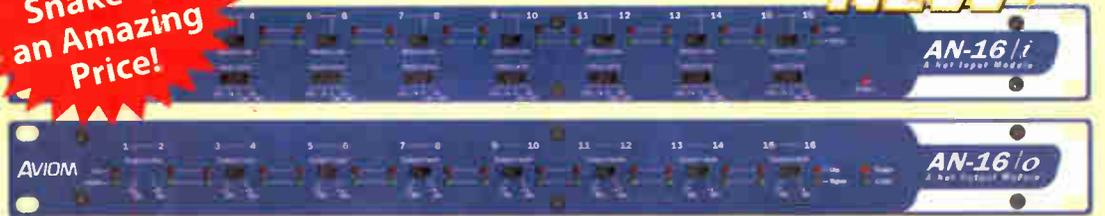
The OC White 61900-BG ProBoom Elite mic boom is extremely well built to hold any studio mic quietly in position. The microphone wire is hidden by an exclusive wire channel with a full-length top cap for quick and easy mic wire installation. A new 15" riser designed to fit behind VGA and nearfield monitors provides an invisible vertical wire channel, which is prewired to an XLR female connector, set-screw removable. Three feet of pigtail extends from the rubber-cushioned base for the user to wire as needed. Only premium-quality, highly elastic music wire springs are used on the 61900-BG for smooth, silent motion, engineered for the rigorous needs of broadcast professionals.

61900BG List 199⁰⁰ **179⁰⁰**

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Powerful, Inexpensive New Audio Routing Solution

The Aviom AN series allows up to 64 channels of high resolution audio to be fed to an unlimited number of locations via off-the-shelf Cat-5/Ethernet computer cable.

The AN16I input module accepts 16 analog inputs and sends the signal in 24-bit digital audio via Cat-5 cable. At the receiving end the AN16O output module converts the signal back to analog output, and multiple AN16O units can be daisy-chained with Cat-5, allowing unlimited duplication of outputs. In addition, the built-in A-Net Expansion jack allows two units to be networked for 32 channels through one cable.

The AN16SB System Bridge combines 64 channels from any combination of 8 I/O units into one Cat-5 cable, allowing easy routing of multiple configurations of audio (32x32 send/return, 64 in either direction, or 16x48/48x16) anywhere you can run Cat-5. Call to learn more today.

AN16I	List 899 ⁹⁵	810⁰⁰
AN16O	List 899 ⁹⁵	810⁰⁰
AN16SB	List 249 ⁹⁵	224⁹⁵



24-bit Profanity Delay with Automation Control Interface

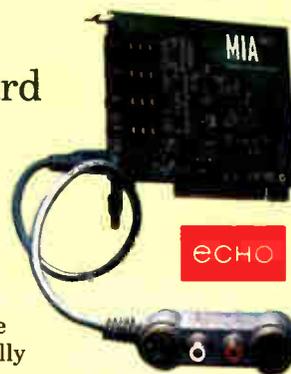
The AirTools 6000AT is a 24-bit digital delay unit for live broadcast that prevents unwanted profanity or comments from reaching the airwaves. Engineered by Symetrix, the AirTools 6000 offers advanced delay technology with up to 20 seconds of user-definable delay at a full 20 kHz range of stereo bandwidth, digitally stretching the broadcast audio so that when unwanted comments are dumped from the air,

the programming continues on, uninterrupted and without a gap with no unwanted pitch shifting. The 6000's Automation Control Interface offers the ability to trigger automation changes or control a router with 'delayed' contact closures. The AirTools 6000 brings world class profanity delay within the reach of any broadcaster. Call for BSW sale price.

6000AT List 2,299⁰⁰ **CALL airTOOLS**

Audio/MIDI Interface Card

The Echo MiaMidi is a professional, high-performing audio/MIDI interface card with unique "virtual outputs" - it appears to software to have eight separate outputs, which are actually mixed down digitally to the physical outputs using a software-based console interface and onboard DSP. **Features:** two balanced 1/4" analog I/O; +4 dBu or -10 dBv analog I/O on each channel; 24-bit/96 kHz converters with multiple sample rate support; 24-bit coaxial S/PDIF digital I/O; Motorola DSP; support for WDM, ASIO and GSIF; low-latency drivers.



MIAMIDI List 249⁰⁰ **199⁰⁰**

Five Headphones for \$89.00!

Yes, it's BSW's Exclusive Money-Saving 5-Pack Headphone Deal! The Sennheiser HD202's sealed-ear design keeps the beefy bass and translucent highs in your head instead of the room and isolates you from outside sounds. These headphones are very comfortable even for prolonged use due to their ultra-lightweight design. Ear pads are durable "leatherette" and replaceable, and the earcups are removable - great for single-ear monitoring! 1/8" mini connector with 1/4" adaptor included. Cord length is a generous 8 feet. 32 ohms impedance.



HD202PKG List 149⁷⁵ **89⁰⁰**

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Workbench

► Continued from page 23

In my contract engineering days, one of my associate engineers prepared a unique cable assembly that lends itself to this discussion of backup redundancy. You may want to consider it.

Our customer was a small-market Class A FM, with a single-tube transmitter and no backup. By adding a four-port transfer switch, the transmitter output was fed into one port, and the antenna feed to the diagonal port. That left two ports unused. The exciter was routed through the unused ports of the transfer switch and back into the transmitter. Low-loss cable was chosen to minimize line loss through this run.

In normal operation, the exciter fed the transmitter through two ports of the switch. The transmitter similarly fed the antenna through the other two. When the transmitter failed, the switch was transferred so the exciter now fed the antenna directly.

Because the switch was interlocked, there was no way the transmitter could be brought up in this "emergency feed" mode. That is the caveat: You must properly interlock the transmitter so the transmitter does not operate without excitation or a load in

the "emergency feed" mode.

With a remote transmitter site, this backup system worked well for many years until the station bought a new solid-state transmitter. The tube model was kept for backup, and the RF switch was already in place.

The only drawback to this "backup" was that the transmitter could not be tested while the exciter fed the antenna — not a problem, because the most common failure was a snake or mouse shorting out the power supply. While the exciter was on the air, the inside of the transmitter was inspected, the dead animal was removed and the transmitter usually came right up after transferring the switch.

I'll be the first to admit this was cheap and dirty, but it worked; and for this small-market station, it was a lifesaver.

★ ★ ★

If you don't have the budget for a transfer switch, consider a patch panel. These manual panels give you a less-expensive way of routing main and auxiliary RF paths.

Do you have an old antenna lying on the ground at one of your sites? Consider using it as a backup. Check with the manufacturer about removing a bay and retuning the antenna for single-bay use.

Better yet, look into budgeting for a new

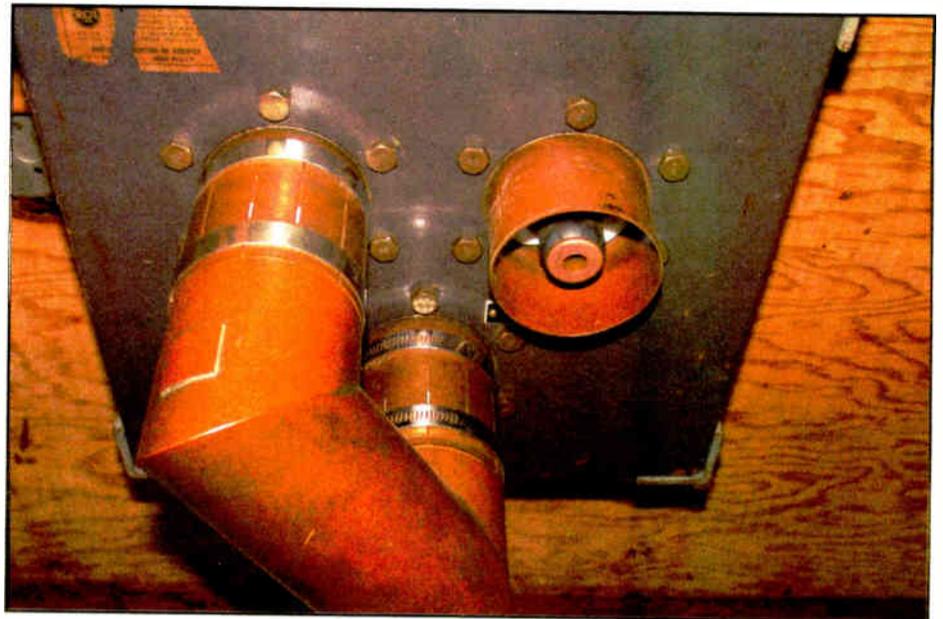


Fig. 3: Even a patch panel will get you back on the air quickly.

wideband single-bay for your backup. The wideband tuning may permit several FM channels to use the same antenna in an emergency. Granted, only one station signal can be fed at a time; but with multiple sites, the chance of losing all sites is not high.

Several FM transmitter manufacturers have designed frequency selection panels to switch exciter frequencies automatically. To really cover your market, feed this selection output into a 10 kW solid-state transmitter.

Backup systems don't have to be fancy, just reliable. During an overnight maintenance session, intentionally drop a breaker and see what happens. If you have backup system instructions for your air staff, they should follow them flawlessly. With all the auto-programming available on remote-control systems like the Burk and Sine, you can leave the jock out of the picture altogether when it comes to selecting your backups.

★ ★ ★

Let me leave you with one bit of advice. Before you start depending on backup systems, make sure you understand them.

An engineer related that he toured a major-market station one afternoon. The new chief wanted to show him how quickly the transmitters would switch. Both were operating, the main into the antenna and the alternate main into the dummy load.

He hit the transfer switch control panel and — poof — smoked all four ports of the switch. The switch contact assembly burned, the switch wouldn't turn and both transmitters shut down because of high VSWR.

The engineer assumed the switches, con-

trol panel and transmitters were interlocked. They weren't. He was off the air in the middle of afternoon drive. You can imagine the impression this left on the GM.

Fortunately, the TV station down the hall had some elbows, and the switch was bypassed. But this was one hard lesson to learn. And with an audience watching.

Even when you've installed the interlock system yourself, test it with the transmitter's high-voltage "off," monitoring the interlock indicators for each mode of operation. It's been my experience that some of the older switch control wiring can be squirrely. This is not a slam toward the manufacturers, but more so to the parade of engineers that's been through the station over the years.

I saw one switch that was wired to shut down the transmitter when switching from transmitter "A" to transmitter "B." But when switching back to transmitter "A", the controller interlock circuit did not open. If the system had not been checked with the transmitter high voltage turned off — in all modes — we'd have smoked a switch, too.

If in doubt as how to wire transfer switch interlocks, pay the extra money to buy the controller, cables and factory wiring. Smoking a \$50,000 transmitter because of crossed wires is not something you want on your résumé.

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is the northeast regional sales manager for Dielectric Communications. Reach him at (571) 217-9386 or john.bisset@dielectric.spx.com.

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

MARKET PLACE

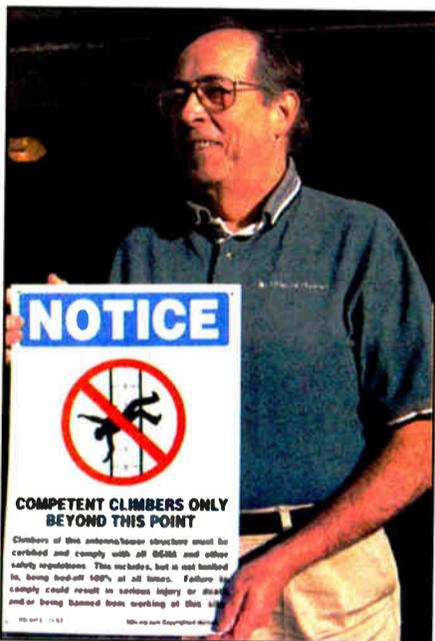
You can make things perfectly clear with safety signs from Radiofrequency Safety International Corp.

Bill Newbrough, president of RF Specialties of Washington, said he's been selling a lot of "Competent Climber" signs to stations. The price is \$24.95.

"With our society becoming more and more litigious, we have been forced to label everything, so there is no question as to whether an item or situation is dangerous. In the RF warning signs, there are three levels of advice, WARNING, CAUTION and NOTICE. Before posting a sign, the engineer should be sure of the level of exposure and whether it is within CONTROLLED or UNCONTROLLED areas."

Newbrough adds, "Gone are the days when engineers could focus all of their attention to equipment and making sure the station stays on the air. Now they have to be part engineer, part lawyer, part psychologist, and let's not forget computer expert, Internet wiz, etc."

For information contact RF Specialties of Washington at (888) 737-7321 or visit www.rfspec.com. Radiofrequency Safety International Corp. is on the Web at <http://rfcomply.com/index.php>



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THIS EASY-TO-USE FM MOD-MONITOR GIVES ACCURATE OFF-AIR MEASUREMENTS.



A wealth of features makes Inovonics' second-generation 531 the undisputed value leader in FM monitoring. In addition to the high-resolution total-mod display, the 531 also shows stereo audio levels, SCA and RDS subcarrier injection, plus a relative indication of incidental AM noise. A digitally-tuned preselector with programmable presets lets you quickly compare your station's parameters with those of market companions.

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World Radio History

Gained in Translation

As a Purveyor of Language, Radio Reflects Our Changing Habits of Speech

by Skip Pizzi

Regular readers of this column have detected its predilection for nuances of language. Given that radio is part of the broader discipline known in academic circles as Speech, analysis of language seems an appropriate match — and a welcome foil — to the typically technical content covered here. Of particular interest is the dynamic character of language, something that radio's immediacy plays a strong part in promulgating.

A recent book chronicles one such metamorphosis, focusing particularly on a tendency in today's American English toward evasiveness, which is accomplished largely by extending the traditional definition of a few common words, such as *because*, *but*, *feel*, *it*, *like* and *whatever*.

Author Maggie Balistreri calls her little book *The Evasion-English Dictionary*, and both its size and style are slightly reminiscent of William Strunk Jr. & E.B. White's well-known *The Elements of Style*. Although not destined to become such a seminal text as Strunk & White, *The Evasion-English Dictionary* still makes a welcome addition to the bookshelves of serious English users today, including radio talent.

Diversionsary tactics

As the author explains in her introduction, contemporary language has always contained elements of non-literal, ritualistic filler, such as "How ya doin'?", which serves as a greeting, but is not really meant to actually ask the question that those words would intrinsically convey. But in the creeping transformation Balistreri observes, this kind of empty or evasive speech is taking up an ever-greater amount of everyday conversation, to a point that moved her to write the EED.

Her primary point is as much sociological as it is linguistic. Much of the book deals with how people use coded words or phrases to shift causality or blame away from themselves, such as the use of *but* instead of *because*, as in, "I'm not rich, but I like nice things." Similarly, the word *feel* replaces *am* to soften an admission, as in "I feel so guilty."

Another noted tendency is the use of *hate* instead of *have* in the phrase "I hate

to say it, but ..." In fact, the author feels that no one really hates saying it when they cite their impressions, as in "I hate to say it, but our house is bigger," but that in phrasing it that way, they feel placed above people who would actually hold such an opinion unabashedly.

Along the same lines, *think* often replaces *know*, as in "I don't want you to think I'm the sort of person who could just do something like that."

Balistreri finds one of the most basic attempts at fault reassignment in what she calls "the eye-chart *it*," coming from "It still looks blurry ...OK, now it's clear." The eye chart isn't actually blurry, but only seems so due to weaknesses in the speaker's vision. Thus when someone says, "It's not clear," they really mean it's not clear to *them*. In other words, the assistance applied is not yet adequate to overcome their inadequacy, but the responsibility is shifted externally to the source.

A variant uses *it* in place of *I* for another blame-diversion tactic, as in, "I'm sorry, it was wrong." Other cited replacements for *I* or *me* include *you* ("You know when you have a bad day and you take it out on the kids?") and *the relationship* ("You owe it to the relationship."). Interestingly, *the relationship* can also be a substitute for *you*, as in "I'm not getting what I want from the relationship."

It's, like, insightful

The most enjoyable section of the book covers the word *like*, which the author traces from its Valley-speak roots to widespread usage. Balistreri identifies no less than 10 applications of the word, ranging from vagueness ("That was back in, like, October.") to an apology for inarticulateness ("I was, like, wow.>").

Similarly, the book includes eleven uses of *whatever*, etymologically referenced to the 1995 movie "Clueless," and brought forward to today. Entries include its usage as an expression of apathy ("She said I was insensitive and I was like, whatever.") and as a pseudo-non-judgmental statement ("She's dating the boss. Whatever.>").

Balistreri stresses that *like* and *whatever* are a different sort of evasive language than the others, in that they are not used to deflect responsibility. They are instead an evasion of full expression, and a sort

of laziness of language or abbreviated speech. Nevertheless, she concedes that, at least in the case of *whatever*, a considerable amount of meaning can be conveyed in a single word, when associated with a given context and the tonal presentation of the speaker.

The Evasion-English Dictionary is a useful book, but also a fun read, particularly for those who enjoy language (to whom I highly recommend it). One of its most striking aspects is that none of the cited usages are at all unfamiliar to the reader. We hear, and perhaps use (maybe even broadcast), many of these phrases every day, which makes Balistreri's identifying them all the more pointed. Her analysis and encouragement to avoid them could help us all be more precise in our speech, both on and off the air. A little more honesty and acknowledgment of our responsibilities wouldn't hurt either,

The Big Picture



Photo: Gary Hayes, BBC

by Skip Pizzi

but whatever.

Skip Pizzi is contributing editor of *Radio World*.

Treasure in the Attic: Radio Gets the Picture

This is part of a series of photographs of radio broadcast facilities and radio history from the collection of Jim Hawkins.

One Sunday I learned from my friend Ruth Hartman that she was storing an old 5-inch television set in her attic for her friend Helen Kinzer. Ruth wondered if it was worth anything.

The set had been purchased new by Helen's late husband J.P. Kinzer, a former engineer at Bell Telephone Laboratories in Holmdel, N.J. It was an Andrea Sharp Focus, model 1-F-5. Upon examination of the CRT from the back (see photo), I could see there was no deflection yoke evident. It used electrostatic deflection.



I put Ruth and her friend in contact with Steve McVoy in Columbus, Ohio, who ultimately purchased the set for an undisclosed amount. Steve told me this model had auctioned on eBay with prices ranging from \$5,500 to \$11,500.

The owner's manual dates the set at 1939. The manual described the TV as "AN ENTIRELY NEW SERVICE: Television reception, seeing and hearing without wires, is the greatest of all the marvels of modern science."

Television in fact was a merging of radio — AM and FM — and oscilloscope technology. When we look back at sets of that period, we can see clearly how television evolved from radio by the more awkward "Radio, Modified to Accommodate a Screen" look. The television signal is, in fact, still radio, albeit a specialized form.

As television evolved, it assumed a shape more specialized to its function as a viewing machine with increasingly less resemblance to a sound-only radio. Technology is a physical and technological morphing process as it evolves to accommodate new functionality. We have moved from a piece of talking furniture to a flat unit that hangs on the wall like a picture.

Andrea Radio Corp. was founded in 1934 by Frank Angelo D'Andrea. He had worked for Lee DeForest prior to founding another company, FADA, in 1920.

By 1941, some 7,000 Andrea sets had been manufactured. Many more people obtained plans from magazines and built their own.

In 1938 the first Andrea television kit was offered to the public. At the time, there were five channels within the range of 44-99 MHz in use, and some sets had a selector covering all five channels. The Andrea set has a two-position selector switch that covered ranges 44-50 and 50-66 MHz.

D'Andrea's company is still in business as Andrea Systems LLC. Development of television continued, but the medium remained experimental until after World War II.

Thanks to Steve McVoy for his help with this article. The Andrea set can be seen at the Early Television Museum in Columbus. Visit www.earlytelevision.com.

Visit the author's *Radio and Broadcast Technology Page* online at www.jphawkins.com/radio.html.

WE GIVE YOU VERNON

Name: Tom Vernon

Education: Ph.D., Management of Technology, 2000

Experience: More than 30 years in broadcast engineering, recording, computers and technical education; 20+ years as a contributor to *Radio World*.

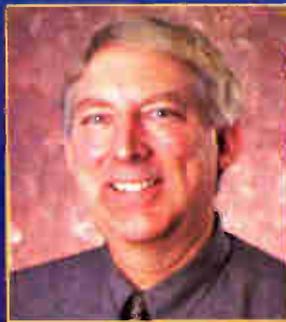
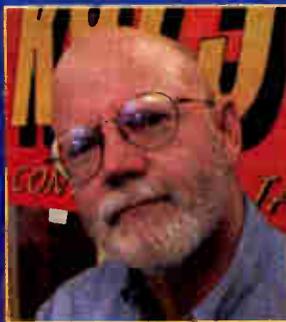
Favorite Stations Growing Up: WMEX, WBCN Boston

Most Inspirational Engineer: Bruno Puglia, WRKO/WROR Boston

Quote: "The future is already here, it's just unevenly distributed."



Radio World's pages are home to the finest writers and columnists in the industry. Like Tom Vernon. Just one more reason we're the newspaper for radio managers and engineers.



Cris Alexander
Crawford Broadcasting Co.
Director of Engineering

Richard (Andy) Andresen
Cumulus Communications
Chief Engineer

James W. Davis
Radio One Inc. (Raleigh)
Chief Engineer

Robert P. (Bob) Hess
Viacom/KMAX-TV.
Sacramento
Director of Engineering

Ralph E. Hornberger
Minnesota Public Radio
Senior Design Engineer

Stephen M. Poole
Crawford Broadcasting.
WDJC-FM/AM.
WYDE-FM/AM
Chief Engineer.
Birmingham, Ala.

Education: Cleveland Institute of Electronics, Broadcast Engineering (1978)

Organizations, Certifications, Honors: SBE CSBE, Assoc. Member AFCCE, FCC General Class Radiotelephone Operator License, Amateur Extra Radio License, Private Pilot License, one of Radio Ink's 30 Most Admired Engineers, 2003

Career: ... Soon my ham transmitters weren't enough; I was drawn to the towers, glowing tubes and kilowatts of the local AM station in the Texas Panhandle. When I was 15, I landed a job there and began studying for my FCC license. Within a few years, I had completed broadcast engineering courses at the local community college as well as Cleveland Institute of Electronics, where I learned under the direction of the late Carl Smith. ...

I served as chief engineer at an FM station, worked as a maintenance engineer at a VHF television station, then moved to Dallas, where I worked for a number of years in TV. Eventually, I returned to my radio roots and came to work for Crawford Broadcasting Co., where I have served as DOE since 1984.

Proudest accomplishment: Construction of numerous directional AM arrays, from concept to finished proof.

Biggest challenge facing radio engineering? There is a decided lack of "new blood" entering the broadcast engineering field today. ... We, as the elder generation of radio engineers, must be on the lookout for, identify and draw young people with an interest in/aptitude for radio engineering into our business. Then we must train them, mentor them and impart to them a passion for this business. ...

Nominator's quote: "Cris is the best managing engineer in the business, far more than just a manager's manager but also an excellent teacher, writer and a true proponent of excellence in performance, standards and design."

Education: High School Vocational Electronics; U.S. Army Signal Corps

Organizations, Certifications, Honors: SBE Member; CBNT, CompTIA A+ Computer certification, EPA air conditioning Technician type universal certification

Career: I grew up in Davenport, Iowa, about where civilization meets the cornfield. I began stringing long-wire antennas, winding coils and building homemade radios ... After three years in the military, there was no time for college. I had to make a living, so I worked at a TV repair shop, (then) opened my own. ...

My first broadcast engineering job was at WQAD(TV), taping shows off satellite and operating a cantankerous Tape Cartridge Recorder. This RCA-built, pneumatic-controlled monster was notorious for jamming, so an engineer was stationed at it. I can still hear the sound of air escaping as the arms would jam while ingesting a cart.

I moved to KWQC(TV), where I performed video dubbing, TCR operations and routine maintenance. Late in 1989, I sold my interest in the repair shop and made the switch to radio as chief for KFMH, KWPC, WKBF and WPNR.

I bought a station of my own in 1993; I ran the little 500-watt AM and continued contract engineering until consolidation signaled it was time to get out.

I'm chief engineer for five stations in Davenport as well as five in Dubuque, 70 miles away. ...

Proudest accomplishment: Development of my own hard-disk audio system. One year and 10,000 lines of code later, ROBO-JOCK went into operation ... the first viable computer automation system in the Quad-Cities. It was also the first hard-disk system in the Quad-Cities to control 100-disk CD players, play music on hard drive and use voice tracking. ... While commercial systems were scrambling to make units Y2K-compliant, ROBO required no changes. In its 14-year run, some 20 units were installed in seven stations. It's still in use at KJOC Davenport and KCJJ Iowa City.

Nominator's quote: "He sees every day as a challenge and an opportunity. Downtime is not an issue, and whatever measure needs to be taken to ensure that, I guarantee you it will get done."

Education: BS Electrical engineering Duke U '71, MS Electrical Engineering Duke U '74, PhD Biomedical Engineering Duke U '93

Organizations, Certifications, Honors: SBE member, Tau Beta Pi, Sigma Xi, FCC General Radiotelephone certificate, Amateur Radio Licensee, KN3/K3VYI ('60s), KG4ZWS (current)

Career: I passed my FCC First Class Radio Telephone License and my driver's exam within the course of a month at age 16. I started working summers and holidays in the Philadelphia radio market in 1965, both for the late Bob Hoy at WHAT(AM/FM) and under Del Dengate at WIP/WMMR through 1970. ...

I began doing contract engineering in 1975, formed a corporation in 1982 when I started engineering at WDCG and WDNC in Durham.

Meanwhile I did weekend specialty programming for WTIK and WDNC (five years), and have done a six-year programming stint with WNCU at North Carolina Central University. I and my staff had the opportunities to build both AM and FM stations from the ground up, move several stations and build studios, keep stations running and out of trouble and generally have a ball and learn a lot.

In 2002, declining client revenues and major surgery led me to consider other options, and I sought a position with Radio One, coming full time to several properties for which I had contracted. ...

Proudest accomplishment: In 1998 I was asked by Gary Saber of Clear Channel Communications to help him with the design and construction of their consolidation build-out in Raleigh. Working with Gary, I and my staff designed and constructed the six studios and associated infrastructure to support four stations and three signals. ...

Biggest challenge facing radio engineering? Finding and nurturing the young engineering talent to help us now and replace us when we are gone."

Nominator's quote: "Jim is one of those engineers who takes the time to teach. I often think of the first four years under his wing as the real college education."

Education: San Diego State University, Geology Major (two units short of a degree); Grossmont College, several electronics courses

Organizations, Certifications, Honors: SBE Chapters 36, San Diego; 66, Fresno; 43, Sacramento; 11, Boston. Former Chapter Chair in Fresno, Sacramento, Boston; Former SBE National Treasurer and board member; CPBE; Co-Chair/Co-Founder, BosCon SBE Regional Convention; Former member, So. and No. California Freq. Coord. Committees; Former board member, KVPR(FM), Fresno; Former member, Curriculum Advisory Board, ITE Technical Institute, Extra Class amateur radio operator, W1RH

Career: ... I had my first experience installing a new transmitter under the direction of Ken Blue. I did DJ and/or engineering work for KXOA, KPOP, KP1P, KRAC, and KZAP in Sacramento. ...

I went to work for KOVR(TV) for eight years and moved to Boston for 13. There I was responsible for three TV, an AM (WBZ) and an FM (WODS) — the only engineer in the company reporting to both Infinity Broadcasting and CBS Television. ... Viacom recently transferred me to KMAX(TV) in Sacramento, where I am doing exclusively television engineering. The radio world has not heard the last of me, however.

My career has been full of studio and tower construction projects. ... I have been responsible, with other major players, for studio projects including WODS(FM), WBZ(TV-AM) and KOVR(TV). Notable tower projects include KOVR(TV), WBZ(TV) and WBZ(AM), among others.

In Fresno I was appointed to the board of public KVPR(FM).

Proudest accomplishment? My most challenging technical project was the WBZ(AM) tower project ... The establishment of the BosCon SBE regional show in Boston, with help from Dan Rau and a super team, is the professional accomplishment I'm most proud of.

Nominator's quote: "I nominate Bob for his tireless work for the SBE 11 chapter in Boston ... (And he) was the keystone in organizing BosCon, which attracts hundreds of local engineers and well over 150 vendors."

Education: Associates degree in Electronics Engineering

Organizations, Certifications, Honors: AES

Career: I started in college radio at WXPN(FM). After a year, I took a job as a wireman at ITA Electronics building transmitters and custom audio systems.

In 1964, I went to WFIL AM, FM and TV as general maintenance. I got my degree while at WFIL, and took time off to go into the Navy for two years. I was made assistant CE at WFIL and stayed there until 1980.

I took a job with Minnesota Public Radio designing and building their new studios. Working for MPR, I progressed to DE, and then to my present title. While here, I have engineered our growth from seven full-power stations to 32, and increased our translator count from four to 16.

Proudest professional accomplishment: The first is having been able to increase the coverage of the MPR network so that we now bring our programming to virtually the whole state of Minnesota, as well as providing national quality programming to the rest of the country.

The second, and more important in my view, is having mentored five beginning engineers who went on to become CEs. I will always be glad I had the opportunity to do this, and I am very proud of their accomplishments.

Biggest challenge facing radio engineering? ... We don't have many people interested in radio engineering, but there are some, and we need to be looking for them. We need to take the time to interest people in engineering, and take the time to train them.

Maybe the local computer geek would be interested in automation systems, or a ham operator might like to get their hands on a 25,000-watt transmitter. It takes a while to find them, and it takes a longer while to train them, but the results can be very rewarding, and then maybe THEY can answer the phone at 2 a.m.

Nominator's quote: "He has continually strived to raise the bar of engineering standards within MPR and the rest of the market. ... Ralph has built an engineering department that is self-sufficient in an age when outside consultants are used for almost everything."

Education: Hoke County High School, Raeford, N.C.; Sandhills Community College, Southern Pines, N.C.; numerous home study courses and seminars

Organizations, Certifications, Honors: Member SBE; ISCET Certified in Communications and Consumer Electronics; Holder of a valid General Class License (renewed from First)

Career: ... My first engineering job as chief was at a 100 kW FM and 5,000-watt directional AM, a true baptism by fire. I had to finish building the AM; my predecessor had left to take a job with South Carolina Public TV. ...

I eventually moved into contract engineering, taking care of stations all over the NC/SC area. When the FCC deregulated the First Class Licensing requirements, I became a Certified Electronic Technician. I have also taught electronics in industry.

When the job came open with Crawford, I jumped on it and moved to Birmingham with my wife. I've been here five years now, with no plans to find another job. I love working for Crawford Broadcasting.

Proudest accomplishment? ... Having kept an AEL FM transmitter on the air in a cornfield with no air conditioning and no filters on the building intake certainly ought to gain me some respect! ...

In truth, just being hired by Crawford Broadcasting, one of the best-run radio groups in the country, has been very satisfying. Cris Alexander is the best boss in the business. Working for Don Crawford is a job, a ministry, a business and a public service.

Perhaps the biggest satisfaction, though, is being able to do engineering cost-effectively. CBC often takes marginal stations and makes them profitable, including those that no one else has been able to make work. ...

Nominator's quote: "Not only a first-rate market CE, but also a first-rate engineering team at CBC-Birmingham."



Cast Your Vote

What is it? How can I participate?

The Radio World Excellence in Engineering Award recognizes individuals for excellence in U.S. radio broadcast engineering and allied fields.

Read the thumbnail sketches provided here, which include excerpts from the nominees' biographies and answers to questions we asked. Visit the Radio World Web site at www.rwonline.com/vote to read the nominees' full replies. (We think you'll be delighted at the insights you'll glean into the careers of your colleagues.)

Then cast your ballot online, one vote per reader. We'll announce the winner in April.

Who was nominated?

Nominees are chosen by a panel of Radio World advisers, contributors, suppliers and other industry experts; RW staffers do not vote. Factors to consider may include, but are not limited to, the candidate's

engineering proficiency, certifications, project management skills, industry honors, service to industry organizations, commitment to mentoring, professional advancement, educational level and other contributions.

Isn't this just a popularity contest?

No, we ask that readers give serious consideration to the factors listed above and their own experience with these nominees. Please read the nominees' answers in depth at the Web site www.rwonline.com/vote.

The selection of one person as the winner of the Radio World Excellence in Engineering Award does not diminish the achievements of any nominee. Each person named on this page clearly exemplifies excellence in our field.

We're happy to know of so many engineers who might qualify for this award. Readers will have the opportunity in coming months to nominate candidates for 2005.



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

Education: Associate in Applied Science degree from Ward College of Technology, University of Hartford, West Hartford, Conn.

Organizations, Certifications, Honors: Board of Directors, SBE; Chairman, Chapter 15, NYC; CSRE, hopes to be upgraded to CPBE shortly; one of the Top 30 Most Admired Radio Engineers by Radio Ink the past three years; member, Digital Radio and Broadcast Engineering Conference Committees at NAB; will moderate the FCC/Regulatory Issues session at NAB. Still hold an FCC General Class license :-)

Career: I started at Buckley station WDRB in Hartford, Conn., as a high-school student in 1977 as a production assistant/board operator. I was promoted to assistant CE while in college in 1980, and CE in 1983.

I spent time at WRCH/WRCQ, Hartford, where I converted WRCQ to the second C-QUAM AM Stereo station in Connecticut. I worked at several other stations in the Hartford area, including a stint as a cellular technician, then settled in at WTIC(AM-FM).

While at WTIC, I was on the Connecticut SECC and helped write Connecticut's first EAS plan, helped develop a "behind the scenes" communications system for Connecticut, helped develop an alerting plan for prison escapes.

I went to work for Northeast Broadcast Lab in S. Glens Falls, N.Y., in 1996 selling broadcast equipment and building broadcast facilities, among them WWV/WWKS in the Virgin Islands. I started at WOR in 1997 as director of engineering, promoted to corporate director of engineering in 2000.

My primary responsibilities are for WOR and the two WOR Radio Networks. Over the past 15 months, have provided a great deal of information to Ibiquty and the industry on AM IBOC implementation, operation and coverage.

Proudest accomplishment: ... Having one of the only radio stations in New York that stayed on the air continuously, minus the 20 seconds it took for the generator to come up, during the blackout in August of 2003. ...

A close second would be having the first HD AM radio station in New York, and being a part of the testing that is bringing this technology to fruition.

Nominator's quote: "Tom never sees engineering issues as 'problems,' only as solutions waiting to happen. His engineering acumen is, in my opinion, second to none in the broadcast engineering business."



Greg Savoldi
Clear Channel
Director of Engineering,
Columbus Region

Education: 2 years, Technical College

Organizations, Certifications, Honors: SBE Central Ohio Frequency Coordinator, FCC 1st Class License, Radio Ink's Top 30 Most Admired Engineers

Career: ... First chief's job was in Steubenville, Ohio, at WSTV/WVRY. I moved to Omaha in 1982, as chief engineer of KLVG (the Wizard), and KQKQ(FM), the 100,000 watt top-40 flamethrower SWEET 98!! To Dayton, Ohio in 1983 as Chief of WYMJ(FM).

Dayton was home to Great Trails Broadcasting, where Jeff Bennett, then director of engineering for the company, was based. He had to fill an opening in Columbus in mid-1984, as the great Tip Carpenter was retiring after 37 years as chief. The six-year stint at WCOL(AM), and WXGT(92X) was magical. ...

In September of 1990, Great American's Director of Engineering Jim Ary hired me as chief of 610WTVN(AM) and WLWQ, FM96. Although multiple owners have come and gone, it's been 14 great years at WTVN. Through this process, Jim gave me the opportunity to travel around the country helping with audio processing, transmitters and studio installs within the (former) Taft stations. Met a lot of solid broadcasters and grew tremendously.

Under Jacor, I became director of engineering for the Central Ohio/Columbus region. Al Kenyon and Randy Michaels made it wild and wonderful, as hip stations like WNCI and WCOL(FM) were purchased and added to the cluster. The segue from tape to hard drive was made at this time, utilizing Prophet's Wizard/CFS system. Voice-tracking, and the ability to do it from anywhere in the country, was a real plus with Prophet, and Jacor made the most of it. It changed the way we do business.

Clear Channel continues to invest and secure our positions in Central Ohio, and the handful of satellite/outer markets that are managed from Columbus. I've been with Tom Thon, RVP of the region, since 1990. My crew of engineers in the region are second to none. ...

Proudest accomplishment: It's difficult to pinpoint one specific event. ... In 1998, it was the great "weekend swap" of seven stations in the market, when Jacor purchased Nationwide Communications, but had to divest, swap and move facilities in conjunction with Blue Chip and CBS/Infinity. We did it in one weekend, with NO lost airtime for any station. It was WILD! ...

Nominator's quote: "Greg exemplifies a wonderful combination of interests and talents that brings respect and recognition to the field of broadcast engineering."



Stephen (Steve) H. Schott
Broadcast Electronics
S.W. Regional Sales Manager

Education: Drake University, Fine Arts Major, no degree; DeVry Technical Institute, Associate Degree in Electronics Communications

Organizations, Certifications, Honors: First Class Radio Telephone License, 1966; Member of Society of Broadcast Engineers; Texas Association of Broadcasters Board Member; TAB Associate of the Year 1991; Texas EAS Committee

Career: I started ... in 1966 as the chief engineer of a small-market radio station, KAVI in Rocky Ford, Colo. It was a 1 kW AM daytimer, where we constructed the region's first Class A FM station. ... After a year and a half, I was fortunate enough to be hired for McLendon's Detroit station WWWW(FM), where we upgraded the Class B FM to full power.

Eighteen months later I was transferred to ... WNUS AM and FM (later to become WGCI), as chief engineer. WNUS was a union station with 13 full-time engineers and the world's first all-news radio station. ... We built new studios, moved the FM to a taller building and rebuilt the four-tower directional antenna system.

In the 1960s and '70s, KLIF in Dallas was the 50 kW "Mighty 1190." It is disputed but generally believed that KLIF was the first "top 40" station. I moved to Dallas and to KLIF, where I was chief engineer of the world's first 12-tower directional array. It was two rows of six towers, nearly a quarter mile long; and it was a challenge to keep that critical array in adjustment. The greatest accomplishment, with the help of an outstanding consulting engineer, was eliminating the directional antenna critical array status.

In 1978 I became a field service engineer for the broadcast division of Rockwell-Collins. ... For 24 years I have been a district sales manager for Continental Electronics, Harris and now Broadcast Electronics. ... It has been my privilege to help literally hundreds of stations get on the air or upgrade their facilities.

Proudest accomplishment? Writing the collection of 14 technical PC programs called *TECHMENU* I created for broadcast engineers to aid in planning new facilities and to help in day-to-day situations.

Nominator's quote: "Steve has 'done it all,' demonstrating his engineering proficiency by working as a broadcast engineer, then chief engineer, director of engineering and a district sales manager."



Michael Sirkis
Radio Systems Inc.
Chief Engineer

Education: B.S. University of Maryland

Career: Except for a short stint as a staff engineer at NPR, I have worked for manufacturers of professional broadcast products for over 30 years.

In 1971, I had just graduated from high school and began working for Broadcast Electronics, located in my hometown of Silver Spring, Md. BE was to be my summer job but I ended up staying for eight years.

My first assignment was wiring cartridge machines. I showed a knack for troubleshooting, so they quickly moved me to the test department. The following year I was promoted to engineering, where I designed and developed the 3000 and 2100 Cartridge Machines, and the 150/250 Series Consoles.

In 1979, I joined Ampro/Scully (1979-1982). Ampro had recently acquired the Scully reel-to-reel tape recorder product line and I assisted in the integration of the Scully products into the Ampro factory. I also created the 8300 series three-deck cartridge machine.

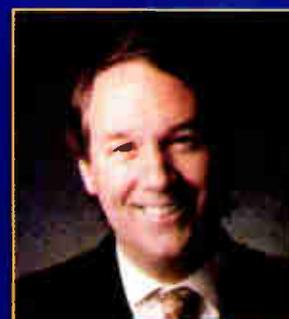
From 1982 to 1984 I developed pre-amps and tape timers under my own label, Peak Audio. In 1984 I joined Fidelipac (1984-1987), where I created and developed the CTR100, CTR10, ESD10 and CTR30 Cartridge Machines.

In 1987, I began working for Radio Systems, where I've designed the RS/Millennium Consoles, RS1000/RS6700 DAT Machines, RS2000 Cartridge Machine, DA484 Distribution Amplifier, DI2000 Telephone Interface, CT2002 Studio Clocks and the StudioHub+ Wiring System. ...

Biggest challenge facing radio engineering? Attracting and maintaining a highly competent and motivated technical staff. Radio engineering is a true specialty, requiring highly technical, trained and experienced professionals.

The technical staff should not be thought of or compensated as maintenance people. This needs to be accomplished through salary enhancements and vested company incentives.

Nominator's quote: "His efficient, affordable designs have enhanced the broadcasts of literally thousands of stations. There are only a handful of engineers whose solo contributions to the technology of broadcast audio have been as significant."



Milford K. Smith Jr.
Greater Media Inc.
Vice President/Engineering

Education: BS Physics (Amherst); numerous formal and informal postgraduate academic and industry courses and seminars

Organizations, Certifications, Honors: Chairman, NRSC DAB Subcommittee; Chairman, NAB Digital Radio Committee, member of numerous NRSC and NAB working groups and ad hoc committees; immediate past chairman of NAB Engineering Conference Committee; Most Admired Engineers in Radio, Radio Ink, 2001-2003. Member, IEEE, SBE, NARTE; associate member of AFCEE. Lifetime General Radiotelephone Operator's License.

Career: Vice president of radio engineering for one of the nation's largest privately owned radio companies for the past 20 years. For the preceding 11 years, held a similar position with First Media Corp., another large radio owner. Also spent several years with Tribune Broadcasting in New York.

Active in the NAB and is chairman of its Digital Radio Committee as well as a member of its AM IBOC Nighttime and FM IBOC dual-antenna ad hoc committees; active in the National Radio Systems Committee and is chairman of its DAB subcommittee, which is involved in the testing and evaluation of the next generation of digital audio service for the United States. Member of several associated working groups.

Routinely practices before the FCC.

Proudest accomplishment: Being involved in and in a small way helping to shepherd the development and implementation of digital radio in the U.S.

Biggest challenge facing radio engineering? The increasing level of sophistication of systems, along with the expansion of the traditional broadcast engineering areas of responsibility to include MIS systems, data delivery systems and like.

These widening areas of responsibility place significant demands on a shrinking universe of truly skilled, competent and generally "graying" engineers.

Where the next generation of capable people needed to populate these highly skilled positions is coming from is unclear. We are not, for a number of reasons including consolidation and the push for ever-greater profits, doing a particularly good job of mentoring our replacements.

Nominator's quote: "I have been to most of the Greater Media properties, and there is a common thread: excellence in broadcasting. ... Smitty has been the person who recruited these individuals and provides high standards and first-class leadership. ... He was integral in communicating to Ibiquty that they had a severe problem regarding their codec choices."



E. Glynn Walden
Infinity Broadcasting Corp.
SVP Engineering

Education: BS Engineering, Florida International University

Organizations, Certifications, Honors: Three Patents: "FM In-Band-On-Channel Digital Audio Broadcasting Method and System," "Method and Apparatus for AM Digital Broadcasting" and "Method and Apparatus for AM Digital Broadcasting." Innovation Award, The George Westinghouse Signature of Excellence Award for Development of the AM Digital Broadcasting System (1994); FCC First Class License; Ham Radio Extra Class KE4IS; Florida EIT

Career: Vice President of Broadcast Engineering, iBiquity Digital Corp. (successor to USA Digital Radio), 1996-2003; Visionary of concept, technical design and economics of AM & FM In-Band, On-Channel digital broadcasting system; wrote IBOC technical and regulatory specifications for a design team of 50 engineers, scientists and technicians ...

Developed the transition plan that allowed broadcasters to move from analog to digital broadcasting with minimal technical and economic disruptions to broadcasters and listeners; developed and completed the most comprehensive study of the existing levels of interference in the AM & FM bands and predictions of how the interference may increase following the adoption of IBOC;

Developed a comprehensive test program for evaluation of IBOC digital performance and compatibility ... Presented extensive results of interference studies and laboratory and field tests ... to the NRSC, leading to the adoption of IBOC as the digital standard for AM & FM broadcasting; conducted tutorials, demonstrations and provided test results to the FCC and members of Congress ... provided results of system tests, presentations and technical papers to international regulatory bodies leading to adoption of the IBOC by the ITU as a worldwide standard for digital radio broadcasting; convinced OEM and aftermarket receiver manufacturers ... to build IBOC-compatible receivers; coordinated broadcast rollout of IBOC ...

Vice President of Engineering, CBS Radio (successor to Westinghouse Broadcasting), 1995-1996; Managed capital budgets of \$12 million, all studio and transmitter upgrades and facility consolidation projects ...

Director, Radio Engineering, Group W, Westinghouse, 1991-96; Engineering Manager, KYW(AM) Newsradio, Westinghouse Broadcasting, 1981-91; Chief Engineer, WCMQ(AM-FM), 1975-81.

Proudest accomplishment? The development of the IBOC system.

Nominator's quote: "Glynn's credentials ... are well-known to the entire industry. His contributions to radio and IBOC/HD Radio are perhaps inestimable."

Studio Sessions

Big Voices for
Small Budgets

See Page 36

Radio World

Resource for Radio On-Air, Production and Recording

March 1, 2004

PRODUCT EVALUATION

Digi 002, Rack-Ready for Broadcast

by Ty Ford

I have been a Digidesign Pro Tools Digi 001 user for three years. The Digi 001 digital audio workstation, which has been running nicely on my G4 500 MHz Mac, has allowed me to keep up with the changing flow of work through my studio in a way that my Orban Audicy cannot — namely, file format and import/exporting flexibility, mix automation and a wider variety of plug-ins.

Pro Tools, including Pro Tools LE, can almost be considered “Photoshop for audio.” And although the learning curve is steeper than with the Audicy, Pro Tools LE does a lot more if you want it to.

If you are just doing spots, promos and voice tracks, the curve is not as steep. A savvy production director can make a few templates so that less experienced staff can start a production with the click of a mouse, rename and save it.

Two versions

Pro Tools Digi 002 comes in two versions: Standard, with a built-in eight-channel mixer, for \$2,499; and the 2U 002 Rack, with no mixer, for \$1,295.

Due to Pro Tools’ simple rubber-band mix automation, a hard console is not necessary.

Because I plan to run Mac OSX operating system and will be stepping from 24 to 32 tracks, I knew I would need a faster computer. The Digidesign Web site (www.digidesign.com) explains in detail what Mac and PC systems to use and how they must be configured. Some of this information is not trivial; do your homework. Phone tech support is above average and the Digidesign Users Conference (DUC) is a good problem-solving forum.

I could spend this entire article comparing the hardware refinements that sep-

arate the Digi 002 from the Digi 001, but I don’t have the space.

Welcome changes from the 001 to the 002 include a standard FireWire interface (rather than a proprietary PCI card), the

eight balanced analog inputs, the first four of which include preamps, each of which has its own front panel trim, mic/line-inst switch and high pass filter (75 Hz at 12 dB/octave).



Digi 002 Rack

addition of a mono button to check the phase of stereo mixes, four preamps instead of two, and LEDs on the front panel to indicate sample rate and MIDI status. The 002 and 002 Rack also have two MIDI outputs as opposed to the one MIDI out of the 001.

The 002 Rack is packaged in a 2 RU. All I/O jacks, except the headphone jack, are mounted on the rear, giving the front panel a clean look. The 002 Rack has

Phantom power is switchable in pairs for inputs 1/2 and/or 3/4. These four inputs have XLR and TRS connectors. The other four inputs are TRS and each is switchable from -10 to +4. The eight analog outputs are balanced TRS operating at +4 dBu. Outputs are also switchable to -10 according to the manufacturer.

A Toslink (ADAT) lightpipe I/O provides eight additional I/Os and the S/PDIF offers another two. The Toslink

(ADAT) digital I/O operates at 44.1 and 48 kHz in ADAT mode and, when switched to optical S/PDIF mode, at sample rates up to 96 kHz. In all cases, the optical I/O supports 16-, 20- and 24-bit operation. The S/PDIF I/O supports both 44.1 and 48 kHz audio (IEC-958 Type 2) as well as 88.2 and 96 kHz audio (IEC-958 Type 1).

The Alt Source Inputs employ a pair of unbalanced RCA jacks. Switches on the front panel routes attached -10 dBV sources to the monitor section of the 002 or to analog inputs 7 and 8. There is also a pair of -10 dBV RCA Alt Main Outputs, useful for feeding recorders, mixers and monitors.

One MIDI input and two MIDI outputs allow the 002 to act as a 16-input, 32-output MIDI interface. The Digi 002 Rack has two 1394 Firewire ports, one of which is used to connect to the host computer. A footswitch jack is provided for punching in and out of record. A power on/off switch and standard IEC power jack completes the inventory of controls.

Software

“What’s New with Pro Tools 6.1” is a 41-page PDF document. Mac and PC features are slightly different, and TDM, the big Pro Tools system, also differs from Pro Tools LE.

If you have not used Pro Tools LE yet, knowing how this version differs from the last is a moot point. You now have up to 128 audio tracks per production, accessing 32 at a time. There are 256 MIDI tracks. DigiBase is a new feature that helps manage audio files in a browser-style environment. The pencil tool, which allows you to redraw the waveform at the sample level to remove glitches and spit clicks, now supports multiple undos.

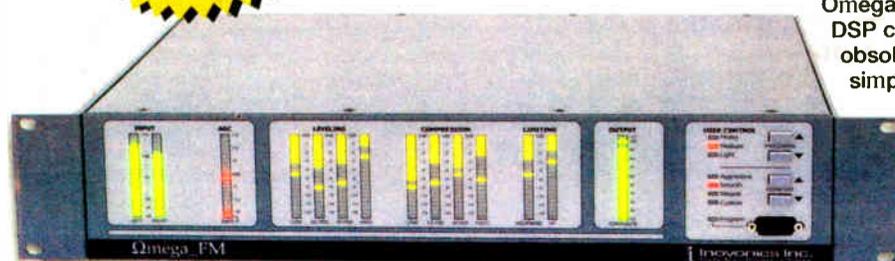
Don’t forget to setup Auto Save, under Preferences>Operation. Your session will be automatically saved periodically. This can be a real lifesaver in the real world of

See DIGI 002, page 32 ▶

Digitally Different Omega_FM - \$5880

NEW!
v2 Software

OUR GOAL WAS TO DEVELOP A DIGITAL PROCESSING SYSTEM FOR FM THAT WOULD RIVAL ANYTHING ON THE MARKET. WE MET THAT GOAL...AND THEN SOME.



Omega_FM is a 100%-digital, software-based design. It doesn't use DSP chips or other application-specific parts that rapidly become obsolete. Upgrades don't plug into 'expansion slots,' they're simply uploaded.

Omega_FM is straightforward and uncomplicated. Hardware simplicity keeps the signal path short and your audio clean. Low latency lets you monitor off-air.

Omega_FM is loud, clean and versatile. We don't expect you to take our word for this, and you shouldn't. Schedule a demo at your station through an equipment supplier of your choice.

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...Processing doesn't get any better than this.

See us at NAB Booth #N3009

World Radio History

Flushing Away Your Audio Quality?

Swishing and swirling audio is the sad result of bit rate reduction combined with the wrong processing. Unless all sources, storage media and transmission systems are linear the audio will be bit rate reduced at least once, probably several times. Each pass generates more artifacts. Lower quality processing, multiband compression, limiting and clipping can make those artifacts even more apparent. But level control is still essential.

Introducing the new Compellor® 320D - the world standard AGC is now available with both digital and analog i/o. For almost two decades the Compellor has sustained its unrivaled reputation for 'invisible' operation. The same cleanliness of circuitry and intelligence of processing algorithms that make it 'invisible' also make it perfect for processing in the digital domain. The Compellor will not 'unmask' the masking from upstream reductions and it will feed a signal that will sail through downstream reductions.

The 320D fits any plant from all digital to all analog and anywhere in between. Perfect for all HD applications, the Compellor 320D will help keep your great audio great at a price that won't wipe you out.



The NEW ApheX Model 320D Compellor - 2 Channel Compressor/Leveler with Digital and Analog I/O

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Digi 002

► Continued from page 31 computers.

According to Digidesign, the 002 requires a 788 MHz CPU at a minimum, with one 7200 rpm drive for system and applications and another for audio. As a crash test, I subjected the 002 Rack and my barely legal 800 MHz laptop running Mac System 10.2.6 to the task of playing back a 16-track music session created on the Digi 001.

On that session, I had used 13 EQ plug-ins, two limiters, five compressors and 17 sends, an additional stereo reverb return, one stereo medium delay return and a stereo master module with stereo EQ, compressor and limiter.

With all of the plug-ins and routing, this tune occasionally stopped playing on my 500 MHz G4, (especially when using the memory-hogging KOL RealVerb and three Auto-Tune plug-ins).

With a simpler reverb and Auto-Tune deactivated, the mix ran on the Digi 002 Rack with system headroom to spare, all from its one internal 7200 rpm hard drive.

I created a typical BWF format stereo promo with three stereo music tracks and three mono voice tracks using the laptop DVD/CD drive to import music and sound effects directly from CD.

The iTunes application popped up and allowed me to audition the cuts before I imported them. A 4:21 stereo music bed took less than 30 seconds to import.

A new file management tool, DigiBase, is included with Pro Tools 6.x software on Mac and PC. According to Digidesign, this tool is essentially like the Mac Finder or Windows Explorer,

allowing the user to do customized searches for audio files and then drag them directly into the Pro Tools Edit window timeline. It will do automatic file conversion if the audio files being dragged in are a different format from the current session.



Digi 002 Standard

I automated levels and pans with the drag of a mouse. I shifted pitches up and down. I time-compressed voices to fit nicely between music track hits. In the end, I had created a slick little piece entirely with Pro Tools LE that simply could not have even practical to try with

conventional means. You can listen to it at www.jagunet.com/~tford.

Audio-Suite effects plug-ins are a good reason to get the Digi 002. You get one-band EQ, four-band EQ, chorus, compressor, reverb, DC offset, de-esser, delay, duplicate, expander-gate,

Product Capsule: Digidesign 002 Rack Digital Audio Workstation

Thumbs Up

- ✓ Four preamps
- ✓ Numerous plug-ins
- ✓ Reasonable cost
- ✓ Solid audio
- ✓ Flexible features

Thumbs Down

- ✓ Some learning curve
- ✓ Requires 788 MHz or faster host computer
- ✓ MP3 conversion not included

Price: Standard version with a built-in 8-channel mixer: \$2,499;
2U 002 Rack (no mixer): \$1,295.

For information, contact Digidesign, a division of Avid Technology, in California at (650) 731-6300 or go to www.digidesign.com.

real-time effect plug-ins that are much the same as the AudioSuite plug-ins. The real-time effects use the processing power of the host computer, which means the faster the computer, the more effects that are able to run. And each real-time effect can be used as many times as necessary, until you run out of CPU horsepower. Basically, add a microphone, a pair of headphones, monitor amp and speakers, and that's pretty much it, especially if your computer has a CD burner.

I compared the Digi 001 and Digi 002 preamps using a Neumann TLM 103. The 002 preamps were slightly smoother. Engaging the software low-pass filter on the 001 or front-panel hardware low-pass filter on the 002 cleared things up a bit, giving the voice tracks more clarity and attack.

Radio station idea

What follows is my radio station idea for Digidesign: Position the 002 Rack at a tracking station. Allow multiple users, each with their own laptop running Pro Tools 6.1.1, to record using the 002 and then, using a special Radio Station iLOK dongle, allow the program to run without being attached to the 002.

(iLok is a USB-based hardware dongle that manages Digidesign authorizations keys. See details at www.ilok.com or www.digidesign.com/support/ilok/.)

There would be a charge for each dongle and it would only work on one computer. Staff could tweak their own mixes without taking up studio time and keep track of their own productions.

The Digi 002 Rack is a complete system, especially for broadcast. It is powerful and flexible and can be operated simply or intricately. The electronics sound good and, although the 002 can go to 24-bit, 96 kHz, 16-bit, 44.1 kHz is sufficient for radio production.

This is solid technology from Digidesign at a reasonable price. Special versions of other software are bundled with the system, including the Reason music production environment; Live audio loop sequencer; the AmpliTube guitar amp emulator; SampleTank sampler and T-RackS EQ. An MP3 converter rounds out the bundle. It runs for 30 days and then quits unless you pay an additional \$19.95.

Ty Ford's Web site is at www.jagunet.com/~tford. Check it out for V/O demos, audio equipment reviews and other services of Ty Ford Audio.

PRODUCT GUIDE

Create Custom Racks, Configurations

RackFrame, which can be likened to an Erector set, makes assembly of customized racks possible from three stock parts.

Once assembled, the company says, it provides the strength and integrity comparable to those of welded rack enclosures. Available in any width, depth and height, the parts ship knocked down in three small cartons.

Options include wheels, braces, handles, shelves, drawers, PVC side panel and steel cover panels. The standard and optional pieces stack and connect into a variety of configurations. Nineteen-inch-wide sides allow immediate and rapid access to electronic equipment. Prices: 4 RU, 13-inches deep: \$159.85; 43 RU, 30-inches deep: \$264.85.

For more information from RackFrame, including additional sizes, contact the company in Las Vegas at (702) 304-1565 or visit www.rackframe.com.



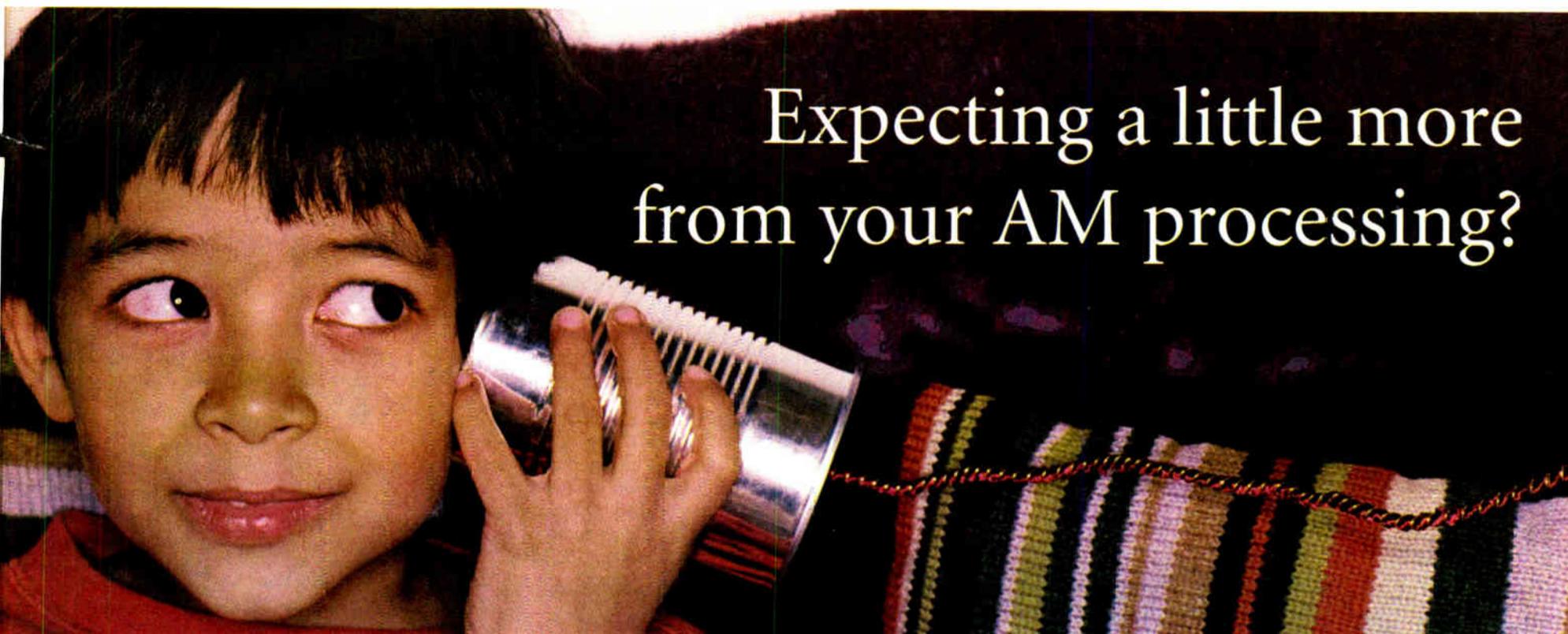
Merger Shuffles Denon, Marantz Into D&M Pro

Denon Professional and Marantz Professional now are united under the flag D&M Professional.

To get the word out about its new lineup, the merged company recently sent out a D&M Professional "deck" — a set of playing cards with Marantz and Denon products and specs emblazoned on them, such as the Marantz PMD505 dual well cassette deck (3 of Spades) and the Denon DRA-395P AM/FM stereo receiver (2 of Diamonds). With two Jokers, the deck includes 54 D&M Professional products.

For more information from D&M Professional, call the company in Illinois at (630) 741-0330 or visit www.d-mpro.com.





Expecting a little more
from your AM processing?

Omnia-5EX for AM delivers.

Many people are saying that HD Radio will benefit AM stations most, because the fidelity improvement will be so dramatic. Probably so. But you'll need a processor that gives you maximum quality on a low-bitrate coded channel. You need a processor designed by people who understand both processing and audio coding - and nobody knows these audio arts better than Telos / Omnia.

The new Omnia-5EX HD+AM is the only processor that accomodates **both your analog and digital channels** in a single unit that easily integrates with your HD encoder and transmitter.

Processing for the HD Radio side is smooth and clean, capably handling AM's programming variety - and really showing off the digital channel to listeners first sampling the new medium.

And you get a **potent upgrade for your analog AM**. Consider: Omnia AM processing is already on many legendary 50kw stations. Understandably, most of these want to keep their advantage a secret. But if you imagine the major AM signals - the real flamethrowers that sound great - you may very well be hearing an Omnia. CEs at these stations tell us, "Phone calls are clearer than before. And the bottom end is phenomonal, so the promos really punch." "Amazingly clear - even when we're in the 5 kHz analog mode for HD Radio compatibility."

You should expect more from your AM processing. More clarity, more presence, more power, more flexibility. Omnia-5EX HD+AM delivers.



The new Omnia-5EX HD+AM has enhanced processing for standard AM, and a second limiter section and digital output for HD Radio. Both limiters and outputs are included as standard.



For those who don't need HD Radio capability, there's Omnia-3AM, with a four band limiter, wideband AGC and our famous high-performance, non-aliasing final limiter for sweet, clear, natural audio that keeps listeners hooked.

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PRODUCT EVALUATION

TASCAM Makes the USB Connection

by Carl Lindemann

The TASCAM US-122 USB Audio/MIDI Interface is an easy way to add a quality two-channel audio I/O to most USB-equipped computers, either PC or Mac. While designed with pro audio applications in mind, this is a simple, portable, cost-effective package that does the trick for radio producers.

ently so that a line source can be recorded simultaneously on channel 1 next to a mic input voiceover on channel 2 — or a guitar solo, if you are so inclined.

The top row has a pair of knobs that set levels for the Headphones and Line Out. A switch puts the two channels into mono mode, helpful for voiceover-only work.

The last knob/switch is for direct moni-

toring. The ability to add compressors and the like through the channel inserts creates latency. Direct monitor mode cuts out these add-ons from monitoring but leaves them in the audio chain for recording.

The top row has a pair of knobs that set levels for the Headphones and Line Out. A switch puts the two channels into mono mode, helpful for voiceover-only work. The last knob/switch is for direct monitoring. The ability to add compressors and the like through the channel inserts creates latency. Direct monitor mode cuts out these add-ons from monitoring but leaves them in the audio chain for recording.

A nice feature is how the unit is powered by the USB port. There is no need for batteries or an external power supply. An LED lights up to show that connection is established. Other LEDs glow to show that there is an audio signal and can warn if the levels are too high. Metering is done through software only.

Software Included

The US-122 comes with a bundle of software including a "lite" PC and Mac OS 9 versions of Steinberg's Cubasis MIDI and audio sequencer. But the unit will work with most any other package. Bench tests on an IBM X20 laptop with Adobe Audition (formerly Cool Edit Pro) showed this to be a quiet interface with 91dB S/N ratio. That may not match 100+ dB studio units designed for ultra high-resolution recording, but it is more than sufficient for radio work.

Product Capsule:
TASCAM US-122
USB Audio/MIDI Interface

Thumbs Up

- ✓ Solid construction
- ✓ Easy to install/understand
- ✓ Excellent value

Thumbs Down

- ✓ Low volume for headphone monitoring
- ✓ No metering to set input levels

Price: \$269

For information, contact TASCAM in California at (323) 726-0303 or visit www.tascam.com.



The US-122 USB Audio/MIDI Interface

The book-sized US-122 (5.9 inches by 2.4 inches by 7.7 inches) has enough real estate so that TASCAM's sensible design gives easy-access to I/O and controls.

On the bottom, two phantom-powered Neutrik XLR mic inputs are placed alongside two line-level 1/4-inch TRS jacks. A pair of channel inserts allow for compressors and other hardware devices to be inserted into the audio chain. On the opposite end, RCA line-outs are next to a 1/4-inch headphone jack, the MIDI I/Os and the USB connector.

Knobs and switches

The top control panel has five knobs and five switches. The bottom row sets the levels on the XLRs and TRS inputs. One switch is the on/off for phantom power. Two others are for musicians to switch the mic/line levels on the inputs to guitar level for direct instrument recording.

The two channels operate indepen-

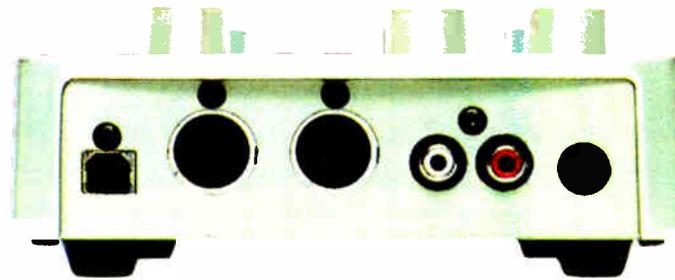
tly. The ability to add compressors and the like through the channel inserts creates latency. Direct monitor mode cuts out these add-ons from monitoring but leaves them in the audio chain for recording.

The metal case of US-122 has a nice, rugged feel and heft, weighing in at 2 pounds.

I was anxious at first about a bit of play and jiggle in the knobs and switches. The knobs don't rattle around changing settings, but the individual assemblies shift.

After several months of bouncing the unit in and around in real-world use without any problems, it seems that this issue is, in fact, a feature. The added "give" lets the unit soak up some of the rough-and-tumble. This is ready for the road.

To hook up the US-122, install the drivers and plug the unit in with a standard USB 1 cable. The included drivers cover the whole PC/Mac universe with support



Rear View

Although this can work well in the studio, this is really at home on the road. Field use with Sound Forge 6 in a variety of settings showed no significant noise. Basically, the unit does the job of bringing audio into the computer admirably. It is easy to install, operate and understand.

make this more of a mini-mixer to get an actual level. Of course, this can be done with the unit as it is through the software.

With a list price of \$269, the TASCAM US-122 is a remarkable value for those wanting to turn a laptop into a full-fledged DAW.

PRODUCT GUIDE

Omnia Has New Box for AM And HD Radio

The Omnia-5EX HD+AM is, according to the manufacturer, the first AM audio processor with a dual structure that processes HD Radio and analog AM simultaneously.

The unit's dual processing design routes processed audio from its multi-band mixer section to separate, simultaneous output stages. The first is optimized for conventional AM broadcasts, the second for HD Radios and DAB, Webcasting, satellite and other digital distribution networks.

According to the company, the Omnia-5EX HD+AM was designed to help AM stations prepare for digital while offering immediate improvement to conventional AM broadcasts.

Features include processing logarithms that provide processing for solo voices and instruments; new Bass Limiter functions, "Tight" and "Girth," for fine control over low frequency processing; and asymmetrical modulation capabilities with selectable output polarity that allow users to specify modulation of up to 150 percent in 1 percent increments.

For information from Omnia Audio, contact the company in Ohio at (216) 241-7225 or visit www.omniaaudio.com.

BUSINESS DIGEST

Balsys Names Howland Custom Furniture Rep

Michigan-based Dave Howland is now representing the Balsys Wood Arts line of custom broadcast furniture.

Howland is a former co-owner of Audio Broadcast Group who continued with Harris Corp.'s Broadcast Division after Harris purchased ABG. He is now an independent sales representative.

Balsys Wood Arts is based in Winter Garden, Fla. and provides custom furniture design and fabrication. With its sister company, Balsys Technology Group, it offers rewiring, system integration and on-site installation services.

For more information from Balsys, contact the company in Florida at (407) 654-7611 or go to www.balsys.com.



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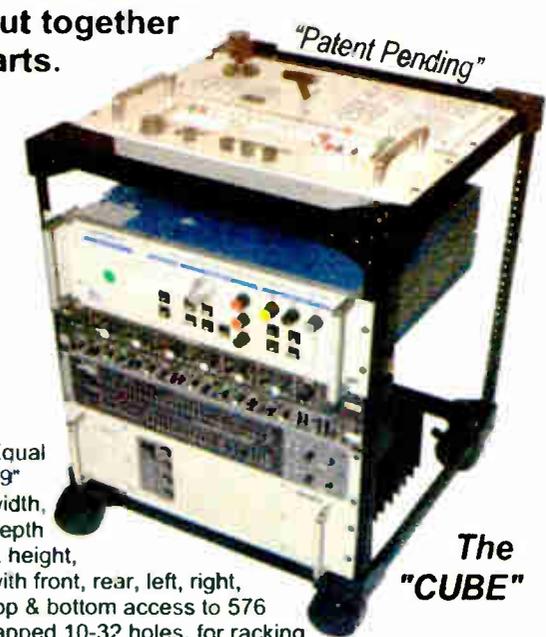
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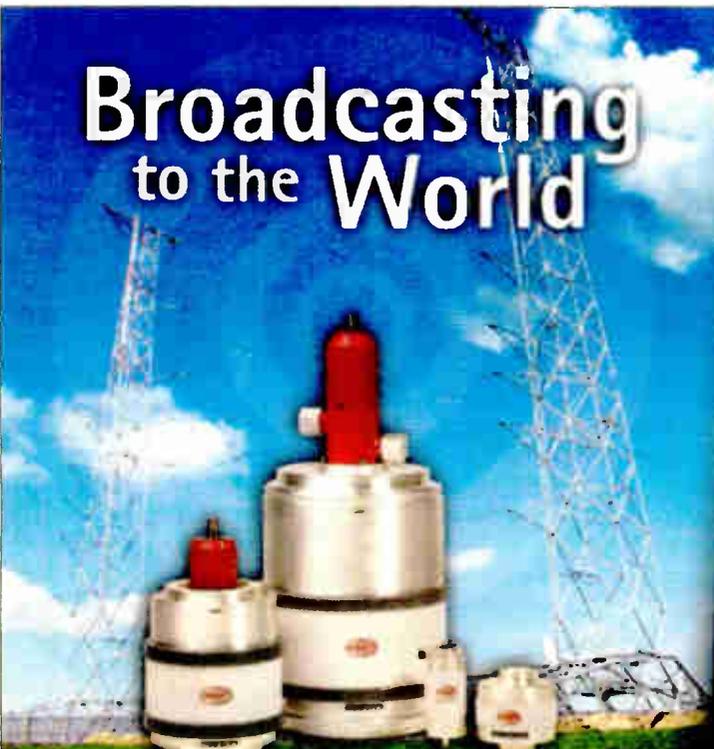
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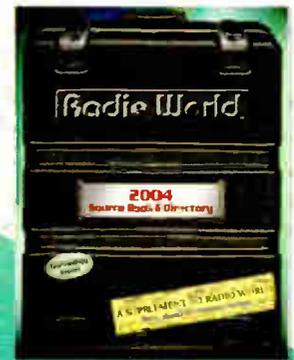
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Big-Time Voices, Small-Time Budgets

A Familiar Voice Talent Offers a Different Business Model for Smaller Markets

by Ken R.

No doubt about it. With credits like the Fox TV Network, the CBS TV Network, Disney and the Grammy Awards Show, Joe Cipriano is one of the top voice talents in America by anyone's standard.

So why would Cipriano and several fellow big-time announcers want to make their unique sound available in small and medium markets for a fraction of their usual fees?

budgets they have," said Cipriano from his home/studio in Beverly Hills. "I came up through small markets and felt I was missing out on working with people who were coming on. Some of the most

tions online for a moderate monthly fee.

As part of the package, the subscribing stations also receive one "custom" voice session by their choice of

Walker, program director of KMGX(FM), Bend, Ore. "It makes life easier when we can get these on the Net. I take it all and cut it up and save it as work parts on my workstation."

Walker said that Cipriano's custom liners work well with the generic material.

"He uses the same voice inflections and processing on everything," he said. "This guy is a pro. Joe has it nailed. It's a good product and he has unbelievable customer service"

Takin' your requests

"To keep the library topical and always growing, we take requests from the subscribers at an e-mail address where they can ask for lines they would like to see in the library," said Cipriano. "Right now we have clients in contemporary hit radio, hard rock, country, Christian, new rock, hot adult contemporary, soft adult contemporary and other formats."

PromoVoice clients can import the voice lines as MP3 files directly into their workstations. Cipriano noted that some production directors prefer to do



Joe Cipriano, Owner of PromoVoice



The PromoVoice Studio Console

Credit the Internet and the fact that many radio stations' imaging needs are similar to those of other stations within their format across the country.

That's where PromoVoice comes in.

"I was not always able to accept jobs in smaller markets because of the limited

creative people are new people, young people with fresh ideas."

He refers unofficially to his new Internet service as "Joe Cipriano Light." He and two other announcers have digitally recorded generic radio imaging libraries and made them available to sta-



The Equipment Rack at PromoVoice

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"Every issue has something of interest. I love the articles on engineering, especially John Bisset's column, as well as stories by Scott Fybush and Paul McLane. Radio World is true radio people doing a magazine for radio people."

Charlie Slezak, Engineer
Delmarva Broadcasting
WDEL-WSTW-WXCY
Wilmington, Del.

announcers. The idea is that stations can take their "custom" liners (which might include call letters, frequency, city, air personality names and other specifics) and mix them with the generic announcer elements downloaded from the Internet to stretch their budgets.

Cipriano's fellow talents in PromoVoice are Ace Walker, whom Cipriano describes as a top-notch female voiceover talent, and Troy Duran, who has one of those deep voices that rumble through the speakers. Stations can select the announcer that best fits their needs. Other announcers may be added in the future.

"I found in my custom work that there is a 'Mix,' a 'Star,' a 'KISS,' etc. in just about every market," said Cipriano. "I found myself saying 'the best hits of the '80s, '90s and today' on about seven of my custom stations and there are hundreds of slogans like that."

Because these same image slogans are used all over the country, Cipriano, Duran and Walker have recorded as many of them as possible and stored them as encrypted MP3 files. New lines are added to the library frequently. Subscribers receive a code to access whatever they need.

"I think it's a great idea," said Rob

this sort of work on their home computers. Subscribers can look at a total list of available spoken lines, select the ones they need and click "start batch download." That places the selected cuts into a ZIP file and puts them on the desktop, then unzips them for the client.

"We also offer music and sweeper beds for our subscribers," Cipriano said. "We can afford to bring on these clients because we spend less time with each than we would with our custom clients."

PromoVoice voice can cost as little as \$65 per month in the smallest markets. In larger markets the top rate is about \$500 per month. Compared to what Cipriano charges his custom clients — about \$1,200 per month — it is a bargain.

He gave this analogy to explain the economics: "When you're in a play traveling all over the country, you say the same lines over and over in each city," Cipriano said. "If you star in a movie, you film it once and it plays all over."

To learn more, visit www.promovoice.com or Cipriano's personal site, www.joecipriano.com.

Ken R. is a former radio personality whose voice is often likened to that of a 12-year-old boy with asthma.

PRODUCT GUIDE

Eventide Ships New Plug-Ins

Eventide has begun shipping Reverb and Octavox Harmonizer diatonic pitch shifter plug-ins for Pro Tools for Mac v5.1.3 or greater.

The plug-ins, launched shortly after Clockworks Legacy plug-ins, are based on the Orville digital audio effects processor.

According to Eventide, the plug-ins provide the flexibility and tone-shaping capability that high-end stu-



dios have enjoyed using the company's hardware processors, but at a more affordable price.

The Octavox costs \$595 and is the first Harmonizer eight-voice diatonic pitch shifter plug-in. The Reverb is \$695 and has reverb algorithms that include halls, chambers, plates, rooms, ambience and lo-fi effects.

For more information, call the company in New Jersey at (201) 641-1200 or visit www.eventide.com.

Sizes Added to Winsted Rack Line

Winsted has added nine sizes to its Pro Series II line of vertical equipment racks.

The line has received UL approval. Models are welded with powder-coated, mar-resistant black finishes for strength and long life.

They have leg-levelers plus corner uprights, lift-off side panels and open pedestals to ease wire management and accessibility.



The company's racks, consoles and command centers are modular, providing flexibility and expansion and revision of existing systems. A selection of accessories is available for each line.

For a copy of the company's new catalog, call (800) 447-2257 or visit www.winsted.com.

Lynx AES16-SRC Becoming Digital Standard

Lynx has added sample-rate conversion to its AES16 line of 192 kHz AES/EBU interfaces. The AES16-SRC has eight channels of sample rate conversion. The unit began shipping late last year and is suitable for applications involving 24-bit, 192-kHz AES/EBU digital audio.

The eight channels of mastering-quality sample-rate conversion accommodate facilities running multiple sample rates or signals not locked to "house sync." The card offers conversion ratios up to 8:1; its sample-rate converters have a dynamic range of 142 dB. The AES16-SRC is able to maintain phase between multiple rated-converted inputs using its matched phase control.

Features of the AES16, including SynchroLock jitter reduction, software control and Windows/Mac compatibility, are included with the AES16-SRC. Two model CBL-AES1604 cables are included for interface using the XLR connectors for audio and BNC word clock I/O.

For more information from Lynx Technology, contact the company in California at (949) 515-8265, or go to www.lynxstudio.com.

Logitek Brings Large Console Flexibility to small workspaces



Remora-10 console at Cache Valley Broadcasting, Logan, UT



Possible Remora Configurations

- Remora-4: four faders with controls for input assignment, monitors, and console functions
- Remora-10 (shown): addition of six-fader module brings additional mixing capability with another stereo LED meter
- Remora-16: incorporates Remora-4 base unit with two 6-fader modules
- Remora-22: incorporates Remora-4 base unit with three 6-fader modules

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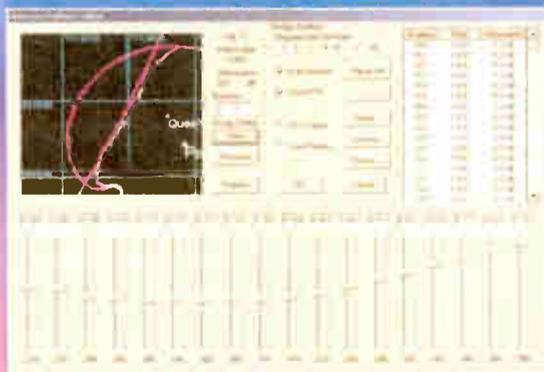
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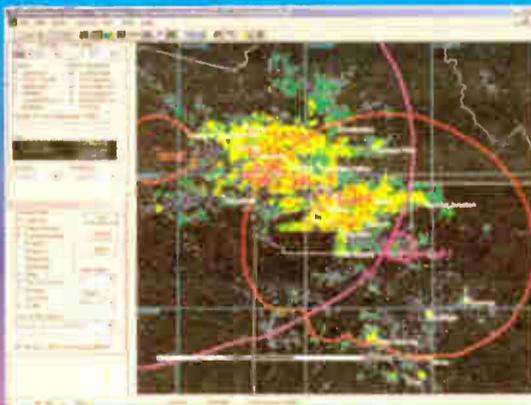
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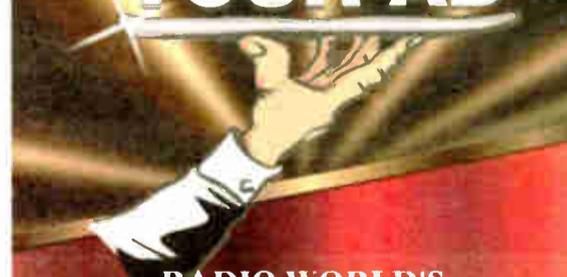
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How to Optimize Speech for Air

by Blažo Guzina

Many factors influence the overall quality of the sound received by a radio receiver.

Limiters and signal processors at the studio output; the type of modulation; the distance, power, polar diagram and orientation of transmitting antennas; wave propagation conditions; fading, multipath and interference; reception conditions; as well as the type, position and quality of the receiving antenna and receiver itself all have an impact on audio quality.

However, under an ideal situation, with technical characteristics set to match perfect values, the sound quality of broadcast speech will depend on three factors: the voice itself, the microphone and the ambient acoustics of the studio or place of recording.

Recommended values

What a listener expects is a voice that sounds clear and natural, possibly slightly reinforced and brightened by studio acoustics. Speech must not contain any distracting noise or sound that is not a part of an appropriate and naturally sounding ambient.

The size of a studio should match that of a living room. The studio has to be acoustically treated with absorbers designed to be effective at low, medium and high frequencies to match the recommended values of reverberation time.

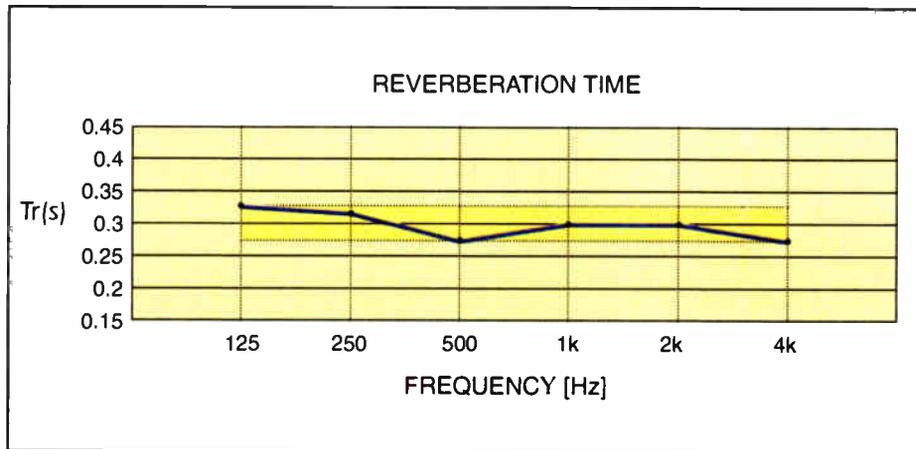
The recommended average reverberation time for a studio for speech is 0.3 seconds (± 0.05 seconds). A lower limit of 0.25 seconds is acceptable for a studio with dead acoustics, with an upper limit of 0.35 seconds for a quite "live" studio.

Fluctuations of ± 10 percent in relation to the average value are acceptable in a range from 125 Hz to 4 kHz. The frequency characteristic of reverberation time should be flat and even, with a little boost allowed at low frequencies and gradual roll-off at high frequencies.

Some owners of budget or improvised studios often make a mistake when they treat all studio walls and the ceiling with rubber or plastic foam, fiberglass or acoustic tile in order to cut costs.

Omnidirectional microphones allow closer distances than cardioid or bidirectional ones. But, at the same working distance, omnidirectional microphones require much dead acoustics, with reverberation times close to 0.25 seconds. This is because omnidirectional microphones are more susceptible to coloration as they capture more reflections and reverberation from all directions.

Cardioid and bidirectional microphones discriminate against studio reverberation by their very directivity. A hypercardioid microphone with greater directivity is recommended for use in a live studio with reverberation of or close to 0.35 seconds.



Measured Reverberation Time of a Speech Studio With Good Acoustics

In multipurpose European radio studios, the typical working distance of a microphone for speech broadcasting is about 19 inches or 50 centimeters (compared to the closer working distance favored by air talent in the United States). Both dynamic and condenser microphones are suitable.

Condensers are known for their excellent response to transient sounds. As an example, the AKG C 4500 B-BC is a perfect microphone for use as a high-quality announcer condenser microphone.

Sibilant sounds

If the speaker's voice has sibilance (emphasized *s* or *sh* sounds), it is necessary to reduce this by using a microphone with flat frequency response rather than one with a presence peak.

is not a problem. On the contrary, it helps eliminate eventual low- and high-frequency noise in the studio.

Knowing that studio acoustics, announcer voice and microphone are interrelated, it is advisable to carry out rehearsals, trial recordings and listening tests before recording or broadcasting speech from a studio with unfamiliar acoustics.

Severe colorations

The recording engineer should place a microphone in two initial positions, which are expected to give the best-sounding results. A speaker with a good

characteristics.

For clarity and quality, direct sound should comprise a full range of frequencies that characterize and define the speaker. It is essential to prevent unwanted direct sounds, such as the turning of pages of the script.

Wanted indirect sound, such as reverberation, must not decrease the intelligibility and clarity of voice, while unwanted indirect sound, such as room resonant modes and excessive reflections, which could cause severe colorations, should be avoided, as should unwanted extraneous noises.

The balance of bass, middle and high frequencies also is of vital importance. They have to be in the correct proportions and should sound in the same perspective. If this is not the case, it could be a sign of acoustic imperfections in the studio.

Such defects will cause certain frequencies to be emphasized more than others.

Tiresome trials

So what is it possible to change during tests?

Answer: The distance between mouth and microphone, the height and angle of the microphone axis in relation to the speaker, especially for directional microphones and those with a switchable directivity pattern, and, finally, the frequency response, changeable by filtering or selecting another microphone with a different response.

Broadcasting or recording engineers should be patient and aware of the fatigue caused by lengthy tests or high listening levels. There is no need for listening levels higher than 80 dB nor for long and tiresome trials. Pauses between tests are recommended to ensure that ears remain fresh.

Blažo Guzina is a senior engineer at Radio Televizija Srbije in Belgrade, Serbia. He is a professor in the Sound Recording Department of the Arts Academy at Univerzitet Braća Karić. Contact him via e-mail at blazo_guzina@yahoo.com or visit www.bg.dk3.com.

In an ideal situation, the sound quality of broadcast speech will depend on three factors.

This kind of porous absorber, together with carpeting and curtains, is effective mainly at high frequencies, when it makes the studio extremely "dead," but without any effect on the low and mid portions of reverberation time.

Resonant modes

The result is boomy and bloated sound, due to the uneven frequency characteristic of reverberation time, poorly damped low frequencies and excessive resonant modes.

The user of a studio should know that rectangular rooms are prone to unwanted resonant modes and standing waves between parallel walls, the worst case being a cube-shaped room.

Studio acoustics also influence the choice and working distance of microphones.

The sound technician should position a microphone off-axis to the mouth and may additionally cut high frequencies more than 5 kHz on the mixing console. In general, dynamic microphones are better than condenser ones when the speaker has excessive sibilance.

It is easy to test the reaction of a microphone or entire audio system to sibilance. The speaker should repeat two sentences rich in sibilant sounds: "Sister Suzy is sewing shirts for soldiers" and "She sells seashells on the seashore," for example.

The microphone response characteristic has to be flat throughout the frequency range of speech. Male and female speech have frequency ranges of 100 Hz to 8 kHz and 150 Hz to 10 kHz respectively.

If the response of a microphone has a roll-off below and above that range, this

voice then should read the same lines in turn from each position.

The sound should be repeatedly compared by careful listening through high-quality loudspeakers. Intervals of 10 seconds or so should be enough to make a decision.

After abandoning the position with poorer sound quality, the microphone should be moved to another position and so on. The test is repeated until no further improvement is possible.

While performing tests, the recording engineer should listen for various sound

PRODUCT GUIDE

Whirlwind Expands E Sys Product Line

E Snake from Whirlwind is a CobraNet-based digital snake, the latest addition to the company's line of E Sys products. Other products in the family include the E Desk system controller, E Beam Ethernet laser and E Mod CobraNet modules.

E Snake is a combination of an E Snake Frame (ESF) and E Snake Control software for managing the system. Each ESF consists of a motherboard that can accept four input cards and four output cards. The modular design permits each ESF to transmit and/or receive as few as eight or as many as 32 channels of real-time audio.

E Snake uses CobraNet, an industry standard for real-time, multi-channel networked audio. A single E Snake can be used as a multiple channel I/O device in existing CobraNet networks. Connecting two of these frames to each other with Cat-5 cable or fiber optics can replace the traditional analog or multipair audio snake.

Due to the light weight of the cabling, E Snake opens possibilities for routing the cable overhead, around obstacles or underground. Replacing a damaged cable is less expensive than replacing or repairing 58 pair cable and multipin connectors, the company says. Setup and teardown are faster and splits can be handled by using standard Ethernet switches to connect multiple receivers.

For more information from Whirlwind, contact the company in New York at (800) 733-9473 or visit www.whirlwindusa.com.



Designing the Cigar-Box Studio

by Alan R. Peterson

Some months back I mentioned that a large studio buildout is underway here in downtown Washington for WMET(AM), along with a new RF plant in nearby Gaithersburg, Md. I am pleased to say that construction on both phases is progressing nicely, even with the interruptions of Hurricane Isabel and the early snowfalls that arrived with winter.

When complete, WMET will be a 50 kW talk monster serving D.C., a good part of Maryland and a nice slice of Virginia as well. Not bad for a former underpowered townie AM that others wrote off as having had better days.

The downtown studio is now tricked out with a Wheatstone D-8000 that ranks among the largest and most complex boards I have had the opportunity to run. Saturdays I can be found at the

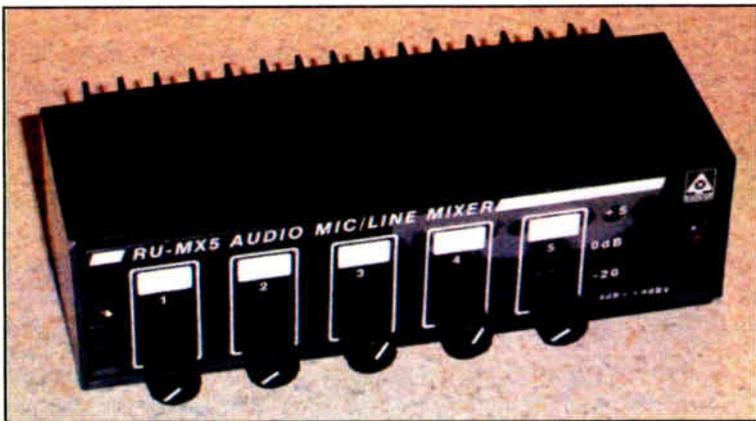


Fig. 1: A tiny RDL mixer. You might not want to run your entire station through one, but that wouldn't stop Al.

downtown facility, mixing talk programming on that giant console and squirting it up to the main studio still in Gaithersburg.

One such Saturday found me thinking about the contrast of complexity between the huge D-8000 I was running and that old Gates console I wrote about a few issues back, slated to be the new heart of my resurrected Part 15 AMer this spring.

There can be no comparison between the two, other than they are both audio consoles designed for radio broadcast. And, with the exception of those monster mixers designed for television production and several radio models from Telos Systems, Ward-Beck and others, broadcast mixers normally do not get much bigger than this.

Which started a train of thought down the other direction: Just how *small* a studio rig could I get away with creating that would still provide decent broadcast quality?

Is it ham? Is it tuna?

Big rigs are all the rage in new buildouts. They handle every kind of input thrown at them, they route to almost anywhere, and jocks love playing "mine's bigger" when it comes to consoles.

However, micro- and nano-technology is also the rage in other phases of industry. Small ingestible cameras that take diagnostic pictures of your insides. Rearranging atoms on a substrate into corporate logos. Micro-machines with etched gears and electric motors that work like little bulldozers.

Radio-speaking, many amateur operators I know enjoy noodling with

extremely small, low-powered ham rigs. They try to work the world with tiny home-brew "QRP" transmitters, and the smaller they are able to build them, the more enjoyable their hobby; some radios are small enough to have been built inside tuna cans.

My aim was not to see if I could construct an IBOC transmitter in a Chef-Boy-Ar-Dee lunchbucket, but rather to see how small I could package a typical studio complement consisting of mixer, audio storage and playback device(s), monitoring and microphones.

I did not necessarily care if it was mono or stereo, so I opted for mono. And I wanted to see if I could do it without having to include a laptop computer or audio playback software.



Fig. 2: A busted fax machine circuit board provides lots of micro snap-switches.

Cost was naturally an issue, but I didn't want to skimp. And since this was going to be a rig in theory only (I don't really feel like building it), I could "spend" as much as I wanted to.

The absolute drop-dead specification I set for myself was that this entire broadcast-ready "studio" would have to fit in a space no larger than the inside of a cigar box.

Lilliputian

First up would be a mixer.

Small mixers are nothing new. In the past, plenty of stations have been built around the old Sparta A-15 five-potters and even a few of the old Broadcast Electronics 4M50 four-pot mono jobbies. But I needed Lilliputian proportions for this to work.

I thought about something that could handle five inputs — two mics, two audio playback devices and a cassette/MD input — and had the feel of a mixer. My search ended with a Radio Design Labs RU-MX5 mic/line mixer (Fig. 1).

Pots 1 through 4 are line- or mic-level inputs, with Pot 5 dedicated for line levels only. A three-LED VU meter keeps levels in check. And it is driven off a wall wart up to 24 VDC.

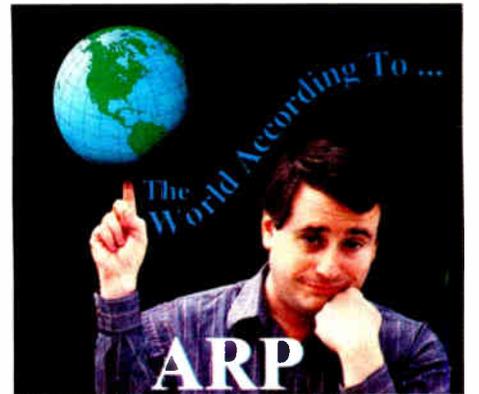
This mixer lacks major features like a cue bus, channel switches, an Insert line and the ability to mix-minus. After all, why would it need them?

But just in case I ever wanted them, I did draw up a rudimentary diagram of channel on/off switches and a cue circuit consisting of a 1458 op amp, a little Kobitone mylar speaker and a 380 audio amp chip. The whole thing

could have been built onto a piece of perfboard, using channel buttons cannibalized from a dead fax machine keypad (Fig. 2) and taped to the top of the MX5.

So much for the mixer. Now came the issue of music storage.

Remember I wanted to avoid using a computer. But that didn't mean I would totally be without the aid of one. Just as you might load music at your station through the production room *without* disassembling and bringing pieces of that room into the on-air studio, I opted for an offsite laptop "production room" loading music into a pair of portable MP3 players, specifically Samsung YP-55V "Yepp" units.



4 inches square, one would be right at home in the cigar-box studio. It is pretty much a given that Sony owns this corner of the market.

With a little creative wiring and some voltage regulator chips, it may be completely possible to drive the entire rig right off the power supply for the MX5 mixer. Skip the batteries, plug in and go!

Drop on the headphones, rack up the tunes and hit the air. Without monitor speakers, you won't have a feedback issue and you won't need an off switch for the mics.

Segue songs between both MP3 players, run the spots and the program elements off the MD player. You might need to trim your nails to hit the little buttons, but you are rockin'. And a few moments with a ruler will convince you that, yes, the whole mess drops comfortably into a cigar box.

By "cigar box" I mean a spacious and finely handcrafted case formerly reserved for 25 Carbonell Gigantes, not that tiny limp cardboard box that those bowling-alley stinkers come in.

Don't do it

You know what? It can be done. But I don't recommend it.

You would never want to bring such a rig with you on a remote. You certainly would not want to set up your main studio like this, unless your radio station is inside a phone booth.

You would have to buy another box of cigars if you wanted to build a production room (snicker). Also, I didn't even address the issue of signal processing or shooting the signal out to a transmitter anywhere.

No, this was just an experiment in seeing how much stuff we could squeeze into the tiniest volume possible. The fact we *can* get a functioning rig into such a small cubic space is actually pretty amazing. Remember how much real estate was required to do this only a few years back? Remember what used to pass for "portable"?

All of the products and items mentioned here are in use now at stations everywhere. Maybe not necessarily in mission-critical positions, but news reporters and street teams make extensive use of MD recorders. Portable MP3 players can be used to "sneaker" music to other computers and truck in comedy bits and interviews produced offsite. And RDL would not make the MX5 if radio stations did not need them.

So smile at the thought of the cigar-box studio, look around your shop and see if you can squash it down even smaller with the stuff you already own, and let me know.

Right now, I'm going back to my nice big console, which is just fine by me.

Alan Peterson is production director for WMET(AM). Reach him at alan-peterson@earthlink.net. 🌐

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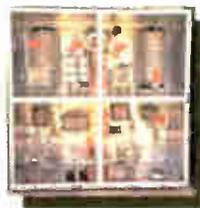
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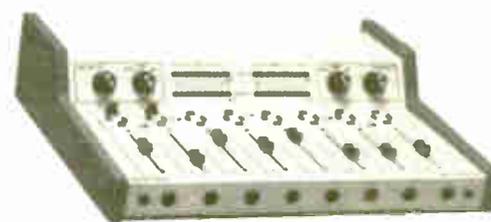


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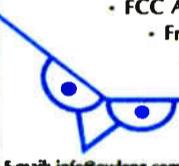
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Radio World, March 1, 2004

Where Has All the Quality Gone?

by Kenneth MacHarg

Don't listen to a station for a least a year after you have worked there.

This was the warning of a friend as I exited a station about five years ago. In the years since, I have become convinced that one should not listen to radio at all if they have ever worked in that medium. It's just too frustrating.

As a freelance journalist, I often work abroad. But as I tune across the dial of domestic stations and listen to the variety of formats, I wonder what has happened to quality.

I'm not talking here about the quality or sterility of radio formats; that's a discussion for another time. I refer to the quality, or lack thereof, in the execution of formats that sound like they are just thrown on the air.

A few examples will suffice:

• **Skill** — Back in the years B.C. (before computers), when commercials were cued on tape or set up on carts, it seemed that even the high-school weekender who was responsible for most goof-ups could meet the network news dead on. Perhaps I shouldn't complain, with so few stations even using network news anymore, but for those who do, would it be possible to get everything wrapped up on time without a cacophony of music finishing, a prerecorded ID with jingle and the network sounder all on the air at the same time?

What about that public radio station I hear each morning, arriving at the BBC news 10 seconds early and allowing us to hear the tail end of the billboard for a program that we will never hear, or entering the news in progress Wally Ballou-style? The same goes for our local NPR station, which covers much of the national news with program promos, news, underwriting announcements, traffic reports and other such clutter and oftentimes can't get back into Morning Edition on time.

And, can live announcers going into the network news no longer synchronize the instrumental that brings the hour to a close with the legal ID that ends with the network sounder? That's a much more professional sound than the interruption of a vocal in progress for the canned ID.

• **Earphones** — The last time I checked, there were still a number of companies producing high-quality earphones for use in radio studios. If these modern marvels are placed over the announcer's ears while on the air live, the operator/announcer will know instantly that a song and commercial are playing while he/she is giving the weather. Continued use of the earphones when off the air, combined with turning off the microphone switch, enables the announcer to hear similar technical problems before a listener has to call in and report them.

• **Automation** — Granted, mechanical execution will involve occasional gremlins, just like live engineering and announcing. The question is, doesn't

anybody listen to his or her station anymore? Automation screw-ups can continue for hours, offering dead air or garbled transmissions and nobody seems to notice. If the format is too unbearable for station personnel, perhaps that old fallback of contracting with a 24-hour diner to monitor whether things are running smoothly might be in order.

• **News** — I shouldn't even get started in this area, and will limit my remarks. Back when news anchors were well-trained, there was the admonition not to begin each news story with the word "well." Well, that idea seems to have been forgotten. The local chicas on one station's 10 p.m. newscast in our market begin almost every story with that word, as do at least three anchors for CNN, one on Headline News and two on CNN International.

• **Writing** — OK, I'm cheating, for this also is a news item. And it has nothing to do with the verbless writing to which we are subjected every day on TV and radio. (In that regard, my wife, a professional ESL teacher, no longer recommends that her students listen to the news to practice hearing English. The grammar is horrible.) The problem here is just a poor command of the English language and its grammatical points.

One recent example is in the coverage of the Egyptian Siamese twins who were separated. Why did I hear several news

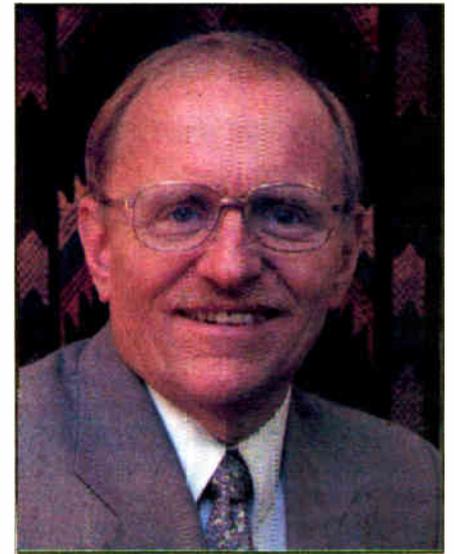
reports concerning "the two twins?" It seems to me that twins imply two. But then, I never was good at math.

• **Pronunciation** — Maybe it's because I'm a news junkie, but I just have to throw in one more news-related gripe. If local stations insist they are going to do national and world news rather than leave it to the experts at the networks, they need to learn how to pronounce things correctly.

For example, the capital of Uruguay is pronounced *Mon-tey-vih-day-oh*, not *Monte-video*, and when the pope elevates a person to sainthood, the process is *be-at-ih-fication*, not *beet-a-fication*. Just two enlightened examples actually heard on the air.

• **Preparation** — How often have you heard a metro-style traffic report end with, "this report was brought to you byyyyy ... Joe's Garage?" Or a certain music hostess on one classical music station who is always saying, "We just hearrrrddd ..." The voice goes up as the announcer extends the word while scrambling to fill in the blank. Come on. Have the info ready *before* you go on the air.

• **Annoyance** — Programmers should work to attract and keep listeners, not annoy them so that they change the channel. Why must we hear "Newsradio XXX, WXXX in-depth, team coverage" repeated so many times in a half hour that it takes up time that could have been used



Kenneth MacHarg is frustrated by what he sees as radio's lax attitude toward preparation and pronunciation.

to include another news story or two? Such repetition is akin to the monotony of dripping water, and its overuse renders the concept meaningless.

Why do I gripe so? Perhaps I'm getting old and grouchy. Or maybe it's because I love radio and want to hear it done well.

Kenneth D. MacHarg is a mission journalist for Latin America Mission, an evangelical Christian organization, and is based in Carrollton, Ga. He is the author of "Proclaiming the Gospel: Guidelines for Local Christian Radio Programming Around the World," published by LAM and available in English and Spanish.



Bill DeFelice, right, and fellow student Jim Bailey at WMNR(FM), Monroe, Conn., just before the studio was demolished in a move brought on by a high-school renovation project.

years with the station, I would be involved with everything from in-studio and remote broadcasts to a multitude of engineering duties.

Recently, WMNR, now a classical music station, celebrated 30 years of broadcasting, which included a new home, modernized studio complex and reunion of former volunteers. Babina asked if I wanted some former studio equipment. While this included several cart decks, a Shure mixer and the remote line telephone, the standout item was the Yard 80.

This console takes me back to a time when I enjoyed a full head of hair and a mint collection of 45s and albums. It highlights the start of my radio career and represents a passion that will follow me for the rest of my life.

*Bill DeFelice
Capital Radio.us
Monroe, Conn.*

I enjoyed reading Peterson's article about his recently acquired Gatesway 80 console. It's always nice to see those old rotary consoles still being used. I have fond memories of an old Gates Yard console at my first commercial broadcasting job.

I am the station manager of a radio reading service for the blind and visually impaired. We have an LPB S-15 in our control room, and a Harris five-pot board in our production room.

Long live rotary consoles.

*Paul Trama
Scranton, Pa.*

Long Live Rotary Consoles

I thoroughly enjoyed Alan Peterson's article, "Classic Console Comes to Roost" (Dec. 3). Few of us rarely get the opportunity to own the actual first console we started our careers on.

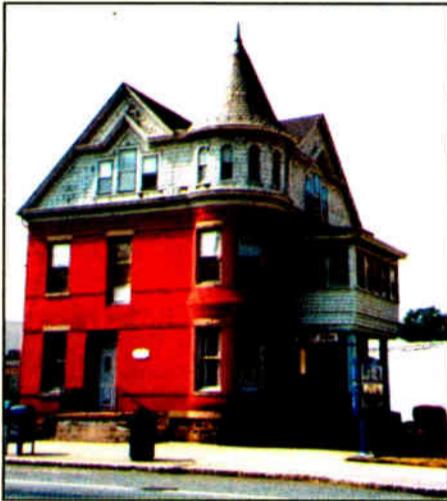
In the early 1970s, local resident John Babina Jr. and the Monroe Connecticut Board of Education started WMNR(FM), then a humble 330-watt FM station located at the town's high school. Student and adult volunteers from the community staffed the station. While much of the equipment had been donated or salvaged from other stations, the first piece of new gear was a Gates Yard 80 that hit the airwaves shortly after broadcasting commenced in December 1973.

I joined the station in the summer of 1974 and passed the tests for my "third" (remember Elements 1, 2 and 9?) just days after my 14th birthday. Even before I hit the air solo in January 1975, I had an opportunity to "board op" on this console. Through my

◆ READER'S FORUM ◆

NJRM Needs Your Help

We would like to thank Radio World and its readers for their support of the New Jersey Radio Museum. Thanks to Museum Secretary and Liaison George Laurie, more than \$12,000 dollars in construction work has been donated to bring our new house up to code.



The museum's new home is on the third floor of this historic building in Dover, N.J.

NJRM is pushing to establish a low-power AM service and applying for a license so that people seeking local programming will find local programming. We are asking for 100 watts daytime and 25 watts nighttime on what is essentially a dead frequency in northern New Jersey: 1580 kHz. To do this, NJRM needs support of vendors via donation of a capable transmitter and mobile-type tower, both of which are advertised in Radio World.

Dover formerly was served by a 10,000-watt day/500-watt night AM station, now silent, and a Class A FM, now located 20 miles to the east. Luckily, our 501-C organization is run by talented on air and engineer folks who understand radio. NJRM would like to give Dover a radio voice and restore local radio to the community. LPAM may be our chance.

If you would like to restore local programming, let the FCC know that people are willing to give local radio another shot. Vendors, you will be valuable helpers, and with LPAM we can advertise your services.

NJRM would like to sincerely thank

1250 WMTR(AM) and Chief Engineer Mike Feriola for their most generous donations of equipment in excellent working order, for display and for use by our future radio station. We welcome and encourage other N.J. radio stations to contact us at www.njrm.org.

*Carl M. Van Orden, General Manager
Rich Phoenix, President
New Jersey Radio Museum
Dover, N.J.*

The above letter also was signed by eight other officers of the museum.

Whitewashing HD Radio

Thanks a bunch for publishing Tom Ray's account of his initial collision with HD Radio reception (Jan. 2).

Even though Tom is an unabashed booster of HD Radio, his piece confirms that HD Radio on AM works exactly as described by Ibiqity. Of course, Ibiqity and its predecessors spent a decade finding out what might happen, so this ought not surprise us.

What Tom's report does not tell us is the degree of interference to existing analog reception the widespread implementation of HD Radio on AM may cause. Horror stories have already surfaced. Two things are clear: Analog AM will be with us for a long time. And most adjacent-channel interference will be caused by powerful stations — Class A facilities like WOR(AM), for instance.

In order to preserve reasonable AM reception amid the mass of analog receivers, particularly at night, we will be faced with a decision: Either reduce the night powers of HD Radio stations causing true interference to analog reception, or live with the interference until analog signs off. I imagine that wiser heads are debating this choice at this very moment.

*Gary O. Keener
Keener Technical Services
San Antonio, Texas*

Alive and Well

Before calling WHA(AM) dead (*Reader's Forum*, Jan. 2), please see:

• gullfoss2.fcc.gov/cgi-bin/ws.exe/genmen/cdb/cdb_site_res.htm?db_id=11&link=0&callsign=WHA
or

Is It OK to Say, But Not Print?

A recent Radio World story by legal columnist Harry Cole concerned obscenity on the radio.

Ed Pyle, news director for Infinity's KNX(AM) in Los Angeles, complained that Cole's story in RW tiptoed around the language with asterisks.

"So it's okay for radio to be polluted with street language," he wrote to Cole. "Okay, fine. At the same time, when you use that language in an article for Radio World applauding the FCC's stance, it's 'c***sucker' (and) 'f***ing'? It's okay to say, but not to print? What is it, concern about protecting all the many kids maybe 6, 8, 10 years old who read Radio World from such coarseness?"

"Course, those same kids who apparently shouldn't be permitted to encounter such raw text in Radio World would probably never tune in to some shock jock. Nah."

Pyle assumes that the columnist avoided the language, but in fact Harry Cole did not; that was our call.

This was before the record \$755,000 fine against Clear Channel and the infamous Janet Jackson breast episode, both of which brought further attention to these matters. But this question of profanity on the air and in print continues to fascinate readers, so we share here the reply sent to Pyle by Radio World Editor Paul McLane:

"Thank you for your note, Mr. Pyle. The decision in this case was made by the editors, not the author of the article, and it is consistent with our publication's policy if not with Harry Cole's internal argument in the story.

"While I personally am not offended by printing the words in this context, and would in fact have preferred to publish them, a number of our readers would be so offended, as I know from experience. In our jobs as journalists, we must constantly weigh what is acceptable to the accumulated readership," McLane wrote.

"Our readers tend to be more conservative than most readers of the general press; and even there, I venture to say, a news story on this topic in most general publications would be so edited, even in stories about standards or censorship.

"Without question these social standards are changing, and perhaps in another year or two I would make a different call.

"I did find the situation ironic, however; which is why I inserted the sidebar box at the end of the same article, with Harry's help — I wanted to acknowledge it."

What do you think?

— RW

• www.wpr.org/schedule/DisplaySchedule.cfm?iStationID=2.

*Ken W. Dicks
Albertville, Wis.*

An Industry Must-Read

I cannot say enough about the value of Radio World.

I started reading RW with the very first issue in, I believe, 1978. I was a junior in the school of business at Marshall University and the student manager of the university's radio station, WMUL(FM).

After 25 years, I don't think I have ever missed an issue, nor would I dare to.

It has been an invaluable asset in my career and I thank you. My copy of Radio World is still the first thing I dig out of the mail bucket and it is a must-read for my technical and operations people. Its quality, content and value have never faltered, and continue to improve with each passing year.

Congratulations on an outstanding publication.

*Jim Hoge
President and General Manager
WPOZ(FM) / WEAZ(FM)
Orlando, Fla.*

Correction

"Ottawa" was misspelled (twice) on page 7 of the Jan. 14 issue.

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D-8000

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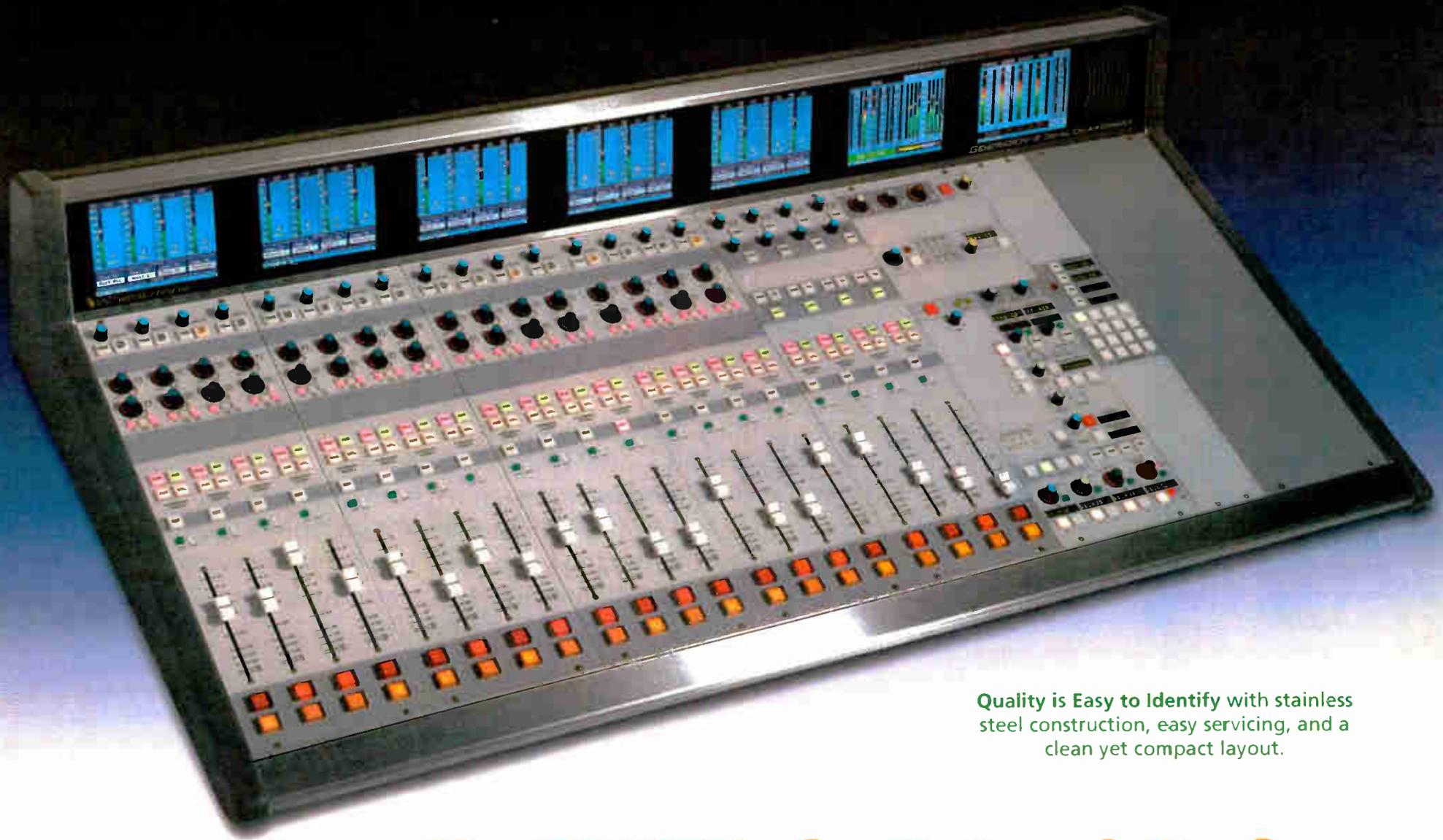
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