AUTOMATION & DIGITAL STORAGE: In Buyer's Guide

**********3-DIGIT 857
S101903 D08 0103 640
BARRY MISHKIND
2033 S AUGUSTA PL
TUCSON AZ 85710 7905

Isolation Booths Come of Age

Getting the noise out of production and keeping it out. Ken R. reports in *Studio Sessions*.

Page 35

KUVO in Tune

Denver's jazz Oasis upgrades to digital to support its diverse programming.

Page 12

Radio World®
The Newspaper for Radio Managers and Engineers
July 4, 2001

INSIDE

NEWS

▼ Orban's parent CRL gains TV receiver product line with Avocet purchase.
Page 2

GM JOURNAL

▼ Smaller groups will be among the most interesting to watch in coming months.
Page 23

▼ The multiethnic, multilingual NAB Americas Conference comes to Key Biscayne.
Page 26

STUDIO SESSIONS

▼ Mike Mann tries out the Fairlight On Air Fusion & Travis the V/O Guy hears from readers.

In This Issue

$$ FOR NOTHING

▼ BSW and RW fire off a $1,000 gift certificate to a lucky reader.
Page 4

Silver Sweepstakes 25 Years
NewsBytes Now Every Business Day at www.rwonline.com

'Amber' Abduction Alert Likely for EAS

FCC Likely to Give Amber Plan EAS Event Code

by Randy J. Stine

WASHINGTON With the FCC expected to add an Emergency Alert System event code for abducted children later this year, law enforcement and children's advocates are hoping more broadcasters will sign on to so-called Amber Plans.

Because of a girl named Amber, a growing number of radio stations are airing EAS messages, hoping to help find abducted children while their trail is still fresh.

Named after Amber Hagerman, a 9-year-old Arlington, Texas, girl who was abducted and killed in 1996, the Amber Plan is an emergency plan that uses EAS to help locate abducted children.

EAS is the major element of an Amber Plan and is seen as law enforcement's

See AMBER, page 5 ▶

Clear Channel's Phoenix Cluster VP/Market Manager J.D. Freeman

NEWS MAKER

Silliman: On Top and Still Climbing

by Steve Jess

CHANDLER, Ind. Lots of people can say they've been to the top of the Empire State Building, but not many have been where Tom Silliman has been, clinging to a metal framework and looking *down* at the art-deco peak, once intended as a dirigible mooring mast, that now anchors a cluster of FM and TV antennas for New York City.

Even though the 56-year-old Silliman is CEO and majority stockholder of Electronics Research Inc., a manufacturer of towers, FM antennas, and combiners, he still climbs towers on the job — against the advice of some of his friends.

In recent months, his work has put him where few in the radio supply business go: on national television and into the pages of the New York Times.

"I have no intention of quitting climbing," Silliman said emphatically. While he cannot go out drinking the night before a climb, as he says he did in his 20s, he believes he remains fit because he has adapted his life to the

See SILLIMAN, page 3 ▶

World Radio History

NEWSWATCH

CRL to Acquire Avocet

Orban's parent company, Circuit Research Labs Inc., has agreed to buy the assets of TV coder and receiver manufacturer Avocet Instruments. Financial details of the transaction were not released.

Circuit Research Labs Inc. said the addition of the Avocet line complements the range of CRL and Orban television products.

Although CRL and Orban both had TV transmission products in their lines, this will be the first TV receiver product in the fold.

"This acquisition creates another product category that will expand our current opportunities and offer production economies that will substantially increase the line's profitability," said CRL President and CEO Jay Brentlinger.

"The Avocet product range solves problems with cueing remote talent for live broadcast and delivering SAP (secondary audio programming) to other broadcasters for simulcasts. Another rapidly expanding SAP application, alternative language programming, presents CRL with another new market segment that the Avocet products readily serve."

The company also plans to market the Avocet talent-cueing products for FM subcarriers at 57, 67 and 92 kHz.

"Once we go IBOC for FM, we're talking about a 7-second delay," said Brentlinger. As off-air monitoring would be impossible, "people will get their cues from subcarrier channels," he said.

As part of the acquisition, Eric Lane, chief executive officer of Avocet Instruments Inc., will join the CRL/Orban marketing and sales team as a consultant for approximately a year. Of Avocet's five employees, only Lane is going to CRL/Orban, said Brentlinger.

Avocet will relocate its assets to the CRL manufacturing plant in Tempe, Ariz., later this year. The assets consist of parts and inventory. Components for digital products would be shipped to the San Leandro, Calif., plant and components for the analog products would be shipped to the Tempe, Ariz., facility for final assembly.

Gentner Clarifies Burk Deal

SALT LAKE CITY Gentner Communications Corp. has reemphasized that the GSC3000 and VRC2500 broadcast remote control product lines are now available for purchase through traditional channels via Burk Technology. Burk now provides technical support for all remote control products formerly manufactured by Gentner.

In April, Gentner sold its remote-control-product business to Burk.

"As a result of numerous inquiries regarding the longevity of the GSC3000 and VRC2500 product lines, we want to clarify that Burk has officially taken over development, production, distribution and technical support of these products," said Fran Flood, president and chief executive officer of Gentner. "We will continue to work closely with them to ensure a successful transition."

Flood stated that Gentner continues to serve the broadcast market with its telephone interface systems.

See NEWSWATCH, page 10 ▶

AUDIOARTS DIGITAL D-70

The D-70 digital console from AUDIOARTS not only utilizes the latest in digital technology and chip sets, it can be ordered with a serial interface that lets it integrate with most popular automation systems and station routers; it even has WHEATSTONE's exclusive VDIP® software setup system.

Plug-in modules let you have any combination of mic, analog or digital line inputs, and four stereo busses give you plenty of flexibility (each has both digital and analog outputs). And with sample rate conversion on all the digital inputs plus selectable console clock rates of 32, 44.1 or 48KHz (and an optional external house sync) the D-70 can fit right in with all your facility's present equipment.

WHEATSTONE'S VDIP® Virtual Dipswitch Software lets you configure D-70 input channels with a laptop computer. Once configured console runs stand-alone.

With a compact, tabletop-mount footprint and a modular rear connector system that utilizes plug-in submodules for easy analog-to-digital field switches, the D-70 can be configured onsite quickly and easily. On the functional side, fullscale digital peak plus simultaneous VU metering, LED illumination everywhere, built-in machine interface, automatic timer and clock (stand-alone or ESE slave) all come standard, along with separate control room and studio source selection plus built in talkback. You can even order the D-70 console with a SUPERPHONE module to support two callers with automatic digitally generated mix-minus. Both digital and analog line selector panels are also available.

THE D-70 DIGITAL AUDIO CONSOLE —benefit from WHEATSTONE's experience— at an AUDIOARTS price!

tel 252-638-7000/www.wheatstone.com/sales@wheatstone.com

copyright © 2001 by Wheatstone Corporation

AUDIOARTS ENGINEERING

Index

FEATURES

KUVO Builds All-Digital Jazz Oasis
by Scott Fybush 12

Workbench: Now You See It, Now You Don't!
by John Bisset 19

GM JOURNAL

Private Companies On the Move
by Scott Fybush 23

Pigs Almost Fly Over Nebraska
by Ken R. 23

NAB Plans Americas Conference
by Ken R. 26

Radio Hats Off to Linda Blair
by Harry Cole 28

Brandt Gustavson: An NRB Innovator
by Wayne Pederson 34

STUDIO SESSIONS

Isolation Booths Come of Age
by Ken R. 35

'Dear Travis' Letters From Readers
by Travis 36

Fusion Fosters Friendly Flexibility
by Mike Mann 40

BUYER'S GUIDE

Free Software: End of the World?
by Alan R. Peterson 43

Scott Studios System Is My Best Friend
by Jon Rivers 43

Eagle Radio Has Eye for Maestro 3
by Jay Thouvenell 44

LocalMax, BE Bring Service to ABC
by Chris Miller 50

BTE Swears by ASI, BSI for Audio
by Greg Case 50

OPINION 62

World Radio History

Silliman

▶ Continued from page 1

needs of his work as he ages.

"In my 30s, I started a weight-training program. I'll go to the gym tonight and I'll run about five miles. It'll take me about 45 minutes. My pulse rate will go to about 132. I live a very Spartan life."

Electronics Research Inc. was established in Evansville, Ind. in 1943 to perfect the radio systems used in World War II aircraft.

Early ERI

The middle-America location was no accident. The city was out of reach of enemy aircraft, and the Ohio River was too shallow for submarines.

Silliman's father, Robert Silliman, worked at the Radio Research Laboratory in Boston, and flew to Evansville several times during the war to test radio gear at ERI.

Newcomb, an ERI field technician from its beginnings in the war. Together they bought the company's assets and reorganized it.

Under Newcomb and Robert Silliman, the company flourished, according to his son Tom, developing the Vertical 300 dipole and several circular polarized antennas in the 1960s.

Tom Silliman joined the firm after receiving his Bachelor's degree in Electrical Engineering from Cornell University in 1969.

"Chester and I would go out and I started doing the field service and then Chester would climb for me and that's about all he did," Silliman said. He took a leave of absence for one term in 1970 to finish his Master's degree in Electrical Engineering degree at Cornell.

With that degree in hand, he came back to serve as project engineer for ERI's build-out of an antenna on top of One Shell Plaza in Houston.

"That was a 12-layer, three (-sided) FM panel antenna that had first- and second-null fill and beam tilt," Silliman said with evident pride.

"It was quite a design. It eventually had eight stations operating at 100 kilowatts ERP from it." Silliman said, at that time, it was the highest-power FM system in the country.

Many other projects followed through the 1970s, until ERI stopped taking new work for a year in the early '80s to concentrate on redesigning its filters. The new designs paid off in better performance and in new jobs, such as that on Boston's Prudential Building, according to Silliman.

In 1992, Silliman led the team that installed new antennas atop the Empire State Building. While not ERI's largest antenna complex, Silliman says it was the company's most extensive job, involving the design and installation of not just antennas but also transmitter rooms, cable chases and an access alarm system.

During this 18-month job, he and his team replaced antennas further down the structure that exceeded radiation standards for people on the top floors of the building.

Lots of coverage

"That is probably the most incredible thing I have ever been involved in," Silliman said. "I'm not going to say it's the most incredible thing *I've* ever done, because I didn't really do it (alone). I did it as part of a team, an incredible team of manufacturing and business management and engineering."

It's hard to look at a photograph of Silliman clinging to a mast 1,500 feet above street level without thinking of the risk involved.

His high-altitude climbing has attracted the attention of national media. In April, ABC's "20/20" profiled him as one of its "People Working on the Edge." The New York Times covered one of his trips to the top of the Empire State Building in January under the title, "Where Is King Kong When a Bulb Goes Out?"

Silliman says he'll also be featured in an upcoming segment of the "Ripley's Believe or Not" program.

Silliman insists the national exposure doesn't faze him.

"Lots of times people who live ordinary lives think that anybody who works in broadcasting is unique," he said. Silliman, who once climbed towers wearing a leather lineman's belt and simple clips that could "roll out" and detach from the line, now boasts that his company uses only state-of-the-art climbing gear.

Engineers ride only steel cables, wearing synthetic belts that include shoulder and leg straps to hold a climber if he becomes inverted. New "ascenders" allow a climber to go up the line, but lock and hold the climber in place should he lose his grip.

ERI has never lost a tower climber on the job, said Silliman.

He and his staff will get plenty of

See SILLIMAN, page 11 ▶

Tom Silliman Facts

Born: March 15, 1945.

Personal: Divorced, two daughters, 23 and 26 years old.

Located: Newburgh, Ind.

Education: Bachelor's and Master's degrees in Electrical Engineering, Cornell University, 1969 and 1970, respectively.

Professional: Registered as a professional engineer in Indiana, Minnesota and Maryland.

Photo by Steve Purple

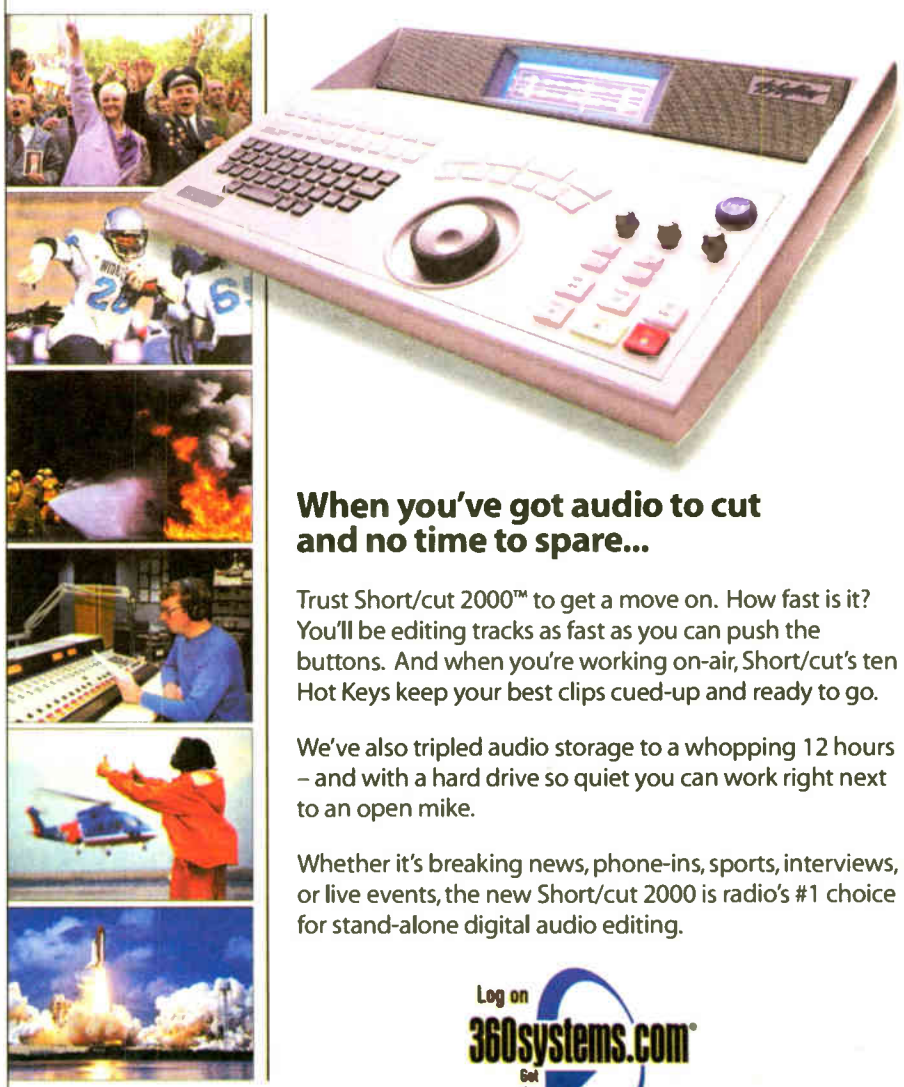
ERI President Tom Silliman gets a different perspective on his booth at NAB2001. 'Teardown takes about seven hours for four men,' said Tom. 'Usually, after the show closes at 4 p.m. on Thursday, we go to work, and we work until 9 p.m. Then, we start at 6:30 a.m. sharp, and we have the crates off by 10 p.m. in time to catch a 12:30 p.m. flight.'

Robert Silliman died in February of this year at age 87.

After the war, the elder Silliman conducted research and development as a consultant for ERI. When ERI's owner died in the late 1950s and the company began to falter, one of its major clients, Collins Radio Co., hired Robert Silliman to study why antennas it bought from ERI were not performing up to par.

Silliman concluded that the late owner's widow and her accountant lacked the expertise to manage the technical enterprise. Not long after, ERI collapsed financially, although it did not declare bankruptcy. The entire staff was laid off. Collins asked Silliman to take over ERI, which he did in partnership with Chester

"We're On-Air in Five Minutes."



When you've got audio to cut and no time to spare...

Trust Short/cut 2000™ to get a move on. How fast is it? You'll be editing tracks as fast as you can push the buttons. And when you're working on-air, Short/cut's ten Hot Keys keep your best clips cued-up and ready to go.

We've also tripled audio storage to a whopping 12 hours – and with a hard drive so quiet you can work right next to an open mike.

Whether it's breaking news, phone-ins, sports, interviews, or live events, the new Short/cut 2000 is radio's #1 choice for stand-alone digital audio editing.

Log on 360systems.com Get the Story

360 Systems, 5321 Sterling Center Drive, Westlake Village, CA 91361 • Phone (818) 991-0360 • Fax (818) 991-1360

World Radio History

WOR: Longwires and Spare Towers

I continue to hear from folks about Ed Montgomery's article in the March 1 issue, which mentioned the WOR(AM) directional antenna in northern New Jersey near New York City.

The latest word comes from someone with inside knowledge: the station chief, Kerry Richards. He wrote to me after reading a letter in our May 9 issue.

"Donald Shippy is correct about the construction of the array at the Carteret, N.J., site, which was WOR's third transmitter site," Richards wrote.

"The sole purpose of the longwires used between the two towers was to hold up the vertical wire in the center, which substituted for a third tower. This array produced a great signal south into Philadelphia, and up and down the East Coast."

Richards said the station has memos in its files describing numerous problems keeping this early directional array in operation. The original Western Electric 50 kW transmitter was subject to problems created by the antenna, and there were many failures.

WOR had almost 20 engineers employed in the transmitter division.

— Kerry Richards

"The solution was to erect an emergency tower, which could be operated at 10 kW nondirectional, so WOR could remain on the air while the directional antenna could be repaired and adjusted. This was the sole purpose of the 'third tower' Mr. Shippy refers to. This emergency tower could be operated from the WOR 10 kW backup transmitter," Richards said.

"This shorter third tower was operated into a detuning unit during directional operation, but was never a radiator in the actual directional array, nor used to develop any null to the south.

"Keep in mind, this was in the days of Mica capacitors in the tuning and phasing elements of the array, which were subject to failure, and then the actual catenary system of wires and associated insulators, supports and plumbing, which were subject to icing in the winter. It was not the most reliable system. WOR had almost 20 engineers employed in the transmitter division.

"We also have logs referring to the cooling ponds for the Western Electric water-cooled final amplifiers, which had numerous operational outages. Everything from clogged pumps, 'frogs stuck in the pond's drain,' 'dead bird stuck in sump,' an entry indicating 'dried moss in a filter basket' and a loss of distilled water from an operator throwing the wrong valve, could knock WOR off the air. Hence the emergency tower.

"Mr. Shippy might also want to know that the Carteret site was off the air by 1968, when WOR moved to its current site in Lyndhurst. This is a story in itself, but the basic reason to move was to get a better signal in Manhattan and Long Island.

"Of further interest to your readers is the current WOR Web site. Tom Ray, our corporate director of engineering at Buckley Broadcasting, has posted pictures of the current WOR transmitter plant for everyone to see."

Thanks, Kerry. The WOR site is *www.wor710.com/Technical/cover.htm.*

★ ★ ★

Another letter comes from Bob Clinton of WARW(FM) in Bethesda, Md., who read in the April 25 issue about The Cart Guys, a company that is keeping alive the flame of the endless loop. He brought up the question: how many radio stations are still relying on cart these days?

"WARW is still using carts, and probably predictably, are using ITC machines," Bob said. "Remember the Scotchcarts? When 3M announced that the last batch of tape for Scotchcarts was being made, back in the mid-1990s, vendors put in one last huge order for the lubricated tape.

"I think we are experiencing the final days of those carts, unless someone loads different tape (with different bias characteristics). Tape has a shelf life, and eventually the oxide begins to shed, and the adhesive gets sticky, which is death for cart tape," he said.

"It would be interesting to know how many stations still depend totally on carts, and how many still use them as backup for digital systems and so forth."

Are you still using carts? Why? Write to me at *radioworld@imaspub.com.*

★ ★ ★

A word of solace to the friends and family of E. Brandt Gustavson, whose byline has appeared in the pages of Radio World during my watch as editor.

The president of the National Religious Broadcasters died in May at age 64, less than two months after being diagnosed with cancer of the liver and pancreas.

He was a member of the NRB executive committee and board of directors. Among earlier duties, he was executive vice president and chief operating officer of Trans World Radio, vice president and administrator of development at Moody Bible Institute and director of Moody's broadcasting network, where he initiated the Moody Broadcasting Network by satellite.

He also held positions at several Midwest radio stations.

"He spent his entire career serving the Lord through Christian broadcasting," NRB said in a statement.

From the Editor

Paul J. McLane

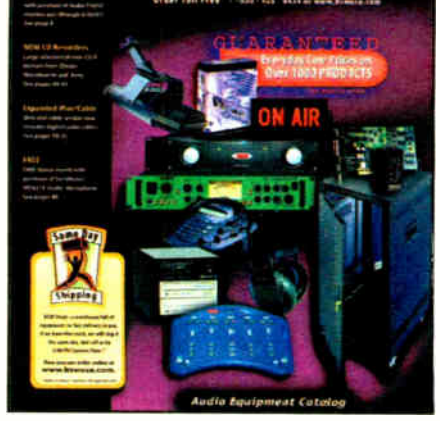
A $1,000 gift certificate from BSW — Broadcast Supply Worldwide is winging its way to David Sproul, FM chief engineer for ABC Radio in Washington.

We picked his name at random as the latest winner in our Silver Sweepstakes, celebrating 25 years since the founding of IMAS Publishing.

BSW is a long-time broadcast vendor, a super source for equipment and a great bunch of guys and gals to boot. The company supplies just about anything you might need for professional audio. They offer great pricing, excellent service and 13,699 products from approximately 200 manufacturers.

(I didn't count them, but BSW President Tim Schwieger assures me that indeed he has 13,699 products on the shelf.)

You can still sign up for the contest at *www.rwonline.com.*



Which Transmitter Control System is Right for You?

ARC-16
- Front Panel Display
- Site-to-Site Control
- 16 - 64 Channels
- Studio Control with Flexible Communications

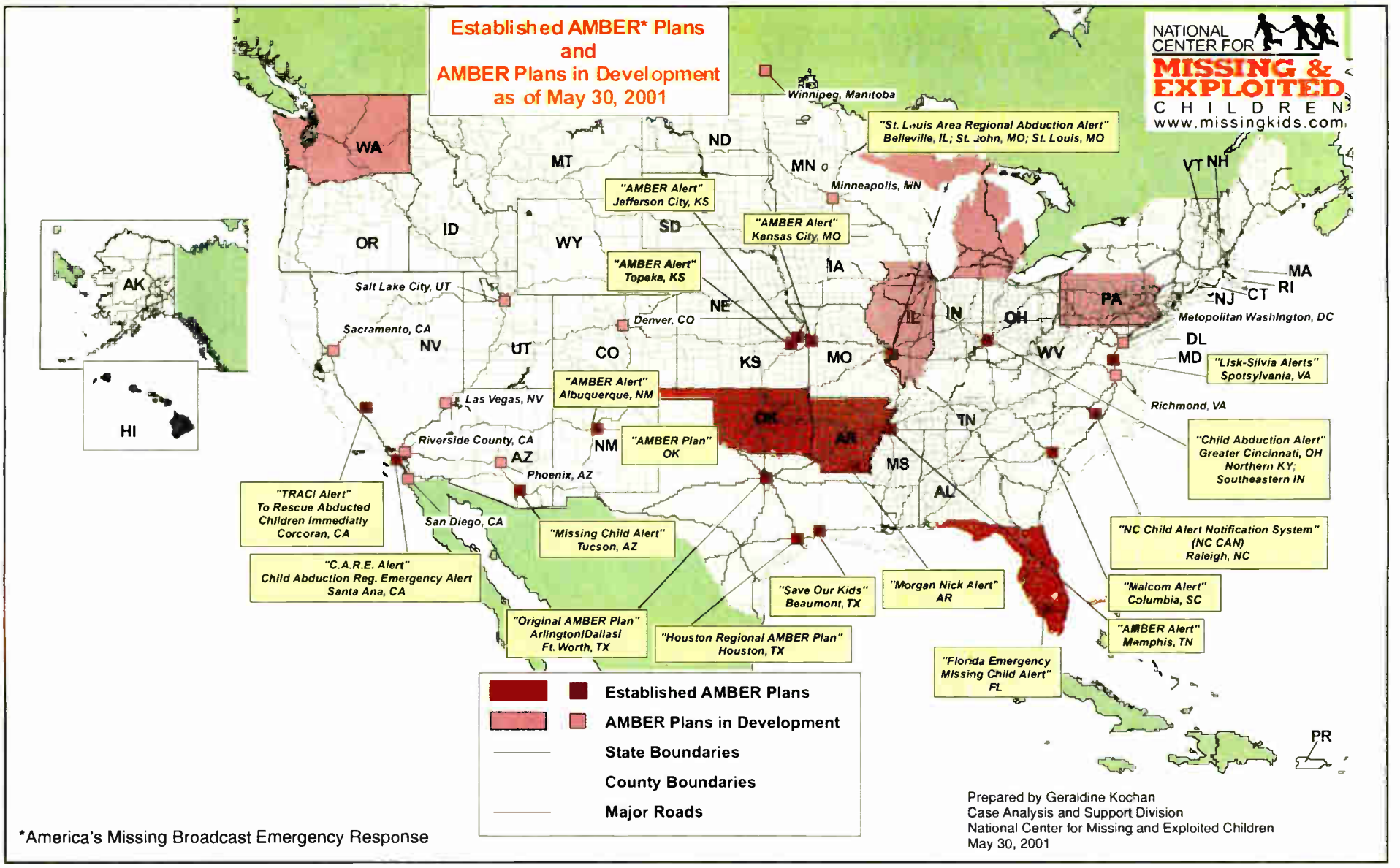
GSC-3000
- 85 Sites
- 8 - 256 Channels / Site
- Built-in Macros

VRC-2500
- Single Site Solution
- 16 Channels
- Built-in Macros

Burk is proud to add the GSC-3000 & VRC-2500 to our product line, giving your more choices with our continued high level of support.

BURK TECHNOLOGY
Phone: 1-800-255-8090
Email: sales@burk.com
www.burk.com

World Radio History



Source: National Center for Missing and Exploited Children, Alexandria, VA — May 30, 2001

Amber

▶ Continued from page 1

primary tool to disseminate information quickly to stations and a particular listening area.

Even with an event code all its own, the continued success of the Amber Plan will depend upon the participation level of broadcasters, who are not required to carry local and state EAS messages, said Richard Rudman, chairman of the EAS National Advisory Committee and the Los Angeles County local emergency committee. The only messages broadcasters are required to carry are national EAS events and tests.

"A new Missing-Child Statement event code means broadcasters can differentiate an Amber alert from a toxic spill. This means they can decide specifically if they want to participate in Amber alerts by entering that code into their EAS box, or leaving it out," said Gary Timm, broadcast chair of the Wisconsin EAS committee and a member of the EAS National Advisory Committee. "Participation in the plan will be strictly voluntary."

The plans originated in the Dallas-Fort Worth area, and versions have been adopted in other major metropolitan areas, including Cincinnati, Memphis, Tenn., Charlotte, N.C., and in Oklahoma, Florida and Arkansas. Michigan planed to launch a statewide Amber Plan in late June.

Plans are in development to implement Amber in Washington and Phoenix. A total of 22 plans are in effect nationally.

NAB's Education Foundation honored Dallas/Ft. Worth area stations and law enforcement agencies with a Service to America Samaritan Award on June 11. The NABEF gives such awards each year to pay tribute to an individual or organization involved in broadcasting that exemplifies the industry's commitment to use the airwaves effectively and responsibly to promote the public interest.

Credited by supporters and law-enforcement agencies with 16 child-abduction recoveries, the alerts are currently sent as a Civil Emergency Message over EAS.

Supporters have urged the FCC to assign a particular event code to help broadcasters identify the alert more easily. Event codes are the three-letter codes EAS uses to identify an event or emergency causing the EAS activation.

Possible changes

The FCC is considering proposed changes to the commission's Part 11 EAS Rules (RW, April 25). The Notice of Proposed Rule Making shows the FCC is recommending the addition of a Missing-Child Statement to EAS.

Comments for EB Docket #01-66 were due in early June with reply comments due July 11. EAS observers said they hoped the commission would issue a Report and Order by the end of the year.

Proponents of the plan include The National Center for Missing and Exploited Children, a nonprofit organization based in Washington, the national Fraternal Order of Police and numerous lawmakers on Capitol Hill.

Perhaps more important, it appears that many in the broadcast industry have embraced the idea.

"The whole Amber Plan concept has spread quickly the last several years. Certain communities have really adopted the idea and have had success with it," said Joann Donnellan, media director for the National Center for Missing and Exploited Children.

The NCMEC in its comments to the

See AMBER, page 7 ▶

World Radio History

Synergy

Combining the best in broadcast audio for 90 years

DENON

The first name in digital audio

Number One 一番

www.del.denon.com • Denon Electronics, 19 Chapin Rd., Pine Brook, NJ 07058 (973) 396-0810

Denon Canada, Inc., 17 Denison St., Markham, Ontario, Canada L3R 1B5 (905) 475-4085 • Labrador, S.A. de C.V., Zamora No. 154, 06140 Mexico, D.F., (52) 5-286-5509

World Radio History

Amber

▶ Continued from page 5

FCC is recommending that Missing-Child Statement be changed to Abducted-Child Statement because, Donnellan said, the Amber Plan is not for all missing-children cases, but for abductions.

"The advisory should only be used for the most serious child-abduction cases. It must be witnessed by someone and a child's life must be in jeopardy. It's not for runaways or parental disagreements. We don't want to overuse the system," she said.

Some broadcast EAS experts are concerned about the Amber Plan's inclusion in EAS. Some felt an EAS missing child alert would help to dilute the effectiveness of EAS and lead to overuse.

Proper use?

"When we first heard of this, many of us in the EAS community were opposed to it. We thought, 'That is not a proper use of EAS,'" said Timm.

"I think the main operative for Amber to work in a local area is a good written plan, to avoid overuse or misuse."

Timm believes a system of "checks and balances" will be needed to demonstrate careful oversight and monitoring of the plan. "I think most of the EAS community will go along with the plan."

Steve Terry, station manager and chief engineer for WYPL(FM) in Memphis, Tenn., the area's LP1 station, said EAS is an adequate means to distribute Amber Alerts.

"My only complaint with EAS is that a station or civil authority cannot send a full text message. I think in the case of an abducted-child message you need as much exact detail as possible. It would be nice not to have to worry about having an announcer transcribe a long message. There could be even better ways for broadcasters to handle missing-child alerts," Terry said. (See sidebar, p. 8.)

Memphis' Amber Plan covers all of Shelby County and was established in 1999. Since that time, there has yet to be an Amber activation in the county, Terry said.

"I want to protect the integrity of EAS, so overuse is one of my concerns," said Rudman. "However, I'll support an EAS missing-child advisory, but I still have some worry as to whether EAS was intended for that purpose."

Donnellan thinks it was.

"The FCC has said EAS is for getting life-saving messages out to the community. Child-abduction cases can be life-threatening situations, so it fits the criteria stipulated by the FCC," she said.

EAS can enable stations to deliver information to a community quickly, the main point supporters of the plans make. Police and child-abduction experts agree that action in the first few hours after an abduction is key to a successful recovery.

"The direct correlation between recovery and how quickly the information is spread is undeniable," Gilbert Gallegos,

See AMBER, page 8 ▶

Stations to Pay For Box Upgrades

Both broadcasters and the FCC are concerned about driving up the cost of EAS encoders/decoders if the digital header codes used in the transmission of EAS messages are modified or if new codes are added.

Richard Rudman, chairman of the National Advisory Committee and the L.A. County local emergency committee, said broadcasters will have to modify existing EAS equipment.

"It depends on what the box is capable of. It's a memory issue. It will most likely be software-related, but may be firmware in some cases."

Several EAS equipment manufacturers said they believe existing EAS units can be modified with minimum expense to broadcasters.

"We are hesitant to put a price on the changes until we see the complete list of codes the FCC adds. The number of codes will drive the price for the upgrades," said Dave Halperin, vice president for HollyAnne Corp. "The price to do so will be moderate, substantially less than replacing the unit. A fraction of that."

A HollyAnne HU-961 EAS encoder/decoder lists for $1,495.

"We expect the rules changes, as they are written now, to be of minimal cost to broadcasters, probably under $100" to modify existing equipment, said Darryl Parker, VP, TFT Inc.

"It is not a question of having to replace the whole box."

The TFT EAS911R4 EAS encoder/decoder lists for $2,195.

Harold Price, project manager for the Sage ENDEC EAS encoder/decoder, said the FCC's proposed changes to EAS are "fairly cosmetic" as written.

"The price to broadcasters all depends on the complexity of the changes the FCC decides upon."

Price said the new EAS originator codes will require firmware, but no hardware changes for Sage ENDEC units.

TFT, HollyAnne and Sage officials said they filed comments with the FCC predicting the extra costs broadcasters may have to shoulder.

Jim Gorman, owner of Gorman-Redlich, ballparked the incremental cost to implement changes to a relatively new unit to between $50 to $300.

The FCC will allow time for a phase-in period for broadcasters to make the necessary equipment changes, Rudman said.

— Randy J. Stine

Matrix–

QUITE POSSIBLY THE LAST CODEC YOU'LL EVER BUY.

THE CODEC FOR THE FUTURE

Your remote equipment toolbox may already include ISDN and POTS codecs plus a slew of other stuff. Now they are talking about high speed GSM digital wireless — and coming soon...3G.

The Matrix's modular approach is designed with this future in mind. The core of the Matrix's flexibility revolves around full access to its powerful coding engine through easily inserted modules and upgradeable flash memory. Whatever may be coming down the communications pipeline, the Matrix is ready.

THE CODEC FOR TODAY

WIRELESS

- 5 kHz real-time, full duplex audio on GSM wireless phones
- Up to 10 kHz real-time, full duplex audio on HSCSD GSM
- 15 kHz real-time, full duplex audio on portable Inmarsat terminals (with optional ISDN module)
- 15 kHz nonreal-time, "Store and-Forward" feature may be used on many mobile circuits
- Optional battery kit delivers power for up to 7 hours

ISDN*

- Layer III for 15 kHz at 64 kb/s
- G.722 for wide compatibility with other codecs
- Turbo-G.722 for 15 kHz with only 6 mS of delay
- Layer III transmit with G.722 return to reduce delay
- 1200 baud ancillary data available
- Fully international terminal adapter works worldwide

* ISDN module required

POTS

- 15 kHz full-duplex audio on a standard telephone line
- Available in portable or rackmount versions
- Modular design enables use on future circuits
- Will work at data rates as low as 9600 baud
- "Store and Forward" allows 15 kHz, nonreal-time audio transmission at any data rate

Comrex Corporation, 65 Nonset Path, Acton, MA 01720
Tel: (978) 263-1800 Fax: (978) 635-0401 Toll Free: (800) 237-1776 in North America
Email: info@comrex.com www.comrex.com

COMREX

World Radio History

Amber

▶ Continued from page 7

national president of the Fraternal Order of Police.

Even so, Gallegos said EAS should be used in only the most threatening child-abduction cases.

"If you have a witnessed child-snatching, then EAS should go beyond warning of tornadoes and storms. Anyone who is a parent knows that if their child were snatched, they would consider it an emergency situation," he said.

The NCMEC estimates there were nearly 750,000 missing children reported by the FBI National Crime Information Center in 2000. Donnellan said runaways and parental abductions are the two leading causes of reports of missing children.

Spurred by the success of the Amber Plan in Texas, support on Capitol Hill has steadily grown. Rep. Nick Lampson, D-Texas, said he, along with 25 members of the House, have sent a letter to the FCC supporting an abducted child statement for EAS.

"A missing-child message is a superb use of EAS. It's a perfect example of how broadcasters and electronic media can serve their communities," Lampson said. Lampson chairs the Missing and Exploited Children's caucus in the House.

While based on a similar premise, Amber Plans can vary in design and by name depending on location. For instance, in the Dallas-Fort Worth plan, the EAS alert is issued by WBAP(AM) and KSCS(FM) in Arlington, the area's LP1 stations. In Oklahoma, the EAS messages are initiated by the state's Department of Public Safety. It is not the goal of supporters to standardize how the plan works.

"I think that is best left up to individual states or communities," said J.D. Freeman, Clear Channel Communications/Phoenix market manager, and one of the original Amber Plan developers as station manager at KDMX(FM) in Dallas.

'Localized' Amber

Freeman said he is working on an Amber Plan for the Phoenix area but will design a plan only after getting feedback from local police and broadcasters.

Frank Lucia, the recently retired special EAS advisor for the Technical and Public Safety Division of the FCC Enforcement Bureau, said the success of Amber Plans depends on how the plan is "localized" to a particular community, and how law enforcement helps to foster the system.

"I think it can work well either locally or statewide. Law enforcement's participation will be key. They are becoming more familiar with the program. And from what I've been hearing, I think broadcasters are buying into the idea too," Lucia said.

In Dallas-Fort Worth, an Amber Alert is set into action once WBAP(AM), Arlington, receives and confirms a fax from law enforcement detailing a child abduction, said Clay Steely, director of engineering for WBAP, the originating EAS station. (For a detailed look at the Dallas-Fort Worth Amber Plan, visit the station's Web site at *www.wbap.com*.)

"After the two-tone attention signal, we have a customized sounder for the Amber Alert and then a pre-scripted open stating this is an Amber Alert Activation," Steely said. "What follows is a detailed description of the vehicle and information about the child."

Steely said more than 30 radio stations monitor WBAP and KSCS across 17 North Texas counties. The receiving stations have the option of either re-transmitting the audio, or transcribing the message and doing their own broadcast, he said.

"I'd say even though the majority of stations manually forward messages, because of the EAS unit's automatic storage, they will actually carry the original audio from our stations. That helps to keep things consistent," Steely said. Most stations will repeat the Amber statement every 15 minutes for the first two hours, he said.

Tyler Cox, station manager, KMEO(FM) in Dallas, is chairman of the Amber Advisory Council. Cox is also president of the Association of Radio Managers (ARMS) in Dallas, the group responsible for going to law enforcement with the idea for an Amber Plan in 1996.

"I cannot think of a better use of EAS.

See AMBER, page 10 ▶

THE AMBER ALERT

OKLAHOMA'S EARLY WARNING SYSTEM TO PREVENT CHILD KIDNAPPINGS

A LAW ENFORCEMENT GUIDE

STATE OF OKLAHOMA
OFFICE OF GOVERNOR FRANK KEATING

Are EDIS and RBDS Amber Options?

LOS ANGELES At least one EAS expert believes there is a better way to disseminate abducted-children information quickly and maybe more efficiently than EAS. "I think there are more suitable vehicles in some areas of the country, which could be built easily in other areas, to do what the Center for Missing and Exploited Children want to do with the Amber Plan," said Richard Rudman, chairman of the National Advisory Committee and the Los Angeles County local emergency committee. "One of those is EDIS."

California's Emergency Digital Information Service is used by the state's emergency managers to alert and inform the news media and public with regards to emergencies, from earthquake disasters to power blackouts.

Rudman said EDIS is a combination Web site, news wire and 24-hour broadcast service. "We have had success with it in California. EDIS allows a local emergency manager to use existing information networks like the Internet, pagers, and e-mail to reach the public via broadcasters," Rudman said.

"Broadcasters can use filtering software, which can preselect messages of interest that they want to carry."

EDIS was developed in 1990 as a means to give emergency managers a simple, comprehensive way to relay detailed emergency information to the public. During the 1994 Northridge (Los Angeles) earthquake response, EDIS carried more than 2,000 news releases and media advisories, according to the EDIS Web site (*www.edis.oes.ca.gov*).

EDIS can be used to trigger EAS alerts, but it can also be used to follow through with the detailed information people need after an initial alarm, Rudman said.

The EDIS Web site states, "EDIS is designed to be disaster-resistant. A sophisticated satellite distribution network constantly updates 'mirror' EDIS servers in selected newsrooms and network facilities around the state. Even when public networks are clogged after a disaster, EDIS information will be available statewide."

"It really is a government-to-media wire service," Rudman said.

Steve Terry, station manager and CE for WYPL(FM) in Memphis, Tenn., said the Radio Broadcast Data System presents many opportunities for transmitting missing-child information quickly. One of the main benefits of RBDS is the ability to transmit full-text messages, which is one of Terry's complaints about EAS.

"In Memphis, the Amber Alert calls for local police to initiate the alert. Right now they have to fax the information to (WYPL), the LP1 station. What happens if we don't see the fax?" he said.

Eventually, Terry would like to see the Memphis Police Department equipped with a RBDS encoder to enable it to move information in a timelier manner.

According to a report from the National Radio Systems Committee, RBDS allows stations to use a subcarrier to transmit emergency alerts without interrupting the main audio channel. RBDS alerts those with the appropriate receivers who have their warning features enabled. Some pagers can also receive RBDS messages.

The report said RBDS was considered when the FCC examined technologies to replace EBS in the early 1990s.

The Tennessee State EAS plan includes the capability of using RBDS to distribute EAS messages.

— Randy J. Stine

World Radio History

CLEARLY NOT FOR EVERYONE

Your Grandmother is certainly a very nice lady, but a Porsche is probably not her ride.

It's the same with processing. Some people should stick with the conservative stuff. Give them something too fast and they just won't know what to do with it. Frankly, the new Omnia-6 is probably not for them. It's just too potent, too flexible.

On the other hand, maybe you are the sort who can run a fast machine. Who loves the thrill of smooth power. Who revels in the admiration of others.

Omnia-6 - if you can handle it.

6 fm

Omnia
A Telos Company

www.omniaaudio.com

North America: +1.216.241.7225
Europe: +49.81.61.42.467

Omnia is used in 4 of 5 leading stations in New York, 2 of the 3 top stations in Los Angeles and 5 of 6 of the most listened to stations in the US. It's on the leading stations in Paris, all of the BBC's FM stations in the UK, and the number one stations in Canada, Ireland, Germany, Finland, Australia, India, China, Denmark, and Sweden.

World Radio History

Amber

▶ Continued from page 8

This is the best public service idea I've ever been around," Cox said. "We get to make a real difference in our communities by helping save the life of a child."

Cox said the Amber Advisory Council meets every two months to review previous system activations.

"We want feedback from as many people as we can get. The group is made up of broadcasters and police, so it's a chance to come together and see the difference we are making," he said.

The ARMS board has been heavily involved in the national rollout of the Amber Plan, and has been fielding calls from broadcasters interested in setting up Amber Plans in their own communities, Cox said.

"They ask how it works and whether it means giving over control of their airwaves to police," Cox said. "I think some broadcasters are a little intimidated by EAS anyway."

Oklahoma's state Amber Plan has been credited with one successful recovery since its inception in January 2000. Arkansas and Florida also have a statewide Amber strategy.

"When you think about it, this is the type of thing that's ideal for radio. We have thousands of eyes and ears in their cars listening to our stations at all hours," said Carl Smith, executive director of the Oklahoma Association of Broadcasters.

Smith said broadcasters in the state have been "very willing and very receptive" to air Amber messages as needed.

"We have always been careful to stress to our members that it is the goal of the state and the Department of Public Safety to keep EAS interference at a minimum. The abduction of a child must meet very strict criteria to warrant an alert," Smith said. Even with those safeguards, one false alarm was issued last year, he said.

Overkill?

At least one Oklahoma emergency manager believes EAS "is overkill for a missing child in a rural county" in Oklahoma. "If we want to succeed at this on a statewide basis, proper training for civil authorities and broadcasters will be critical," said Lloyd Colston, emergency management director for Mayes County, in northeastern Oklahoma.

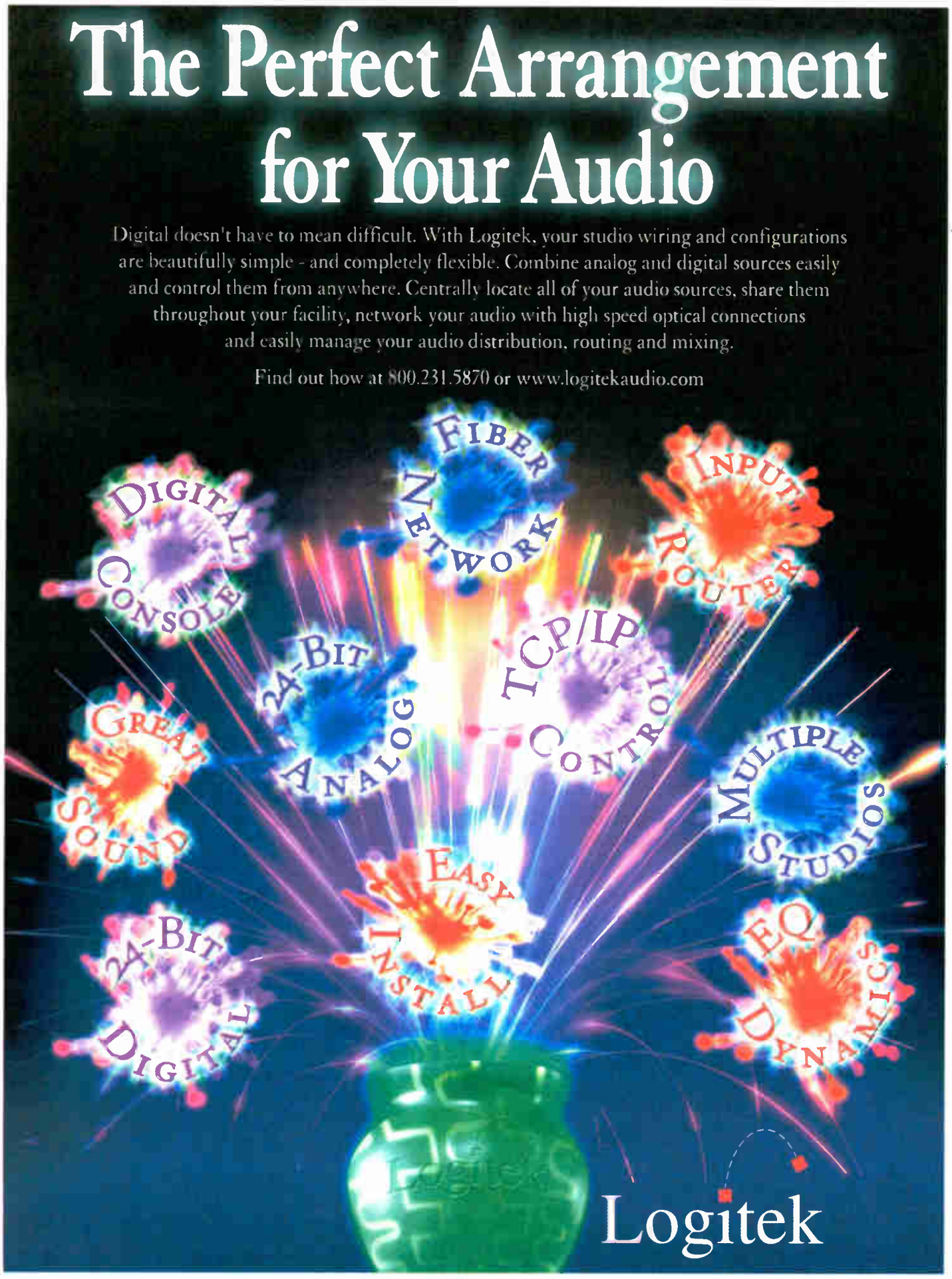
Colston said people also have to consider the far-reaching effect of EAS. He cited the case of an Amber alert for Comanche County, which is "almost 600 miles away" from Mayes County.

"When an Amber alert goes up from that far away, our local station here wonders why they are receiving a Civil Emergency Message," Colston said.

As the FCC considers assigning a new event code for missing children this summer, the National Center for Missing and Exploited Children will launch its own version of the Amber Plan: America's Missing Child Broadcast Emergency Response. The nationwide initiative will assist communities interested in establishing their own plans.

"We will provide information kits and video tapes for law enforcement and broadcasters to use as guidelines in setting up their own Amber Plan," Donnellan said.

"We hope stations will carry the abducted-child statements," Donnellan said. "We think EAS is the most credible and reliable vehicle for getting information out. We think this is just another way to realize the potential of EAS."



◆ NEWSWATCH ◆

▶ Continued from page 2

FCC Seeks Fee Increase

WASHINGTON FCC Chairman Michael Powell has asked Congress to allow the agency to raise regulatory fees to cover an additional $18.5 million in the FCC budget request for a total of $248.5 million for the next fiscal year. That represents an 8-percent increase over the previous request.

If approved, Congress would not need to increase the FCC's $29.8 million appropriation. The balance of approximately $200 million would come from the fees it charges annually to all licensees of the industries it regulates.

If approved, about 40 percent of the additional funds would cover salary increases and employee benefits and about $11 million toward new computers.

FCC Changes

WASHINGTON Periodically, FCC employees play musical chairs. Here are some of the recent changes:

Jane Mago is the new FCC General Counsel. Mago, a deputy chief of the FCC's Enforcement Bureau since November 1999, has served as Acting General Counsel since January. Prior to that, she held a number of positions at the FCC including Senior Legal Advisor to then-Commissioner Michael Powell and to Commissioner Rachelle Chong. She came to the commission in 1978.

Linda Blair, previously chief of the Mass Media Bureau's Audio Services Division, is now associate chief of the Enforcement Bureau. Peter Doyle is now acting chief of the ASD.

Lisa Fowlkes is assistant chief of the Enforcement Bureau. Since January 2000, Fowlkes has been legal adviser to the chief of the EB on mass media issues.

Washington attorney Kenneth Ferree is the new chief of the Cable Services Bureau.

World Radio History

Silliman

▶ Continued from page 3

opportunities to climb in the next few years, with the advent of digital television and the promise of in-band, on-channel digital audio broadcasting. ERI's FM antennas feature a wide bandwidth — good news for stations that are forced to take down their current antennas to make room on a tower for a new digital TV system.

Side-mounted rototiller

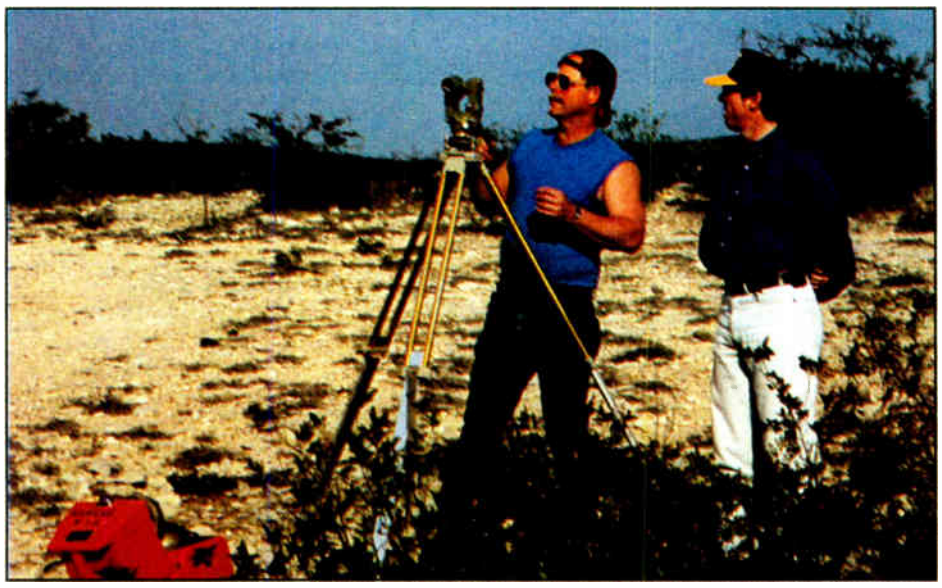
"Because our side-mount product is so broad, we've managed to put two and three stations regularly into a side-mounted rototiller, and keep stations located at the same site." Silliman said. "All of a sudden, two antennas and feed lines go down, and two DTVs go up, and everybody's happy."

In some ways, co-locating stations has been made easier by the consolidation of the radio industry. FM stations that are forced to use the same antenna now often are owned by the same company, eliminating the politics between competitors that Silliman saw in previous years.

ERI's engineers are preparing for the IBOC era, designing combiners to merge the outputs of digital and analog transmitters onto a single transmission line. ERI also is mulling over designs for dual-input antennas that do the combining right on the tower.

"If you do that, you can eliminate a lot of that loss (from the combiner)," Silliman said. "But then you have to provide an extra feed line on the tower, and now we have weight and wind load and installation cost, and so on. It's really going to be a question of where you spend the money: whether you spend it on lost energy or whether you spend it on new hardware."

When asked about another potential future antenna technology, the Crossed-Field and EH Antennas, Silliman said he does not believe the claims that these compact AM antenna designs can match the performance of a traditional tower.



Tom in Mexico conducting a survey for a tower that ERI built in the mid 1990s. With him is Luis Hinojosa, who was with station Stereo 7 in Monterrey, Mexico.

Silliman studied the theory behind the CFA and EH antenna two years ago, and participated in a panel on these antennas at the Institute of Electrical and Electronic Engineers last year. He observed as the CFA and EH proponents delivered a paper supporting their concept at NAB2000.

What does Silliman think of their claims? "Total snake oil," "bunk," and "a marvelous scam" are the more polite terms he uses.

"I went about it using the electromagnetic field analysis with Maxwell's fundamental five equations. I re-read all my texts on that, and as I applied it, I realized that the whole argument in the (CFA) patent was totally false. I couldn't believe this crap."

Most of ERI's business is comprised of selling and installing new systems. The division that evaluates existing structures accounts for roughly 10 percent of ERI's income, he said.

ERI has had some overseas sales, such as in India, Europe and the Caribbean, but U.S. sales make up the bulk of the company's work, he said.

Silliman doesn't mince words about the future of ERI. Despite occasional rumors to the contrary, he said the company is not for sale. He owns 60 percent of the stock, and he intends to keep it. Since the other 40 percent belongs to ERI's 150 employees through their retirement plan, selling the firm would be complicated.

"We actually did a very thorough study of what it require to sell our company last year, and we were advised that we shouldn't be looking to sell right now. Our employees aren't really interested in selling at the moment, nor are we in negotiations with anyone for acquisition," Silliman said.

Besides, if he sold the company, he might have to hang up his lineman's belt for good.

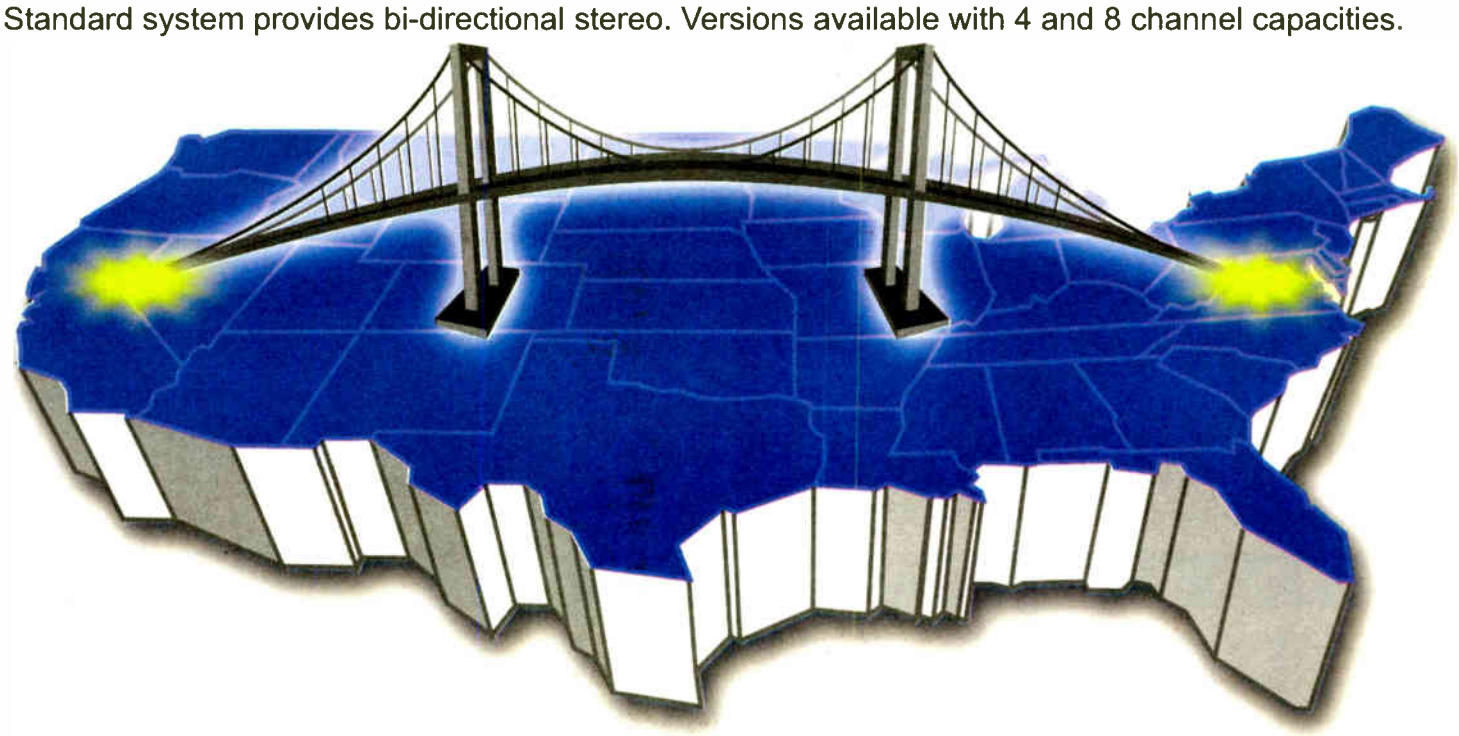
"I have a very strange job. As a CEO of a company, I live a very unusual life. If I worked for anybody else I doubt if they'd let me do what I want to do, even though I think I'm pretty good at what I do.

"What I do does expose me to some danger, and I know a lot of people in chat rooms in the last year have mentioned my name and said that I shouldn't do some of the things that I do. But I like to do them, and I'm good at that."

Tele-Link
by Energy-Onix

The only stereo quality STL link to utilize the
"Free Internet Highway"

Standard system provides bi-directional stereo. Versions available with 4 and 8 channel capacities.



Contact Energy-Onix, Broadcast Connection or your Energy-Onix dealer for price & delivery information.

Energy-Onix Broadcast Equipment Co., Inc.
Toll Free Phone: 888-324-6649
Fax: 518-758-1476
E-Mail: info@energy-onix.com

ENERGY-ONIX
"The Transmitter People"
BROADCAST EQUIPMENT CO., INC.

Broadcast Connection
Phone: 970-482-9254
Fax: 970-482-6123
E-Mail: john@broadcastconnection.com

World Radio History

KUVO Builds All-Digital Jazz Oasis

Facility Upgrade Helps a Denver Station Pursue Cultural Diversity and Lots of Live Programming

Scott Fybush

Public radio listeners in Denver get something most of us don't: a lot of live jazz music on the radio, thanks to KUVO(FM).

Mike Pappas, chief engineer at the Denver station, said KUVO is one of very few stations in the country airing live jazz performances.

The station, which calls itself "The Oasis in the City," prides itself on the live music it offers under the banner "Performance Studio" — as many as 11 performances in as many days during a recent pledge drive. Even during a non-fundraising period, KUVO's 26-by-38-foot performance space under a 17-foot ceiling plays host to three live concerts each month.

The format includes jazz, R&B, blues, Latin jazz and specialty programming.

Weakest link

When Pappas arrived at KUVO six years ago, the station's equipment didn't live up to the quality of the music, especially in the air studio and production room.

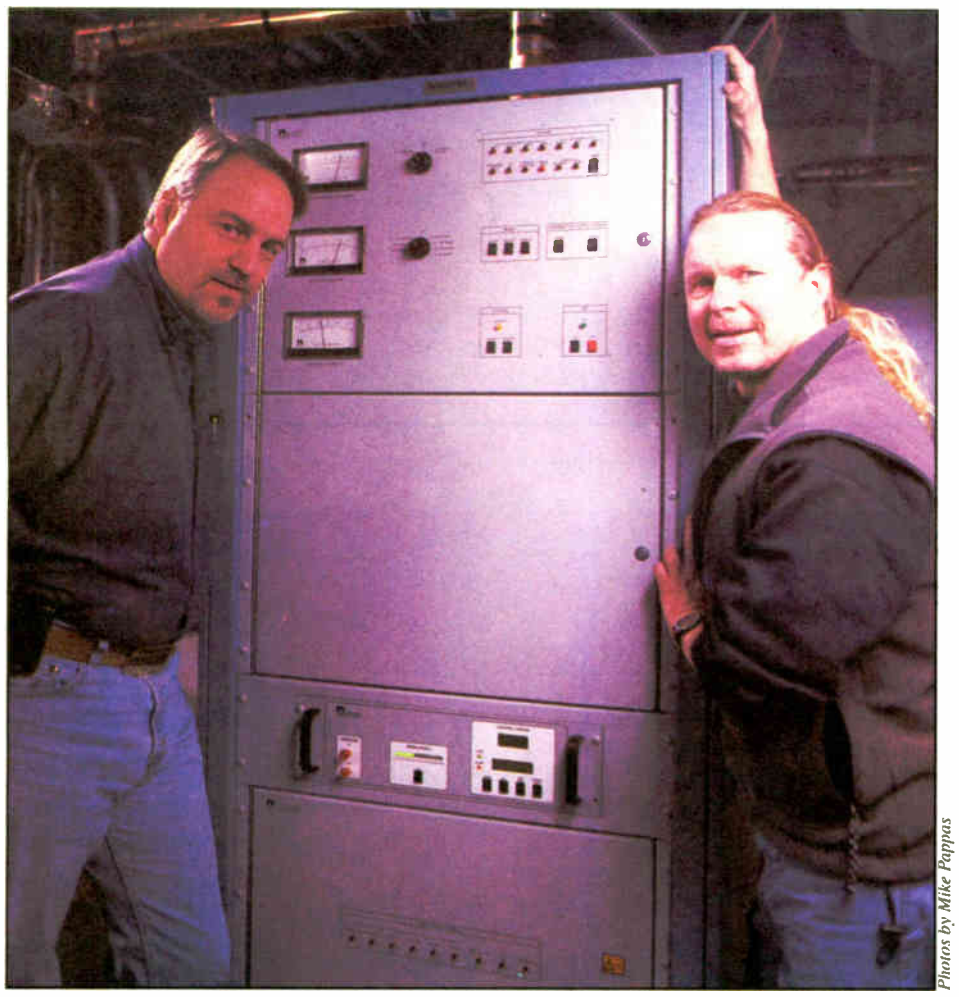
"We were running on 12-year-old analog boards that were literally falling apart. Howe, the manufacturer of the consoles, had gone out of business, so the boards were basically unsupportable," Pappas said.

Things weren't much better up on Lookout Mountain, where KUVO's transmitter site is shared with public radio KCFR(FM) and public TV's KRMA. KUVO was using a Wilkinson transmitter that was causing Pappas plenty of trouble.

"On average, it would go off the air about three times a week," he said, occasionally forcing a trip up the mountain to coax the transmitter back on — "usually at 2 a.m. or during snowstorms," he said.

Pappas, who has been in the audio industry for more than 25 years and has worked on live TV events including the Democratic National Convention, the 1999 Super Bowl and numerous sporting events, knew it was time for a facility rebuild.

Further, he wanted to go digital.



Photos by Mike Pappas

KUVO Chief Engineer Mike Pappas (left) stands with Lead Assistant Engineer John Mikity at the station's new Nautel FM 10 transmitter.

Air Personality Susan Gatschet-Reese

"There are a couple of ways you can approach a digital upgrade," he said, "from buying a standalone digital console to a full router-based system."

With the station's commitment to live music in mind, Pappas preferred the versatility of a router approach. After looking at several options, he decided on a Logitek Numix.

"The system behaves like a giant router in the sense that every input is available to every control surface and every output," he said. "Because it is software-driven, we can reconfigure it via software. We never have to move an input or output physically."

The system has 40 digital inputs and outputs and 24 analog I/Os. All are run to a central rack room, where the Numix routing takes place. The control surface "mix boards" run the router via a four-pair CAT-5 cable.

In all of its hardware decisions, Pappas said the station made a conscious decision to buy quality. Even though KUVO, which is licensed to Denver Educational Broadcasting, is a small standalone with only 7,000 members, Pappas wanted to have the best equipment.

"We didn't want to be shortsighted and outgrow the stuff in four years," he said. "The directive from management was, buy the best quality and not cut any corners."

See KUVO, page 14 ▶

For all your audio & audio–for–video needs:

BROADCAST
www.BRADLEYBROADCAST.com
PRO AUDIO

800-732-7665

Local Phone: 301-682-8700 • Fax: 301-682-8377 • Address: 7313-G Grove Road, Frederick, MD 21704

World Radio History

Encore!

The Telos Zephyr is one tough act to follow. It revolutionized point-to-point audio by combining ISDN with MPEG coding, and quickly became the #1 selling codec worldwide — perhaps the most successful digital broadcast product ever. So what will we do for an encore?

Presenting Zephyr Xstream, with innovctions like AAC (Advanced Audio Coding) for superior fidelity, a special low-delay mode, and an Ethernet port for IP audio streaming, remote control and easy software updates. There's also a rugged portable version with full-featured digital mixing.

And of course Zephyr Xstream includes everything else you'd expect from a Zephyr, like Layer-II and Layer-III coding, ISDN connectivity, a simple, friendly user interface, and bulletproof reliability.

Zephyr Xstream. Sometimes the sequel is even better than the original.

Telos

www.zephyr.com

Zephyr XStream, Telos and the Telos logo are registered trademarks of TLS Corporation. Copyright 2001, TLS Corp.

World Radio History

KUVO

▶ Continued from page 12

The station's general manager is Florence Hernandez-Ramos. The program director is Carlos Lando.

"Obviously, you have to have the support of station management. Everyone has to be on the same page working towards the same goal," Pappas said.

For a station that gets 60 percent of its annual budget from its listeners, this required some patience.

Evaluating vendors

"We spent a couple of years raising funds to put this together. For instance, we evaluated board vendors for over a year before selecting Logitek. We had to make the right choice right from the start, and we used this approach with every item we purchased."

The overall project budget was approximately $300,000.

The first phase of the rebuild began in 1999 in what had been KUVO's production room. Pappas and his assistant, John Mikity, moved the old analog production gear to a corner of the live performance studio's control room while they began building a new studio in the production space.

In addition to the Logitek Numix control surface, the new studio space gave KUVO's on-air personalities a room full of new gear to learn.

"There isn't anything in the plant that's older than a year and a half," Pappas said, from Denon CD players, which play most of the music, to Sony MD players for station promotional announcements, to the Tascam cassette deck for skimmer use.

There is no hard-disk automation system. "We're still spinning CDs because I haven't found an automation system that I liked that actually sounded good," Pappas said.

The attention to detail extended to the monitors in the new studio.

"You don't hear about many radio stations using Genelec in their on-air studios," Pappas said (although Genelecs also were chosen for the recent digital buildout at XM Satellite Radio in Washington).

Joe Kloss is shown miking the 6'2" Baldwin conservatory grand piano for a live performance with a Sennheiser MKH800 microphone.

Fact File:
Station: KUVO(FM)
Frequency: 89.3 MHz
Power: 22.5 kW
Format: Jazz
Owner: Denver Educational Broadcasting
Licensed: Aug. 29, 1985
Information: (303) 480-9272 or *www.kuvo.org*

Staff:
President/General Manager: Florence Hernandez-Ramos
Program Director: Carlos Lando
Chief Engineer: Mike Pappas
Assistant Engineer: John Mikity

with a transmitter power output of 5.8 kW.

In contrast to the old tube gear, Pappas says he's been thrilled with the reliability of the Nautel.

"We used to go up to the transmitter site once a week," he said. "Now I go up once a month, just so I don't feel guilty, just to knock the dust out of the air filter."

An additional benefit to using Nautel equipment, Pappas said, is its wide usage in the Denver market. At least six other FM stations are using Nautel, he said, making it easier for engineers in the Mile High City to borrow parts in an emergency.

A Shively 6810BR eight-bay 3/4-wave spaced unilobe antenna was put in place on the KUVO tower. To get the audio from the studios five blocks north of downtown to the transmitter site high in the Front Range, Pappas picked a Harris CD-Link digital microwave system, which KUVO runs uncompressed.

Indeed, Pappas said the plant has little digital data reduction.

"The MiniDisc machines (Sony aand Otari) use compression, and the sat feeds from National Public Radio are compressed," he said. "We don't compress anything else, because it kills the audio quality and I can hear it. And that's all that counts."

Mike Pappas is at the helm of the Mackie 24x8 8-Bus mixing board preparing for a live broadcast.

KUVO's studios each have a pair of Genelec 1029A speakers and a matching subwoofer, "so our on-air people can hear exactly what's going out over the air."

Once the production room had been rebuilt for digital use, it was put into service as the new main air studio, freeing Pappas and his staff to gut the old air studio and rebuild it as a duplicate of the production studio — thus allowing KUVO to switch from one to the other with a simple software download to the Logitek system.

While that task was underway, Pappas turned his attention to the other end of the air chain.

Up at the Lookout Mountain site, the old tube transmitter gave way to a solid-state Nautel FM-10 with NE-50 exciter. The station's effective radiated power is 22.5 kW,

The final touch in the air chain is an Omnia processor, loaded with FM Veris software originally developed by the supplier for Swedish Radio's classical FM network.

"We don't need to be the loudest guys on the dial," Pappas said, "but we do want to have the cleanest signal."

Live room

The rebuild of the main on-air studio was finished last September, and Pappas says "about 40 or 50" listeners called to compliment the station for its improved audio quality after the studio and transmitter upgrades.

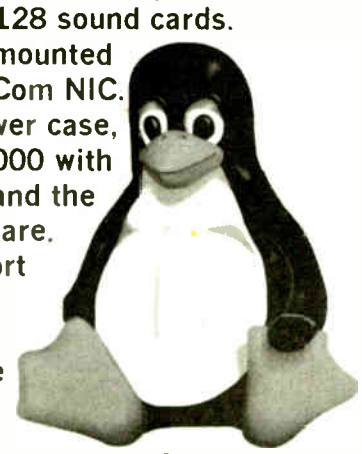
See KUVO, page 16 ▶

A competitor's low-end Windows-based on air and production package sells for about $26,000.

So what will you pay for On Air Digital's complete turnkey on air and production package, one of the most powerful and reliable systems on the market, including our Linux-based RadioSuite HD server?

Less than $23,000. (You could pay us more if it would make you feel better.)

What you get:
- RadioSuite HD server with rack-mounted Pentium III CPU, dual 36 GB IBM UltraSCSI 160 hard drives, Adaptec SCSI controller, 3Com NIC, and 3 SB PCI 128 sound cards.
- UDS II control application with rack-mounted Pentium III CPU, Windows 98, and 3Com NIC.
- Production PC with Pentium III in tower case, Lynx One pro-sound card, CoolEdit 2000 with 4-track plug-in, Xing AudioCatalyst, and the RadioSuite Explorer production software.
- All required accessories such as 8-port Ethernet switch, KVM box, all cables, plus software, utilities, and manuals.
- One year warranty minimum plus one year of service and support.



ON AIR DIGITAL USA

Contact us for more information and a custom price quote today.
972-481-8700 or fax 972-481-9499
E-mail us at info@onairusa.com

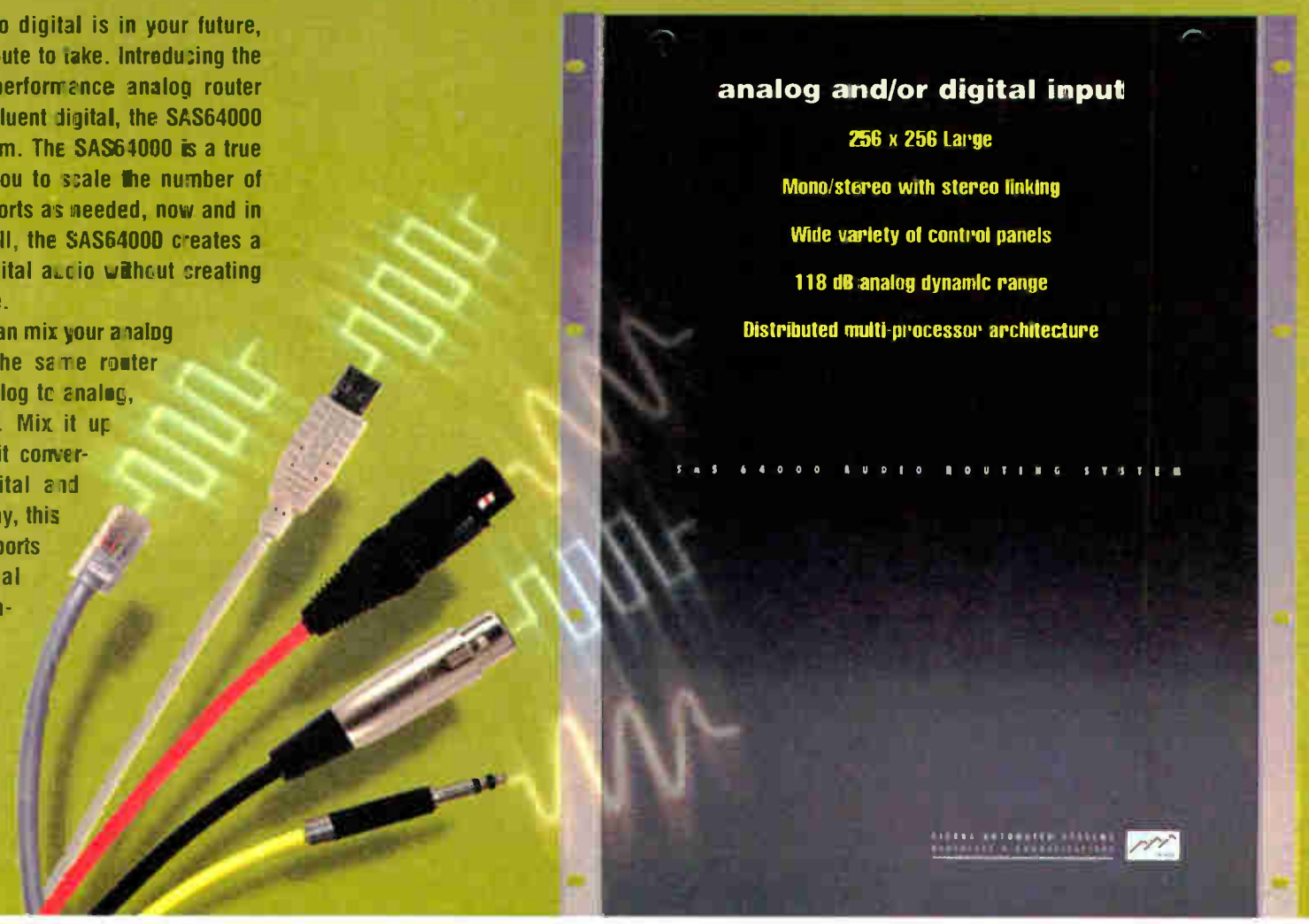
World Radio History

SAS64000 AUDIO ROUTING SYSTEM

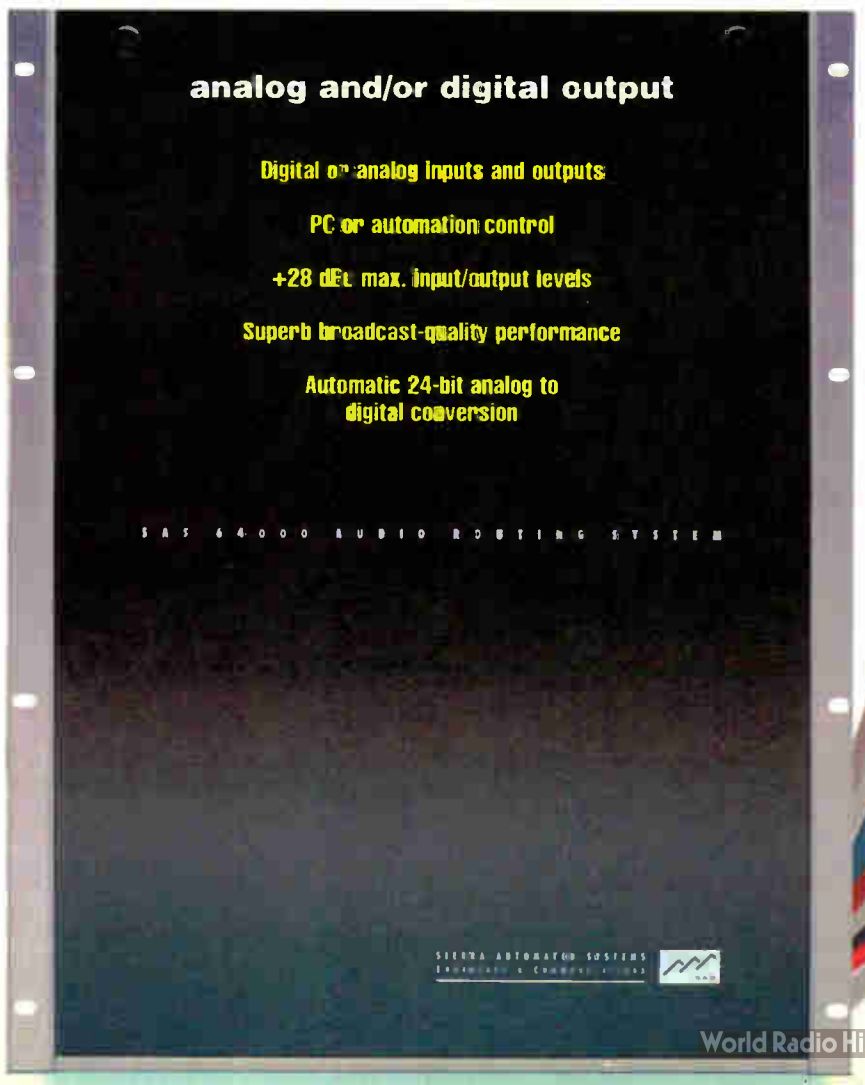
INCOMING

If the migration to digital is in your future, then this is the route to take. Introducing the large size, big performance analog router that also speaks fluent digital, the SAS64000 Audio Routing System. The SAS64000 is a true hybrid that allows you to scale the number of analog and digital ports as needed, now and in the future. Best of all, the SAS64000 creates a path to AES/EBU digital audio without creating analog obsolescence.

This means you can mix your analog and digital I/O in the same router frame. Go direct analog to analog, or digital to digital. Mix it up with automatic 24-bit conversion analog to digital and vice versa. Either way, this unique architecture sports uninterrupted signal integrity and non-blocking flexibility.



OUTGOING



And the SAS64000 is simple to integrate, upgrade and put into service. Just plug in our new digital port expander and that's it. Welcome to digital!—co-existing flawlessly with analog—and all in the same framework. Interested? There's much more to tell. Call 818 840 6749; or e-mail sales@sasaudio.com; or check our website at sasaudio.com. If you're moving into digital, then the SAS64000 Audio Routing System is your conduit to the future.

SAS

SIERRA AUTOMATED SYSTEMS

sasaudio.com

World Radio History

KUVO

▶ Continued from page 14

As for the huge live-performance space, Pappas said he filled it with the best technology he could afford. For mics, KUVO uses a variety of Neumann and Sennheiser products, including a matched pair of Sennheiser MKH800s ("with 50 kHz response," Pappas said with pride) and a Neumann KM-100 dummy head for recording percussion.

While the Neumann KMS105 mics in the air studios are fed through Symetrix 528e processors, Pappas prefers to use little equalization on the live-performance mics, instead choosing "just the right mic" from his stable for each instrument or performer.

"We decided to spend our money on the best microphones we could afford instead of buying outboard Band-Aids to try to 'fix' lesser-grade microphones."

Are there special considerations of miking in this kind of radio environment, where live musical performance is common?

"We use a minimalist approch to miking performances," Pappas said. "For example, we only use three microphones on drum kits — two Sennheiser MKH-20 omnis and a MHK-20 low in the kit. It took us about two years' worth of experimenting to come up with this configuration. It works so much better than trying to stuff eight or more mics in a drum kit.

"We have also been experimenting with using the Neumann KM-100 on congas and Latin percussion, and it is amazing. We have also been experimenting with using Sennheiser MKH-70 shotgun microphones on reed instruments. You can place them farther from the musician and you get more of the sound from the whole instrument than if you just stick a mic in the bell.

"Almost all mics we use are condensers, mostly Sennheiser and Neumann. We recently broadcast a live performance of Grammy Award-winning jazz vocalist Dianne Reeves. We hooked her on the Neumann KMS-105. We used a matched pair of Neumann KM-184s on her guitar player's Romero Lubambo guitar."

A 24-channel Mackie 8-Bus board is used for mixing live performances, which are recorded on an Alesis ADAT multitrack recorder for eventual use on CDs. KUVO offers the CDs as membership premiums.

Recently, Pappas has been experimenting with Sony's Direct Stream Digital format, which offers 100 kHz bandwidth, thanks to a unit Sony loaned to KUVO for testing.

"Direct Stream Digital is a 1-bit format that runs a sample frequency 64 times greater than that of a standard CD. It offers wide bandwidth and very high dynamic range of about 120 dB. It records to either hard disk or MO disk.

"We use it to record all of our live performances. We will eventually release a compilation of live performances on the consumer playback format of DSD, which is called Super Audio Compact Disc (SACD). The reason we are recording on this is that it offers the highest fidelity of any digital format and it is perfectly in line with our goal of uncompromising quality."

Vendor support

Planning and execution of this project were done in-house.

"We did all of the design, purchasing, wiring (the plant is wired with Mogami analog and digital cable) and installation ourselves."

Pappas said he received "world-class support" from his vendors.

"For example, we got dumb with the Logitek Numix and programmed it wrong the weekend before it was to go on the air. We called Tag Borland, the president, at home and he bailed us out of our self-inflicted problem. Bob Surette at Shively went way over and above the call of duty. John Lynch at Broadcast Supply Worldwide was a huge help when we figured out we were short some critical component and we needed it the next day.

"We had a snag with the Nautel transmitter (again self-inflicted) during the installation, and we called their 24-hour support line at 3:30 a.m. our time on a Sunday morning and got a call back in under 25 minutes.

"And of course the folks at Sennheiser and Neumann who have supported our quest for the best live performance sound."

The real test of KUVO's new equipment happens 24 hours a day in the hands of its large staff of air personalities, mostly volunteers.

"We basically went from stone tablets to — as my program director said — the starship Enterprise," Pappas said.

That required training sessions for the staff, four people at a time, as they learned what they could accomplish in their new studios — for instance, assigning each of the last four faders on the Logitek console to any of 15 audio sources.

Pappas was worried about the reaction, especially from some of the station's older volunteers, but he learned his fears were misplaced as soon as he heard from "J.C., The Senior Citizen of the Airwaves," who hosts KUVO's Friday night blues show.

"She came out and she goes, 'I can't wait to get on this thing,'" Pappas said.

Scott Fybush wrote about how to protect stations from computer viruses in our May 23 issue.

KUVO Equipment Inventory

Air/Production Studios

Each studio contains the following complement:

Logitek Numix console and digital routing system
(3) Neumann KMS-105 mics
(6) Symetrix 528e mic processors
(3) Denon DN-C680 CD players
(2) Sony MD player/recorders
Otari DTR-8 DAT machine (production)
Panasonic SV-3700 DAT machine (air)
Tascam 122 MKII cassette deck
Technics SL-1200 MKII turntable with Ortofon cartridge
(4) Benchmark Media System headphone amps
Telos Systems Telos One phone hybrid
(2) Genelec 1029A speakers with subwoofer
Mogami eight-pair digital cable and 105-strand mic cable

Live Performance Studio and Control Room

(2) Sennheiser MKH800s, sequential serial number, matched pair
(2) Neumann TLM-103 black monoliths
Neumann U-87
(4) Neumann KMS-105
(2) Neumann KM-184
Neumann KM-100 (Fritz the dummy head)
(2) each Sennheiser MKH-20, 40, 60 and 70
Z-Systems 16x16 Digital Detangler
Benchmark Media Systems A-D converter
Lexicon PCM-80 digital reverb
RTS Systems intercom and IFB system
DAS Model 6 Nearfield Monitors
Baldwin 6'2" conservatory grand piano
Mackie 24x8 8-Bus mixing board
Telos Zephyr ISDN codec
32 channel Alesis ADAT multitrack recorder
Sony Direct Stream Digital recorder with Meitner A-D and D-A converters
Grace Design 801R remote controlled 8-channel mic preamp

RF Chain

Harris CD-Link digital STL
Omnia FM Veris processor
Nautel NE-50 exciter
Nautel FM-10 transmitter
Shively 6810BR eight-bay antenna
Bird wattmeter with 3-inch line section
Myat 3-inch hard line
Sage Endec EAS
Sine Systems remote monitoring and control system
Beta Bright Displays

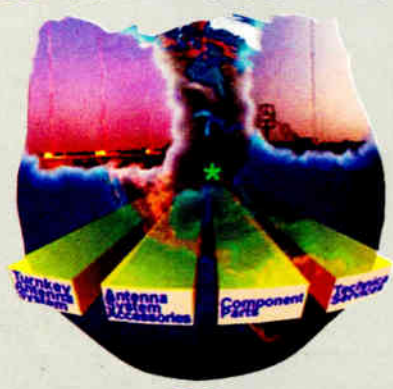
Background: The station's Shively antenna is on the KRMA public TV tower located on the backside of Lookout Mountain.

Rapidly Transportable Mobile AM All-Band Antenna Systems

NEW PRODUCT

Model STM-AMAB-5K
5 kW All-Band Antenna Tuning Unit And Associated Telescopic Mast

Your No. 1 Source For AM Antenna Systems And Accessories In The USA And Worldwide



We Design And Build For DRM Or IBOC Digital Audio Broadcasting

Kintronic Labs, Inc

Phone: (423) 878-3141 Fax: (423) 878-4224

Product Brochures Available At www.kintronic.com

High-Powered AM/Medium Wave Weatherproof Dummy Loads

NEW PRODUCT

Model DL-300WP-4116EIA
Rated for 450kW Continuous

World Radio History

Standard equipment on every model.

If any digital audio delivery system could have a "trust" button, DAD$_{PRO}$32 is it. Live assist or automation, single radio station or regional cluster, you can trust DAD$_{PRO}$32 to deliver 24/7/365. Put your mind at ease, choose DAD$_{PRO}$32—from ENCO Systems.

Smarter. Faster. Better.

ENCO SYSTEMS, INC.

800.ENCO.SYS www.enco.com

World Radio History

MARKET PLACE

IM³ Infrastructure Management

IM³ Networks, formerly Davicom, offers the MAC line of remote controls.The company changed its name in December after the sale of its broadcast antenna division to Dielectric.

These products monitor a transmission facility via standard phone line and a PC. MINIMAC is for smaller radio station operations. The MAC System, by contrast, is expandable and suits broadcast facilities of all sizes. More than 1,500 are in service.

The unit can display real-time VSWR in a split second. It has the logic to take corrective action based on the user's programming parameters. The MAC system can monitor most gear and in the event of a fault send an alarm by phone (with its voice synthesizer), fax, pager or SMS. You can dial in and listen to 16 audio inputs.

MAC now can connect using a GSM or PCS modem, meaning an installed telephone line is not required. The unit also has an internal, 512-event log.

A CD is available explaining the features of the system. E-mail to *info@im3net.com* for a copy.

Also from the company is the FMPM-01, shown, a power monitor combined with a demodulator. It allows you to know exactly the transmitted power and performs quality testing of the transmitted signals.

The FM Power Monitor Demodulator, FMPM-01, is designed to detect the carrier at the output of a transmitter and develop a DC voltage proportional to the transmitted power. The built-in FM detector, mono or stereo, can be used for making essential audio measurements like frequency response, noise and distortion to determine if a transmitter is calibrated properly.

It can be used alone or with a Scientel Audio Presence Detector or MAC remote monitoring system.

For information contact the company in Canada at (800) 465-4343 or visit www.im3networks.com.

Ice Detection Systems From B.F. Goodrich

Is antenna ice a problem at your transmission facility? Ice detection systems from B.F. Goodrich use aerospace technology to detect icing quickly, to save you money and headaches.

The probe vibrates ultrasonically at a resonant frequency of 40,000 Hz to detect the presence of an icing condition. As ice accretes on the probe, the added mass causes the resonant frequency to decrease.

When a frequency decrease equivalent to 0.020 inches of ice thickness is detected, the ice signal is transmitted to the control unit. An ice output relay will activate for an amount of time that you select.

The system's electronics perform diagnostics to ensure proper operation, and analyze the probe frequency and compare it to the normal operation frequency (36,400-40,151 Hz).

If a failure is detected in the electronics or the frequency is not within the normal operation frequency range, the failure output is activated. The controller then can perform any number of operations programmed by the user.

The Model 0872J1 is intended to replace Rosemount Models 0872B12 and 0872CB ice detectors.

For more information contact the company in Minnesota at (952) 892-4300 or send e-mail to weather.sensors@asd.bfg.com.

World Radio History

Workbench

Radio World, July 4, 2001

★ ★ ★

Now You See It, Now You Don't!

John Bisset

Remember the pesky problem of infrared remotes not working in fluorescent light environments?

Michael Miller, the AV technician for two high schools in Royal Oak, Mich., has a novel solution.

First, a little background: A few years ago, his school lighting was upgraded to GE type F32T8-SP35 fluorescent bulbs. After the upgrade, Mike was swamped with complaints that television remotes had failed, and in some cases, TV sets would turn on and off all by themselves. Talk about disrupting classrooms!

As Mike investigated, a teacher offered a clue that the problem was related to the fluorescent bulbs. She said the remotes worked fine when the classroom lights were off. When the lights were on, the remote acted like it had no battery. Nothing worked.

Mike's first thought was that the new bulbs were emitting an unusual amount of infrared waves in the spectrum. After a discussion with a GE design engineer, he was assured that there was very little infrared radiation from this lamp. The engineer added that the sensor on the television set senses visible light along with infrared and therefore could be overloaded by visible light, and so becomes inoperative.

This statement led Mike to explore the idea of filtering out visible light without affecting the infrared control signal. His theater lighting background drew him to a Rosco Cinegel swatch book. Mike found a neutral density gel in the book, and the associated transmission graph showed little filtering at the infrared frequencies.

If you refer to the Rosco Cinegel book, you'll find the gels calibrated in standard photographic f-stops. Typically, the gels are available in one, two or three stops, which correlate to a reduction of 50, 70 or 87.5 percent, respectively. In almost all cases, a three-f-stop gel did the trick. If additional attenuation is needed, just sandwich an extra f-stop or two.

The three gels that Michael used were Rosco Cinegel #3402 (one stop), #3403 (two stops), and 3404 (three stops).

The really good news is that the problem was solved on more than 100 television sets with less than $10 worth of materials. A square inch of gel was placed over the television IR sensor, and in some cases affixed with black electrical tape. If the gel gets lost, it's easy to replace.

Thanks, Mike, for a novel solution, borrowed from our theater lighting technicians.

★ ★ ★

What does your tower base look like? Figure 1 shows an AM base where the vegetation has been treated by a defoliant such as Round-Up brand, but the area still needs to be cleared.

Remember, the roots of small trees, such as those up against the fence in the photo, can rip ground screen and/or radials if pulled by the roots. If you trade the services of a landscaper to clean inside your tower fences, supervise their work — and also keep in mind RFR exposure limits.

After clearing the area, cover the ground with landscape fabric or black plastic. A covering of pea gravel or sand will reduce further vegetation growth.

Figure 1

A few years ago, Terry Jordan, engineering manager for Cape Fear Broadcasting, now part of Cumulus, was planning a building expansion.

His dilemma: the architect had designed the visitor's parking lot in close proximity to one of the tower guy anchors. Not wanting to tempt fate by leaving the anchor exposed, Terry started evaluating his options.

Fencing was the first, but aside from expense, a fence does a poor job of stopping an automobile. That's when Terry settled on a more economical, aesthetic and sturdier solution.

The steel posts shown in Figure 2 (page 20) were set in concrete and painted. They were located beyond the anchor concrete pier, so any shock from a car slamming into them would not damage the pier.

★ ★ ★

The saga of rodent removal from

See WORKBENCH, page 20 ▶

The problem was solved on more than 100 TV sets with less than $10 worth of materials. Your station might benefit too.

Dependable Modulation Monitors for AM & FM

520 AM Mod-Monitor

- Built-in, tunable preselector for accurate off-air measurements
- Easy-to-read, peak-hold modulation display
- Alarm and RS-232 data outputs
- Companion active antenna option

530 FM Mod-Monitor

- Off-air operation with 8 station presets
- High-resolution displays for deviation, audio, pilot, RF signal and multipath
- Accurate and affordable

Download full spec sheets at www.inovon.com

Inovonics
1305 Fair Ave. • Santa Cruz, CA 95060
TEL: (831) 458-0552 • FAX: (831) 458-0554
www.inovon.com • e-mail: info@inovon.com

World Radio History

MARKET PLACE

Amek Large-Format Surround Console

Amek unveiled the Galileo 360V large-format surround console.

Available in 40- or 56-channel configurations, the Galileo 360V is equipped with Amek Supertrue V4 automation, as well as four-band parametric equalization, multichannel mixing up to 5.1, high-resolution multichannel bar-graph level metering and VCA or moving fader options. The transformer-like amplifier input stage was designed by Rupert Neve.

Also new from Amek is a 60-channel version of the Media 51 mixing console featuring EQ and mic preamps by Rupert Neve.

For information contact the company at (818) 973-1618 or visit www.amek.com.

TeleCast SoundManager

The TeleCast Group unveiled SoundManager, a Windows NT-based system for radio automation and production as well as Webcasting. SoundManager is based on client/server technology for reliability and cost efficiency and employs MPEG audio and standard PC hardware. Functions include sound archiving, playlist planning, newsdesk integration, broadcast automation, Web publishing and Internet streaming.

For information visit www.soundmanager.com *or call +47 70 13 27 00.*

QEI Looks to IBOC

QEI said it is prepared to help customers with the transition to in-band, on-channel digital audio broadcasting. Its transmitters have auto power control, regulated power supplies, modular design, upgradeable power level and linearized amplifiers.

QEI transmitters, the company said, will not need replacement under IBOC.

For information call the company at (800) 334-9154 or visit the Web site at www.qei-broadcast.com.

control is good.
IP2 is better.

Now you can monitor and control multiple RS-232 and logic devices from anywhere in the world, using any web browser or telnet client. Connect via local or wide-area network, modem, or the Internet. IP2port is your complete remote control solution in one reliable, easily-configured rack mount unit.

DIGIGRAM INC
TEL: +1 703 875 9100 ◊ FAX: +1 703 875 9161
E-MAIL: INPUT@DIGIGRAM.COM ◊ WWW.DIGIGRAM.COM
NETWORKING SOLUTIONS FOR DIGITAL AUDIO AND REMOTE MANAGEMENT
Digigram

Workbench

▶ Continued from page 19

transmitter sites continues.

Sid Schweiger from the Entercom Boston cluster advises readers of *radio-tech@broadcast.net* that the latest generation of electronic gizmos are startlingly effective in removing rodents.

Sid tells a horror story of mice destroying the generator at a previous station, requiring a $3,000 rebuild. That got management's attention. Sid bought three of the electronic repellers (total, about $30), and placed them around the transmitter building. He cleaned up the mice mess and nests, and waited the prescribed two weeks. Not a trace of the little furballs.

A nice side benefit was that snakes appeared to be repelled by the sonic controllers. They've disappeared, too!

It's a good idea to check conduits as well. Old or new empty conduits, or open-ended conduit pipes that run outside to the tower or generator, provide easy access to the inside of the building.

Here's a sealing method that should be helpful. Buy a package of steel wool. Tear off a piece that will fit snugly inside the end of the conduit. Tie a wire or string around the piece of wool, prior to stuffing it into the conduit. This "pull string" facilitates removal of the wool stuffing if the conduit is needed.

After stuffing the end with the wool, cap the conduit end with dum-dum (a clay-type compound found at electric supply stores), tape or an end-cap, also available from electric supply stores.

The logic behind the process is that if a rodent chews through the seal, the steel wool will stop them. If they've traveled from the other end of the conduit, again, the steel wool will end their journey.

A little preventive maintenance now will prevent rodents from chewing through wires and taking you off the air later (Friday afternoon drive, of course!).

Figure 2

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is a district sales manager for Harris Corp. Reach him at (703) 323-8011.

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

More innovative solutions...

Thermal Sentry III
monitors transmitter operating temperature
analog output for remote monitoring
programmable alarm output with relay
front panel adjustments and LED display
two air temperature sensors included
indicates failed or clogged ventilation system
early warning for antenna icing conditions
model tsn-3

Time • Temperature • ID
time and temperature delivery for automation
60 seconds of user recordable storage
automatically varies message delivery
professional male announcer voice
temperature in Fahrenheit or Celcius
battery backed AC synchronized clock
digital message storage - no moving parts
model tti-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
seven DPDT relays and one 4PDT relay
model dai-2

innovative solutions
Sine Systems
nashville, tennessee • 615.228.3500 voice • 615.227.2393 fax-on-demand • www.sinesystems.com

World Radio History

On The Air

A Monthly Newsletter from Broadcast Software International Issue 5

News

BSI Partners with Dell and AudioScience

Dell has been selected as the platform provider for all of the BSI digital systems. BSI tested PCs from various providers, including Hewlett Packard, Compaq and several custom-builders. Dell provided the best combination of quality, non-proprietary hardware, service, and overall value.

BSI President Ron Burley says, "We try to provide our customers with peace of mind. They know they can rely on Dell, and they can rely on us. It's a partnership of trust."

Most BSI systems, including the $9,999 dual studio Series 110 are built upon the Dell PowerEdge 300 workstation. An exception is the $19,999 dual studio Series 210, based on the Dell PowerEdge 2550 server with dual redundant power supplies and swappable hard drives.

AudioScience has created the new $1499 4344 and $1999 4346 to be sold exclusively by BSI. These audio cards each have an on-board MP3 CODEC and are capable of four simultaneous playbacks. The ASI4346 also has an RS422 bitstream input and GPIO.

MP3 is a more advanced algorithm than its predecessor, MP2. At the same sample rate, an MP3 file will sound better than an MP2 file. To get the same broadcast quality music that you've had using MP2, you can compress an MP3 file twice as much. But, playing multiple MP3 files using a software CODEC takes up a lot of processing time, often resulting in audio breakup or system sluggishness.

"Even with the fastest CPU on the market, a card with onboard decoding capabilities is the preferred means to decode and play audio files," said Greg Case, president of Broadcast Technical Engineering.

The ASI audio cards include specialized digital signal processing chips (DSP's) that take the load off the CPU. Combine that with four balanced audio outputs and you sound great, while taking advantage of the most popular audio format in use today.

Quote of the Month

"If we have a network glitch, we have confidence that our WaveStation is fully flexible. We can just put our automation on and we're ready to go."

Matt Clark
KLEY- Wellington, KS

Calendar

Aug 23-25, WaveStation Weekend Training Session

Sept 5, Demonstration of a new automation product at the NAB. Call for an invitation.

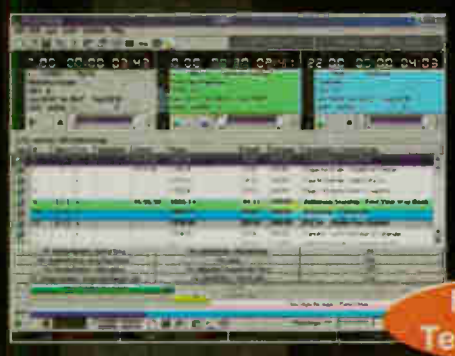
Birthdays:
July 1 1961, Princess Diana
July 20 1947, Carlos Santana

Tip

Carts Cut Time Spent

Ever get tired of building logs with the same group of three or four events over and over? Try putting them in a cart and then calling that cart in the log. Not only will it make your logs shorter, it'll be much easier to read. A cart with the description "Fade to break" is a lot more descriptive than a group of mixfade and deckfade macros. This is also a great way to avoid running out of lines in your scheduling software.

Affordable Digital Automation-Air and Production just $1499



Full automation, live assist or satellite
Quadruple overlap
Voicetracking
Multiple station control
Support for any audio format
Easy interfacing with any scheduling or multi-track editing program
Windows 2000, 95, 98, ME , NT or XP

Reliable, powerful, affordable.
Download WaveStation at
www.bsiusa.com

User File

KKVV - Clive Millett

Clive works at KKVV in Las Vegas, Nevada, where they use BSI's $299 WaveCart. He says, "I was the board-op during the mornings and I was also the only production guy. I was recording all of our shows and commercials in real time. For the holidays, I spent 3 days, 11-12 hours a day, and it was a real headache. Last year I started recording it right into Cool Edit and then loading everything into WaveCart."

He started out by jumping right into things. And while we recommend reading the manual, we know that not everyone does. "Technical support was great because they were patient with me," says Clive, "At one point, we weren't segueing, and the tech finally figured out what I didn't know and showed me how to set it up so we sounded like we were supposed to."

WaveCart also had features he didn't expect. He says, "One thing we needed was triggers, and we didn't even know they were included. I was just reading through the help file and found out how to do it."

Clive says, "WaveCart really cut down on my headache time. I didn't have to sit there and baby-sit."

Send us your story.

888-BSIUSA1 WWW.BSIUSA.COM
Broadcast Software International

World Radio History

Everything
you've ever wanted.

Everything
you've ever needed.

Everything
you'd expect from PR&E's legacy.

And...it even looks better than Jennifer Lopez.

next level solutions

SERVICE

SYSTEMS

AUTOMATION

TRANSMISSION

HARRIS

World Radio History

GM Journal

Radio World | Resource for Business, Programming & Sales | July 4, 2001

A Team Cole's Law Salute

See Page 28

Private Companies On the Move

Public Companies Face Ownership Caps; Private Companies Move as Smaller Markets Consolidate

Scott Fybush

Think all of United States radio is now in the hands of just a few huge companies?

Sure, Clear Channel now counts somewhere over 1,100 signals in its empire — but that's still less than 10 percent of all the stations on the air right now in America.

Carl Hirsch

Mix in a stock market that's still struggling to find its feet after the huge run-up and falloff in prices, and

See GROUPS, page 24 ▶

Pigs Almost Fly Over Nebraska

Ken R.

Well it was a nice try.

Tom Robson, general manager of two radio stations in York, Neb., hit on what he thought would be a novel way to sell one of his properties. He always believed that the average "Joe" could own his own radio station when pigs took flight, so he hatched a plan to change all that.

Contest

Robson held a national contest with the winner to receive the right to apply to the FCC for transfer of license for KAWL(AM), a 500-watt daytimer with nighttime waiver. We'll give you the results of this contest momentarily, but first let's look at how this unique proposition was set up.

"We talked to our lawyers and the commission's lawyers and it's completely legal," said Robson. "The winner of our contest would actually end up with the assets of our company."

Would-be broadcast moguls just logged onto *www.kawl1370.com* and took a short quiz testing general broadcast knowledge.

Sample question: "What is the current acronym for the system linking radio. TV and cable so they can broadcast information during an emergency?" (Multiple-choice answers are: EBS, TBS, EAS or FEMA.) The contestant then printed the entry, signed it and sent it with a check for $1,000 to

Tom Robson

KAWL Contest, York, Neb.

In the event of a tie, there was a clever timed test to be taken on the Internet by the finalists. Fastest fingers would win.

"The commission tells us this is not a lottery because it involves a game of skill," said Robson.

Should the FCC reject the winner's application, the prize was to be forfeited to the second-place entrant and the final winner was responsible for taxes, license and application fees.

"We needed about 1,000 entries and if the station didn't get enough, all the escrowed money would be returned."

The deadline was 5 p.m. on May 31, 2001 and the winner's name was to be posted at the same Web site on June 5. Tie-breaking contests were to occur later that month if necessary.

The prize included the tower, building, land, transmitter and equipment — all debt-free.

On the level?

It was a real contest, the commission approved it and it really could have earned someone the radio station, which currently plays solid-gold hits only. This prize included the tower, building, land, transmitter and equipment — all debt-free.

"The winner could change the format if he or she wanted to and I'll continue to run our other station, KTMX(FM),

See PIGS FLY, page 28 ▶

Reliability.

SMARTS Systems are built around the idea that air time is extremely precious. No radio broadcaster wants to hear dead air. As broadcasters, we understand the importance of a consistent audio signal.

We design every SMARTS System with dependable, professional, audio-focused hardware and software. Smartcasters use stable operating systems and trustworthy components that prove time and again their reliability. Rock solid dependability you can rely on year after year.

When your digital audio system has you down, call SMARTS!

Broadcast Intelligence.
Digital radio that makes sense.

www.smartsbroadcast.com
800-74 SMART
(800-747-6278)
info@smartsbroadcast.com
2508 West Main Street, PO Box 284
Emmetsburg, Iowa USA 50536

SMARTS Broadcast Systems

World Radio History

Groups

▶ Continued from page 23

you've got a recipe for some interesting months among the medium-sized radio groups.

Take Bonneville, for example: It zeroed in on the Chicago market, where Clear Channel and Infinity are at their ownership limits and a juicy station — WNIB(FM) at 97.1 on the dial — was for sale.

The Florian family owned classical WNIB and its smaller sister station, WNIZ(FM), for more than three decades.

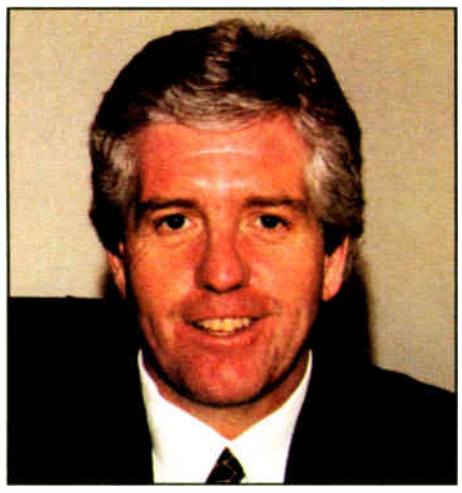
Bonneville already owned three other stations in the market — WLUP(FM), WNND(FM) and WTMX(FM) — so adding the Florian stations was an attractive prospect for the privately held broadcast arm of the Church of the Latter Day Saints.

"Operating radio stations in a major market is a good investment," said Bonneville President and CEO Bruce Reese, noting that radio revenues in the Chicago market are expected to top $1 billion within five to seven years.

Good move

With single stations in Los Angeles and Salt Lake City and larger clusters in Washington and San Francisco, Reese said the church understood the desirability of adding to its holdings for the first time in several years.

The price tag? A cool $165 million, one of the highest prices ever paid for a single radio station, all for a signal for which the calls, staff and format were changed the moment Bonneville took control.



Peter Smyth

Bonneville runs successful classical radio stations WGMS(FM) in Washington and KDFC(FM) in San Francisco, but Reese said there was never a hesitation to make a format change at its expensive new acquisition, especially with a strong classical competitor, WFMT(FM), already operating in Chicago.

Now you can hear Chicago — the rock band — on the former WNIB. Renamed WDRV(FM), "the Drive," the signal at 97.1 now runs classic rock targeted at men aged 35 to 50.

Bonneville may have had one big advantage over its competitors in its pursuit of the former WNIB.

As a privately held company, it has been immune to the Wall Street roller coaster of recent months and so has access to dollars that public companies can't touch right now, given market conditions.

"It's a different problem for us," said Reese. "We've still got a stockholder we have to go to to fund these things."

Reese isn't ruling out additional station purchases in the months to come. In the meantime, Bonneville is busy on another front.

The company's all-news station in Washington, WTOP-AM-FM, and its classical sister, WGMS, recently became the first to launch a Web site incorporating LMiV, the Local Market Internet Venture, a joint venture with Emmis, Susquehanna, Greater Media, Citadel and Jefferson-Pilot.

Bruce Reese

WTOP was also a pioneer in the use of "side channels," with a Webcast originally known as WTOP-2 and now as Federal News Radio, which targets the many federal employees who call Washington home.

"I think there's a business plan out there for radio stations and the Web," Reese said, "but it's not just a streaming solution, it's the information services we can provide to our advertisers on the Web."

Reese said Bonneville learned its lesson from the dot-com slump, keeping its spending on Internet development at a cautious level.

"I think we all understand there isn't such a thing as a New Economy," he said. "There's still a need to develop revenue."

Out in the 'burbs

"I think it's a more discriminating market now," said station broker Gary Stevens. "When things are really good, people will buy anything. When things are down, people want to focus on the oceanfront property."

If Bonneville's new 97.1 signal is the beachfront property of Chicago radio, then the 13 stations NextMedia recently acquired in the market are, literally and figuratively, way out in the suburbs.

Licensed to communities ranging from Kenosha, Wis., to the north down to Joliet, Ill., in the far west suburbs, the signals are among the 58 stations the company acquired in just 12 months after its start early last year.

Beyond the Chicago area, NextMedia has clusters in Reno, Nev.; Canton, Ohio; Erie, Pa.; Sherman-Denison, Texas; Myrtle Beach, S.C.; Greenville, N.C.; Decatur, Ill.; Panama City Beach, Fla. and Lubbock, Texas, as well as a station in Wilmington, Del.

But if the company itself is a newcomer, its principals are anything but. CEO Steve Dinetz built the Chancellor Broadcasting empire in the '90s before merging it into AMFM and selling to Clear Channel.

Chairman Carl Hirsch built the OmniAmerica group before selling it to Chancellor.

"Dinetz and Hirsch have made more people on Wall Street rich than just about anyone else in the industry," said NextMedia radio group President Skip Weller, on why the privately held company has had no problems raising money to buy its stations.

"Dinetz and his colleagues have got a concept of buying into suburbs of big markets like Dallas or Chicago and they've done very well," said station broker Frank Boyle.

He agrees that the name recognition of industry veterans like Hirsch and Dinetz is essential right now to raise investment money when that community still is skittish from the dot-com crash.

"If you're Steve Dinetz or Skip Weller or Carl Hirsch, the answer is yes (you can raise money), because they've dealt with Wall Street for 25 years and made a lot of money for them," he said.

Fishing for profits

There's money to be made in the niches of the radio world, as well. Analyst Jim Boyle, managing director of First Union Securities, is keeping a close eye on Inner City Broadcasting's urban-formatted stations.

"Really, with Radio One taking out Blue Chip Broadcasting, you're down to just two sizable players in the urban market," he said.

James Marsh, senior broadcasting analyst with Robertson Stephens Investment Bankers, sees big promise in the religious radio market, singling out Salem Communications for special attention.

"It's probably not on the radar screen of most investors, but they've had better-than-average growth rates," Marsh said. "They've really demonstrated their revenue model works well in less-robust markets."

Since the launch of a new Christian contemporary music format called "The Fish" in suburban Los Angeles last year, Salem has been busy adding to its roster of stations, with recent purchases of AM outlets in Boston, San Francisco, Chicago and Richmond, Va., accompanying higher-ticket acquisitions of FM signals in Sacramento, Calif., and Cleveland.

Broker Gary Stevens, who handled those purchases for Salem, calls the company "the 9,000-pound gorilla" of religious radio.

"They don't have any of the issues the standard groups do," he said. "They don't have the ratings problems, they don't have high-priced personalities to deal with."

Half a continent away from Chicago and its suburbs, another medium-sized radio group is getting back into the acquisition business after several quiet years.

Greater Media traded away its Los Angeles and Washington stations in the late '90s, building clusters in Detroit, Philadelphia and Boston to add to its hometown pair of WCTC(AM) and WMGQ(FM) in New Brunswick, N.J.

After those trades, the last headline out of the family-owned company was the sale of its cable operations last year, which left Greater Media with cash to spend on acquisitions.

The silence ended in May, when Greater Media agreed to pay $79.68 million to buy New Jersey Broadcasting's four stations: WMTR(AM) in Morristown; WWTR (AM) in Bridgewater; WDHA(FM) in Cedar Knolls; and WRAT(FM) in Point Pleasant — all in New Jersey and all a short drive from the Bordes family's base in New Brunswick.

Skip Weller

"We thought that was a pretty good acquisition in New Jersey," said Greater Media President/COO Peter Smyth. "If we were going to be there, we wanted to be there in a strong way."

Like his counterpart at Bonneville, Smyth works for just one stockholder, something he sees as an advantage.

"You can move a lot quicker (as a private company)," he said. "I don't have the pressures of Wall Street that they have."

With the interests of the Bordes family as his main concern, Smyth said it's a relief to be able to focus on something beyond quarterly earnings reports.

"I'm not looking 90 days out, I'm looking four, five years out," he said.

With the advantage of the cash his company holds from the sale of its cable systems, Smyth said more acquisitions are in that long-term agenda.

"I'd like to see us get another FM in Philadelphia and Detroit," he said. "I'd like to be back in Baltimore/Washington and I'd love to get into Nashville," adding that Atlanta and Florida are also possible areas for growth.

Dinetz and Hirsch have made more people on Wall Street rich than just about anyone else in the industry.

— Skip Weller

Scott Fybush, a regular RW contributor, is the editor of NorthEast Radio Watch. Reach him via e-mail to scott@Fybush.com.

World Radio History

i can run my radio station for $995.

MP3 on any card!
Multiple Streams
No Skipping! No Kidding!

- Satellite
- Voice Track
- Live Assist
- Automation
- Internet

MediaTouch

Record and Play MP3, MP2, PCM, ADPCM, and Windows Media Audio on ordinary sound cards. iMediaTouch does more for less!

(888) 665-0501 www.imediatouch.com

World Radio History

NAB Plans Americas Conference

Ken R.

Radio and radio producers from the Americas — North, South, Latin and Central — will gather July 24-26 in Key Biscayne, Fla., for the third annual National Association of Broadcasters Americas Conference.

All sessions will be translated as they occur into Spanish and English.

Terri Rabel, senior vice president of the international and associate group of the NAB, said the purpose of the conference is to share information on technical subjects, but to do so in a way nontechnical managers can understand. A void was apparent after a similar event organized by the Catholic Church in Miami was discontinued.

"We've had success with this sort of conference in Europe, and we're in a good situation to be able to provide the platform for discussion of issues that cut across the boundaries of our countries," said Rabel.

Operation forward

"Our mission is to try to provide a conference that is cutting edge and can bring together a lot of disciplines that other associations don't have the wherewithal to handle logistically."

"We want to keep people up to date on subjects like DAB, DTV, streaming and other topics," said Rabel. "But it's really geared toward managers who want to see the big picture."

"This is not a conference designed for engineers, although there may be some in attendance," said Marcia De Sonne, NAB director of technical assessment.

De Sonne will moderate two sessions: "What Equipment Do You Need?" and "New Technologies — the Implications" during the three-day event. She said these meetings will cover broadcast equipment not necessarily by brand name, but by description and category.

Under discussion will be new products designed for e-commerce, streaming audio and video, production and "central-casting," or sending audio to several locations via landlines or satellite.

Terri Rabel

Doug Harris, idea wrangler for Houston-based Creative Animal International, will lead two sessions.

In the first, "The Best Promotions and Contests," Harris will share radio brainstorms — including some disasters.

"One of the worst promotions I've ever heard of occurred at a Clear Channel station in which the morning show hosts killed a wild boar on the air," said Harris.

We want to keep people up to date on DAB, DTV, streaming and other topics.

— Terry Rabel

"I also know of a personality who tried to ship his assistant via Federal Express. Putting someone in physical danger should always be avoided."

Harris is interested in discussing ways successful ideas from the states can be transplanted to countries south of the border.

"We're looking for things that will enchant or capture the imagination of the public," said Harris.

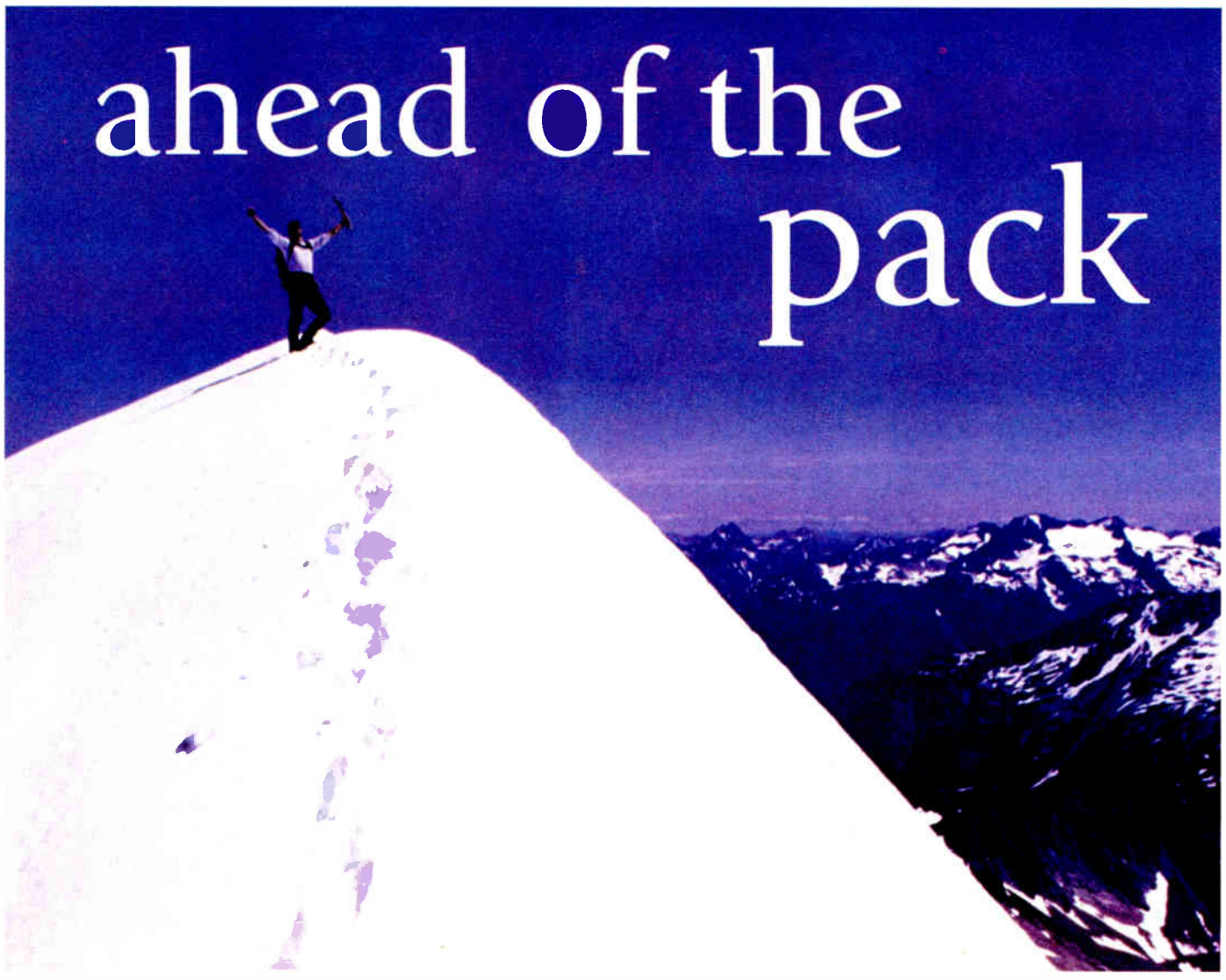
Marijane C. Milton

The Creative Animal's other session, "Free Your Mind and Increase Your Success," will demonstrate Harris' belief that if a station is able to present an exciting idea to a client, all discussion of rates and schedules becomes secondary.

Marijane C. Milton, Innuity Inc.'s vice president of corporate training in San Clemente, Calif., will present a session titled "Eight Steps to Internet Success."

Milton said the Internet poses the greatest opportunities and one of the greatest

See AMERICAS, page 30 ▶



Scott Studios | Cartworks | Harris Intraplex | DTS
Computer Concepts | Glensound | Leitch | Moseley

apt-X™ is now available to license.

The apt-X™ algorithm is the first choice for many of the world's leading professional audio manufacturers. Its world-beating performance allows compression of a factor of 4:1 with no audible degradation, a coding delay of fewer than 4 milliseconds and a high resilience to multiple coding.

But don't take our word for it. Opposite are just some of the industry's leading names currently using this cutting edge technology.

Find out why apt-X™ is the leaders' choice; contact us today.

APT AUDIO PROCESSING TECHNOLOGY

Audio Processing Technology Ltd Tel +44 28 9037 1110 Fax +44 28 9037 1137
Audio Processing Technology Inc Tel +1 323 463 2963 Fax +1 323 463 8875
Audio Processing Technology KK Tel +81 3 3320 1020 Fax +81 3 3320 1022

aptmarketing@aptx.com www.aptx.com

World Radio History

and of course,
the "i" word...

iSelector™

Combining the ***SMARTS*** of Selector
with the ***POWER*** of your listeners!

RCS®

www.iselector.com iselector@rcsworks.com In USA call (914) 428-4600, ext. 408

iSelector™ Patent Pending.

World Radio History

COLE'S LAW

Radio Hats Off to Linda Blair

Harry Cole

Everybody out of your chairs, put your hands together and let's give a standing "O" to Ms. Linda Blair, former chief of the audio services division at the FCC.

Blair has been named associate chief of the commission's Enforcement Bureau. Team Cole's Law salutes Blair for a job well done.

You may not have a clue who Blair is, but without her efforts over the past seven or so years, the lives of many readers would likely be very different.

Day to day

The Mass Media Bureau's Audio Services Division is the place in the FCC where the regulatory rubber meets the road.

If you want to improve your facilities, you have to get the OK from the ASD. If you want to renew your license, you go to the ASD. If you want to sell or buy a license, you go to the ASD.

You get the picture: The ASD is where radio regulation and policy are implemented day to day.

Blair became assistant chief of the ASD in 1993 and moved up to chief in 1995. It's hard now to remember exactly what things were like in 1993, but that was before consolidation (in fact, it was still very early on in the LMA phenomenon), before a lot of technical deregulation and even before the Internet had taken over the world.

Processing times tended to be hit-or-miss, so it was difficult to predict exactly how long it might take to get your mod or your assignment application through. Application forms were paper-based and a number of forms were outdated holdovers that had not kept up with intervening regulatory or policy changes.

Blair oversaw the transition of the ASD from the old days to the new. She got the processing line flowing regularly, so that now it is easy to predict with reasonable accuracy how long it may take to get your grant.

During her watch, virtually all broadcast forms were updated and streamlined, and electronic filing became a reality. She and her able staff put together a division Web site that is chockablock with useful resources.

That last accomplishment was no small feat, given the huge volume of historical data, all on paper, that had to be configured for Web access.

While there have been criticisms leveled at the accuracy of some aspects of the commission's online database, particularly the CDBS function, the fact is that Blair and her staff have managed to oversee the transition of the ASD from a black hole into which paper disappeared for indeterminate periods, to a reasonably open and predictable operation more usefully geared to the needs of the industry.

Blair did her job well, and her efforts greatly benefited radio. Team Cole's Law, for one, thanks her. No replacement has been announced for Blair as of this writing. However, she leaves behind a cadre of professionals that she assembled, including Peter Doyle, her assistant chief for law; Ed De La Hunt, the assistant chief on the engineering side; and a host of others.

They, too, are responsible for the ASD's advances. We are confident they will continue to head the ASD in the right direction.

Restructure to come?

Meanwhile, rumors are flying about a broader reorganization within the commission that might affect the Mass Media Bureau in a variety of ways.

Such reorganizations are not unusual — who remembers the days when the Mass Media Bureau was called the Broadcast Bureau, or the times when there was a separate Cable TV Bureau, then there wasn't one and then there was one again?

While no changes had been announced as of early June, there is some speculation that many of the functions of the Video Services Division (which handles broadcast television licensing matters) might be folded into the cable television and satellite television functions.

The resulting unit (let's call it, for ease of reference, the "video competition bureau," or "VCB") would be charged with overseeing issues affecting the interplay of video service providers to assure fair competition among them.

In this scenario, so the speculation goes, pure licensing issues — i.e., the process of getting both radio and television broadcast facilities licensed and operational — would fall to a licensing unit (let's call that the "licensing bureau," or "LB").

Linda Blair

Since any VCB would exclude radio matters, (the "V" in "VCB" stands for "video," after all), that would suggest that the ASD would likely be folded into the LB.

But because the likely functions of the supposed licensing bureau would appear to track closely to what the ASD already does, it would be logical to assume that the ASD might serve as a model for the structure of the LB.

It would be unfortunate if the gains made by the ASD during Blair's tenure were to be lost.

An interesting feature of the current round of reorganization speculation is that, while the commission supposedly is considering folding broadcast, cable and satellite *video* services into a single regulatory unit, no similar treatment appears to be under consideration for broadcast and satellite *audio* services.

As we all know, satellite digital radio is coming — birds have already been launched, programmers have been hired,

See COLE'S LAW, page 30 ▶

STATION/STUDIO SERVICES

The Mix
The Elite Royalty-Free Music
U.S.: 1-800-387-3030
905-886-5000
www.mixmusiclibrary.com
A Division of Sound Ideas

$200 Off Hit Music Libraries!
1229 Hits from 1954-1969 - 50 CD's
545 Hits from the 70's - 30 CD's
1012 Hits from 1980-1995 - 58 CD's
817 Kickin' Country Hits - 39 CD's
Only $499
Per set plus shipping!
Complete track listings at:
www.radio-mall.com
or call 800-759-4561
For radio broadcast only!

BALSYS
TECHNOLOGY GROUP, INC.
PROFESSIONAL BROADCAST ENGINEERING SERVICES
Analysis – Installation – Support
7141 Tallowtree Lane
Orlando, FL32835
Tel:407-822-7055
Fax: 407-296-2587
www.balsys.com
sales@balsys.com

INTERNET JOCK.COM
Professionally done Commercials $25.00
Liners, Voice Tracking, and more
The Lowest Prices On Earth!
Choose from 20 Voices
www.internetjock.com
Toll Free (877) 646-4163

ATTENTION PROVIDERS!
Promote your services to **Radio World's** readers. Reach Radio Station and Recording Studio owners/managers and engineers with your message.
For information on affordable advertising
call **Simone** at **1-800-336-3045, ext. 154.**

Pigs Fly

▶ Continued from page 23

in the same city," said Robson. "Our biggest obstacle was getting people to believe this contest was for real."

The deadline arrived, but not enough entries were received.

"We got almost 500 of them, but we needed 1,000 to pay off all the stockholders and clear up all the station debt," said Robson. "So even though we have to send back all the money, we got some great publicity from the contest on stations as far away as the BBC in London."

Would Robson ever undertake this again in the future?

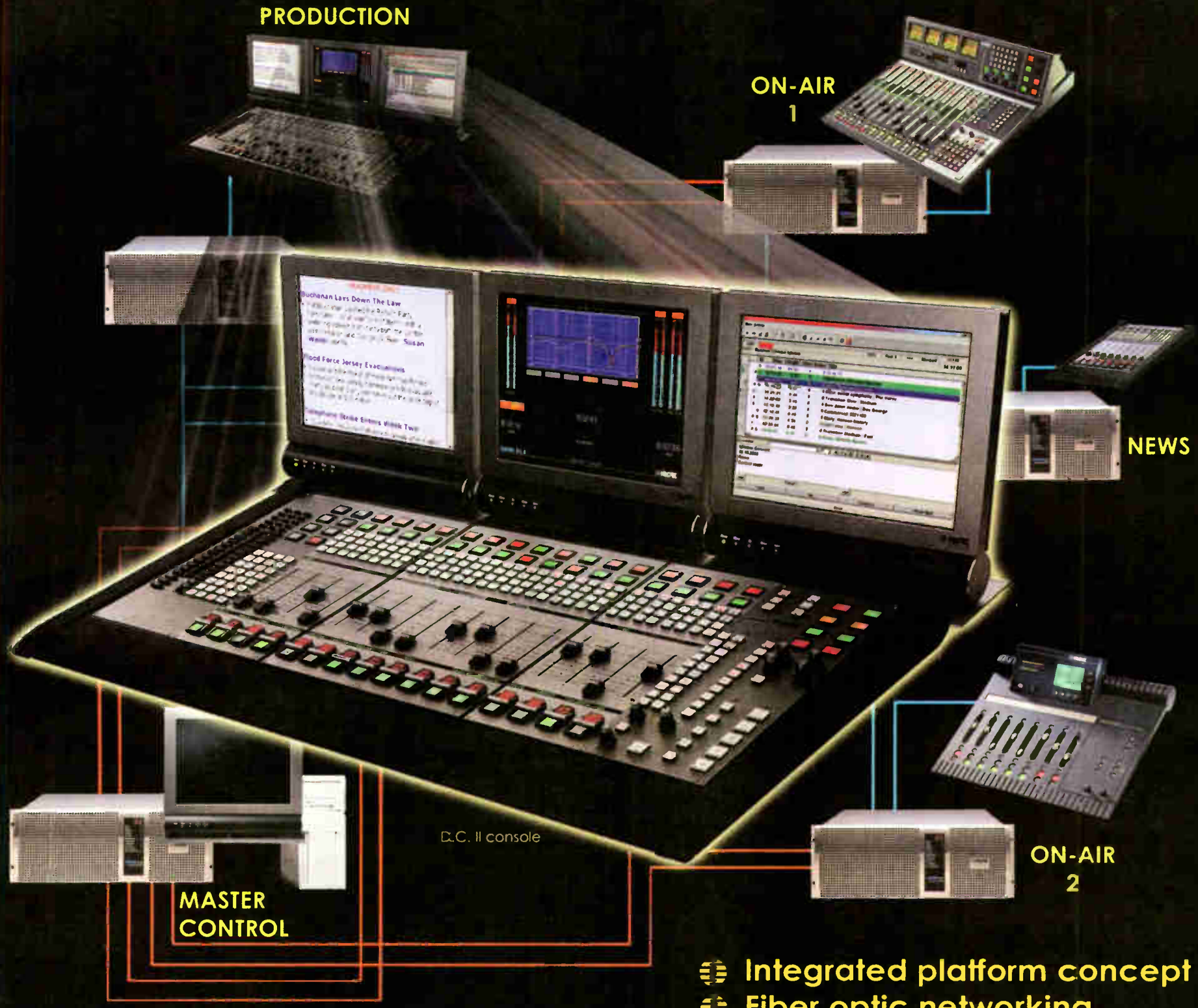
"Wait until you see what we do next!"

KAWL(AM) in York, Neb.

Ken R. is a former broadcaster who could have bought a great FM station in Ohio back in 1971 for $10,000 down — if he had $10,000. Reach him via e-mail to kenr5367@aol.com.

World Radio History

Our Secret is Behind the Scenes!



- Integrated platform concept
- Fiber optic networking
- Any audio source, anywhere

KLOTZ DIGITAL's unique VADIS Platform provides the perfect solution for facilities searching for the ultimate in digital audio integration. From single studio build-outs to new mega-facility operations, KLOTZ DIGITAL provides a cost effective and time saving option to traditional analog and digital facility installations. *Our secret is behind the scenes.* Fiber optic based, the VADIS Platform integrates all audio functions, combining operator tasks, reducing the need for traditional wiring, and paving the way for effortless future expansion. And, the elimination of a central router means distribution of "any audio source any where at any time!"
Compare the costs for yourself. When it comes to savings, quality and performance...nobody even comes close. That's why the most sophisticated and technologically advanced facilities throughout the world choose KLOTZ DIGITAL.

KLOTZ DIGITAL GERMANY Phone:+49-89-45672-300
KLOTZ DIGITAL FRANCE Phone:+33-1-48874681
KLOTZ DIGITAL ASIA Phone:+60-3-5193233
KLOTZ DIGITAL AUSTRALIA Phone:+61-2-95186795

KLOTZ DIGITAL
5875 Peachtree Industrial Blvd.
B dg. 340
Norcross, Georgia 30092
Phone: +1-678-966-9900
www.klotzdigital.com

KLOTZ DIGITAL

Americas

▶ Continued from page 26

threats to radio, because the consumer has so many choices for information and entertainment.

"Some stations get it, some don't and some are disinterested. I think that's dangerous," said Milton. "It's more than just selling tiles and banners, it's integrating the Internet into loyalty initiatives and all-station contesting."

Touchstone

Milton said a station Web site is an opportunity to own a touchstone for the most active listeners and to recycle them back to the station.

"Radio is in cost-cutting mode right now and a Web page can have an immediate return on investment," said Milton. "Many stations spend hundreds of thousands of dollars on direct mail and are just now beginning to think about e-mail, which can be a huge cost-saver."

Milton chastised stations that put someone who is primarily a computer expert in charge of the station's Internet site.

"You can have a special section available only to your car dealers, your NTR clients, your concert promoters," said Milton. "You should have someone doing this who can understand the marketing power of the Web."

Other sessions scheduled for the Americas Radio and TV Conference include "Solving Every Manager's Dilemma," "Investing Partners — Looking Beyond Boundaries" and "How Media Companies Can Win the Battle for Customers."

Marcia De Sonne

Mark Rebholz, director of international business development for NAB, predicted a turnout of between 160 and 175 attendees at the conference, which is put on with the cooperation of the International Association of Broadcasters.

"This conference is designed to fill a niche," said Rabel. "It may not be a barn-burner in terms of making money, but we hope the quality will continue to attract more and more people."

A separate but related NAB conference exclusively for radio executives will take place Nov. 11-13 in Paris.

A list of the sessions in Florida and France including speakers, times and subject matter is available online at *www.nab.org* or call Stacy Siroky at the NAB in Washington at (202) 429-5350.

25th Anniversary Silver Sweepstakes

Enter to win one of 25 great prizes in Radio World's reader appreciation contest giveaway!

IMAS Publishing is celebrating 25 years of serving you and the radio broadcast industry. To mark this significant milestone, 25 of radio's leading equipment suppliers have teamed up with Radio World to express their appreciation.

Throughout 2001, Radio World will conduct 25 random drawings. Prizes and winners will be announced in every issue of Radio World all year long.

Silver Sweepstakes — imas — 25 YEARS

To become eligible to win, you need to complete these three easy steps:

1) Register online at our Web site www.rwonline.com

2) Click the Silver Sweepstakes icon on our homepage

3) Fill out the electronic entry form — that's it, you're done!

It's your chance to celebrate our Silver Anniversary with these fine Radio World supporters ...

APHEX SYSTEMS · audio-technica · Auralex acoustics · AUDIX PERFORMANCE IS EVERYTHING

BRADLEY · BELAR Electronic Laboratory, Inc. · BSW · COMREX

Big gram · ENCO SYSTEMS, INC. · Gentner · next level solutions HARRIS · HENRY ENGINEERING

Inovonics · MACKIE · MARTI ELECTRONICS · NAGRA

Neumann USA · O.C. White Co. · Cool Edit PRO · Scott Studios

Shively Labs · Superior Electric · SRC SYSTEMS · Symetrix

Contest Rules: To enter the drawing, simply register online at www.rwonline.com/sweeps. 25 drawings will be held throughout the year. Contest ends December 19, 2001. One prize per winner. All contestants MUST reside in the United States and have a valid mailing address. Winners should receive prizes within 30 days of notification, however, actual delivery time may vary and is not guaranteed by IMAS Publishing. Federal, state and local tax laws may apply to prizes and are the sole responsibility of the winner.

Cole's Law

▶ Continued from page 28

etc. Presumably those new satellite services will compete with traditional over-the-air broadcast stations just as satellite TV competes with over-the-air TV. And yet, the commission does not seem to see any need for regulation of the interplay of satellite and over-the-air audio.

We salute
Linda Blair for
a job well done.

This apparent hesitation to regulate may reflect reluctance by the commission to take action before it has a chance to gauge the impact, or even the viability, of satellite radio. But it may also reflect a recognition that over-the-air radio is in some ways fundamentally different from satellite radio.

As we have written before, over-the-air radio broadcasting historically has distinguished itself as a *local* medium offering *local* coverage of *local* matters. Satellite radio is unlikely to match that localism component.

Localism

We like to think that any reluctance to merge satellite and terrestrial radio may be based in the belief that the crucial distinction between local and nonlocal services will continue to be meaningful.

Again, any talk of reorganization is, at this writing, speculation. But the advances made by the ASD during Linda Blair's term are fact. Team Cole's Law encourages you in radioland to thank her for her efforts.

If you have any questions concerning the work of the ASD or possible reorganization of the commission's offices, you should be sure to consult with your communications counsel.

Harry Cole is a principal in the Washington-based law firm of Bechtel & Cole, Chartered. Contact him at (202) 833-4190 or via e-mail to hfcole@coleslaw.com

World Radio History

Introducing the Cash™ miracle diet.

Lose three minutes in an hour!

Gone are the days of hunt-and-cut editing, warbling time compression, and sped-up chipmunk audio. Now overstuffed, overtime audio productions can be reduced through a real-time, undetectable process that can cut up to one minute of audio from every twenty without reducing program content.

The Cash audio time machine from Prime Image is a fully digital,easy-to-operate device that utilizes a patented system of random "micro-edits" to reduce the length of any production, whether voices, sound effects, or music. And Cash works automatically, in one pass, with no additional processing. Simply enter the amount of time you want to lose and the period of time over which to lose it. Then push the start button and find something more important to do. Like kicking back and enjoying a cup of coffee–but, in the interest of your waistline, take a pass on the donuts.

For specifications, information, or orders contact Prime Image:
www.primeimageinc.com
408-867-6519

Prime Image®

The Digital Video People
Tel (408) 867-6519 Fax (408) 926-7294
www.primeimageinc.com

World Radio History

Remote Tools from Beyer Now on Sale at BSW!

Get It Now for Remote Sports Season

Low Profile Performer

Low profile, lightweight design makes the DT290 very comfortable for long term operation. It also offers excellent isolation from ambient noise. The list price shown is for model with dynamic mic element. Includes cable terminating in 1/4" connector for headphones and XLR connector for mic.

BEYER DT290 Mfr. List $339.00
ONLY $239.00

All-Time Remote Favorite Headset

The DT190 combines Beyer's best sounding hypercardoid mic element and studio quality headphone elements in the classic Beyer headset design.

DT190 Headset
Mfr. List $459.00 ONLY $319.00

The Perfect Interview Tool

The M58 omnidirectional condenser mic has an internal shock mount to dramatically reduce handling noise and offers very accurate voice reproduction. Great for live performances or critical recording from a wide variety of sources. Frequency response is 40 Hz to 20 kHz. Includes windscreen and case.

M58 Beyer Handheld Condenser Mic
Mfr. List $279.00 ONLY $209.00

beyerdynamic

Hurry, Advantage Sale Ends 7/20/01

BROADCAST SUP

The Wo
Source for P
Audio P

ORDER F

Online

View over 1,000
with your credit

For approved net 30-
the BSWONLINE sect
offers easy ordering,
pricing, product
availability, order
tracking and
much more.

Visit O
www.

Call Your BSW Sa
for Details 1 •

World Radio History

LY WORLDWIDE

ld's Best
rofessional
oducts.

ROM BSW

Catalog

roducts and order
ard 24 hours/day!

ay customers,

on

ur Web Site Today
BSWUSA.com

les Representative
800 · 426 · 8434

Prices Too Low to Publish on Shure Wireless Systems!!

Call for Best Price

99-Channel UHF System

Shure UC UHF systems are frequency agile, which allows you to quickly and easily change frequencies to avoid interference. Choose from 99 selectable frequencies. The 1/2-rack space UC4 receiver features diversity technology for improved reception. Features: 50 mW transmitter; SM58 mic capsule; adjustable squelch control; 2-band adjustable EQ; use up to 16 systems simultaneously.

UC24/58 UHF handheld wireless mic system
Mfr. List $1,417.80 CALL FOR SALE PRICE

UHF Receiver with Camera Mount

Designed for professional broadcasters, the UP4 portable UHF wireless receiver provides the perfect combination of crystal-clear audio and rugged dependability. Features: engineered to shut out RF interference and deliver a clear, steady signal; frequency agile-provides over 100 selectable UHF channels; intermediate frequency filtering-selects the desired channel; phase locked loop circuitry ensures steady signal; tone key circuitry; noise squelch circuitry, microprocessor controlled predictive diversity; 10 hours operation on a single 9V battery; frequency range 692-863 MHz; operating range 500 ft. under typical conditions. This model combines the UP4 camera mount receiver with the U2 handheld transmitter and SM58 microphone capsule.

UP2458 wireless handheld camera mount mic system
Mfr. List $2,086.00 CALL FOR SALE PRICE

Call for Best Price

Call for Best Price

VHF Wireless Handheld and Lavaliere

The SC2458 features: 8 user selectable frequencies (4 on traveling systems); single on/off switch in transmitter supported by mute in receiver; battery fuel gauge to show how much fuel is left; half-rack width, metal chassis; 5-segment RF and audio metering; unbalanced and balanced XLR, mic/line switchable outputs; handheld and lavaliere transmitters with popular Shure mic elements that are perfectly matched to the system electronics.

SC24/58 VHF wireless handheld mic system
Mfr. List $1,132.00 CALL FOR SALE PRICE

SC14/83 VHF wireless lavalier mic system
Mfr. List $1,024.73 CALL FOR SALE PRICE

SHURE®

Hurry, Advantage Sale Ends 7/20/01

World Radio History

Brandt Gustavson: An NRB Innovator

Wayne Pederson

Dr. Brandt Gustavson, president of National Religious Broadcasters for the past 11 years, passed away at his home in Manassas, Va., at the age of 64, Monday, May 14.

As Chairman of NRB, I worked closely with Brandt. He became a dear friend and confidant. Since the news of his death has spread around the globe, people have universally expressed their love and respect for Brandt.

He had a way of endearing himself to whomever he met. Someone who met him for the first time might have been taken off guard by his directness and familiarity. But it was that very characteristic that made Brandt so well-loved.

Brandt earned his stripes in broadcasting. Raised in Rockford, Ill., he began his career in Christian broadcasting with Northwestern Radio at KTIS(AM-FM) in Minneapolis. He worked at the Billy Graham station, KAIM(AM-FM), in Honolulu.

The ranks

He rose through the ranks at Moody Broadcasting in Cleveland and Chicago to eventually become the vice president of Broadcasting for Moody. His heart for world missions led him to the post of vice president at Trans World Radio.

In 1990, National Religious Broadcasters needed new leadership. The board of directors asked Gustavson to be their president. He had already served for many years on the executive committee and as NRB chairman for many years.

No one was more familiar with the opportunities and the challenges facing NRB. No one knew Christian media and NRB membership better than Brandt.

Brandt led the turn-around. He refocused NRB on a renewed spiritual direction. He tightened the organizational efficiency. He cut costs and began to increase revenue.

Dr. Brant Gustavson

He built a strong ministry team at headquarters. He traveled to the membership and the regionals to rebuild the confidence of the membership in the mission of NRB.

Strong organization

Today, NRB is one of the most respected ministry organizations in the world. We have a strong staff, an excellent magazine and a powerful convention.

Membership is at an all-time high of almost 1,400 members. Finances are strong. And we're about to move into our very own headquarters building, which is half paid for.

How does this happen? Brandt was a man of God; a man of passion. He was committed to the mission God called him to.

He was instrumental in creating the NRB/NAB Breakfast at the NAB convention in Las Vegas each year, featuring speakers such as Dr. Laura, Martha Williamson and Michael Reagan.

He led in presenting NRB awards to top communicators in mainstream broadcasting, such as Mr. Rogers, Paul Harvey and James Quello. His influence at the FCC and Capitol Hill has benefited all broadcasters

His work on behalf of radio stations regarding music licensing has saved stations thousands of dollars.

Never better

This is Christian broadcasting's finest hour. There are more opportunities for growth, expansion, influence and professionalism than ever before. Brandt Gustavson helped bring us to this point.

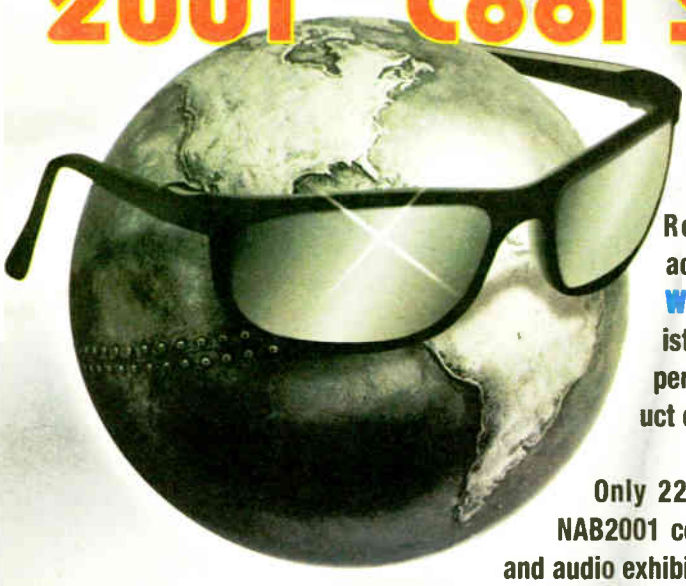
We see the accomplishments of his professional and ministry career. But he was also deeply committed to his family and friends. His love for Mary, his children, his closest friends formed a circle of influence that is a model of personal integrity.

When a man's inner world is in order, his family is a priority and his outward world is in proper perspective. Brandt served as an example for all broadcasters as one who gave himself to our industry. He was an encourager, a statesman, a strategist and a friend.

He modeled for many of us the qualities of integrity, passion, servanthood, professionalism and spirituality.

Pederson is chairman of the National Religious Broadcasters and executive vice president of Northwestern Radio.

Radio World®
Congratulates the
2001 "Cool Stuff" Award
Winners



Receiving the "Cool Stuff" Award is a significant accomplishment. It means a product was selected by Radio World's panel of broadcast engineers and industry journalists as notable for its design, features, cost efficiency and performance in serving radio users. It also means the product caused our judges to stop in the aisles and say, "Oh, cool!"

Only 22 winners were chosen for "Cool Stuff" Awards at the NAB2001 convention in Las Vegas from among more than 250 radio and audio exhibitors and many hundreds of new products.

Hats off to the winners!

Wheatstone ... Bridge 2001 Digital Audio Network Router
TransLanTech Sound ..... Ariane Stereo Audio Leveler
Telos Systems ..... SmartSurface Studio Controller
TC Works ..... Powercore DSP-Turbo
Symetrix ..... AirTools Audio Routing System
Roland ..... VS-2480 Digital Studio Workstation
Orban ..... Optimod-PC "Processor on a Card"
Orban ..... Opticodec Streaming Audio Codecs
Omnia ..... Omnia-6fm Digital Audio Processor
Media Touch/DMT ..... iMediaAdCast Online Content Substitution
Harris Corp. .... BMXdigital Modular Digital Audio Console
Fast-Talk ..... PPE 1.0 & PSE 1.0 Phonetic Preprocessing and Phonetic Search Engines
Dialight ..... 860 Series LED Obstruction Light
Countryman ..... E6 Headset Microphone
Broadcast Tools ..... Time Sync/Time Sync II
Broadcast Electronics ..... FM-20S 20 kW Solid-State FM Transmitter
Bext ..... XL 1000 FM Transmitter/Exciter
Belar ..... DAM-1 Digital Audio Monitor
AudioScience .... ASI4344 and ASI4346 MP3 Audio Cards
Audion Laboratories ..... VoxPro PC Digital Audio Editing Software
Audemat .... GoldenEagle FM Remote Monitoring Solution
Arrakis ..... Digilink-Free Hard Disk Software

World Radio History

STUDIO TRENDS

Isolation Booths Come of Age

Companies Talk About Getting the Noise Out of Production & Keeping It Out With Isolation Rooms

Ken R.

In 1927 when Warner Brothers prepared to shoot "The Jazz Singer," an early talkie film, engineers built a sound isolation booth to house the noisy film camera. Unfortunately it could only be used for 10 minutes at a time because there was no ventilation, and under the hot lights, hapless cameramen would pass out.

Isolation Booth by Acoustic Systems

In 1959, television watchers sweated along with quiz show contestant Charles Van Doren on a program called "Twenty-One."

Van Doren sat in a phone booth-like contraption called the "isolation booth" while he pretended to remember the answers to questions the producers already fed him. He was tried in 1962, found guilty of perjury and given a suspended sentence.

Long history

In spite of the long, colorful history of the sound isolation booth, the structures have improved greatly in functionality and have found a place at radio stations, recording studios and other applications.

"Most radio stations like to do a custom build because they don't need a floating floor," said Charles Roe, a broadcast sales rep for Acoustic Systems. "Everyone's site is different."

Acoustic Systems offers custom installations as well as stock products ranging from a small stand-up voice-over booth to a room that holds four people. Prices for standard configurations run from $4,200 to $9,300. The booths offer a cable management system with a jack panel for XLR and 1/4-inch plugs and a ventilation system.

Cool off

"The smaller systems can't be hooked up to room HVAC but we have fans built into all our booths for air flow," said Roe. "For our larger installations we offer an optional silencer, which is a muffler that is lined with duct material."

Ken DeLasho is vice president of Industrial Acoustics, located in the Bronx, N.Y. His company's focus is on projects for high-end clients past and present such as KIIS(FM) in Los Angeles, WABC(AM) in New York and the CBS and NBC Radio Networks in New York.

"Our systems can be expanded because they are modular," said DeLasho. "They come complete with lighting, electrical, HVAC, cable communications, doors and windows."

One topic of interest to bottom line-oriented engineers is the financial aspect of purchasing these booths. DeLasho said that because booths are not considered "fixed structures" such as drywall, isolation rooms can be treated as "equipment" for tax purposes and depreciated.

His products start at about $5,000 for a single-person voice-over booth and go as high as hundreds of thousands of dollars for major control rooms.

"The reason people get these is the guaranteed noise reduction," said DeLasho. "Our panels offer greater reduction than conventional materials and they are certainly lighter because we use a steel sandwich, perforated on the inside and solid on the outside. We can do in four inches what conventional construction does in six."

In these days of literally "phoning in" a jock program from another city, sound isolation is important for ISDN work. If the announcer is working from his or her home, there are pets, children and traffic to consider. Within radio facilities, several studios may be directly adjacent to one another.

"We have standard and enhanced isolation," said Brad Stanton, sales manager for Morristown, Tenn.,'s WhisperRoom Inc. "Standard means a single-wall room for typical use and enhanced means double-wall construction which is really a room within a room."

WhisperRoom products are shipped unassembled but can be put together with a screwdriver. The company offers booths as small as 3.5 by 2.5 feet or as large as 8.5 by 15 feet. Optional wheels can make the rooms even more portable. Prices range from $1,520 to $19,170. WhisperRoom also offers ventilation and silencing systems. One handy option is a remote switch for those situations in which the talent in the booth simply wants to turn off the ventilation for short periods of time.

Wave deflection

Another issue that comes up is possible standing waves due to parallel booth walls. WhisperRoom offers a sound deflection system that helps scatter sound within the booth.

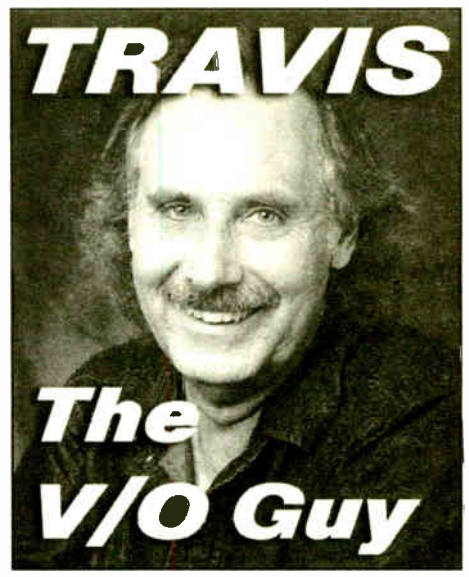
One of the latest companies to make its presence known on the booth scene is a 1999 garage startup based in Bend, Ore., called VocalBooth.com.

Run by writer/musician Calvin Mann,

See BOOTH, page 39 ▶

World Radio History

'Dear Travis' Letters From Readers



Travis

When I made the transition from working for someone else at a radio station to working for myself, I hadn't realized that I would need to deal with the sense of isolation when you're no longer "part of the team."

Sure, it's great that I don't have any need to complain about the boss, or to participate in water-cooler gripe sessions about the way the station's being run. But I soon found myself missing the sense of camaraderie.

When you're your own boss, the only management you can honestly complain about is yourself — and trust me, it's no fun complain about that.

The sense of isolation is further complicated by the fact that everyone in the business is a competitor. Sure, I have a number of good friends who are also voice-over artists; people who have done tremendous favors for me and people who I've done favors for.

Competition

These are people I really like, whose company I enjoy — but whenever we get together, I get a very real sense that the next time we see each other, it will probably be at an audition, where only one us, if we're really lucky, will get the gig.

The work itself lends to the feeling of isolation. You are almost always working alone, in a room, connected to the people on the other side of the glass through an intercom.

Many times, after the job is finished, if I ever see any of those people again, it won't be for six months or a year. Many of these situations also occur in radio, but in voice-over, you're not part of something, like a radio station.

The need to be part of something is one of the reasons that I really appreciate working on the RW voice-over column.

One of the best perks of writing a column like this is the opportunity I get to share experiences with other voice-over artists all around the country. I have received e-mails from all types of individuals interested in voice-over work. It really helps to re-create that sense of belonging.

I have been amazed at the broad spectrum of people who read RW and have found this column to be worthwhile. I've even received e-mails from two former radio colleagues who I lost track of years ago after they moved out of state.

Hard drive full

Unfortunately, I no longer have some of the best letters — the result of too many disk-drive crashes. But I do have some great letters and I'll present a few more in a few months.

The most common subject of the e-mails I receive is an expression of frustration.

By far, the most common subject of the e-mails I receive is an expression of the frustration beginners feel getting started, and then finding work. Here are a few examples:

Dear Travis,

I'm sure you get a ton of e-mail asking for advice on getting an agent and getting started with the voice-over actor business ... so here's another one.

I'm hoping that you can help me get off the ground and doing what I was meant to do. I live in Miami and have been looking for a serious agent, you'd think I could find something like that here, but I've had no luck. Could you recommend a company or person I could call or get in touch with?

Desiree A. Gonzalez
Miami

Hi Desiree,

One of the most frustrating things — no, the most frustrating thing for all

See TRAVIS, page 41 ▶

Scott Studios' New CD Ripper Saves Time and Money for Stations using APT-X on Older SS, AXS and DCS Digital Systems

At Last...A CD Ripper for APT-X

Now...your stations with classic digital systems like Scott Studios' SS, Electric Works' AXS, or Computer Concepts' DCS air studios can now *save time* by *eliminating dubbing* of music CDs and multi-track production editors like Vegas, Sound Forge, Cool Edit, SAW, Sadie and Audicy.

Regardless of the age of your digital system, TLC transfers 5-minute songs to hard drive in about 15 to 20 seconds and uploads 1-minute spots in a few seconds. Multi-hour syndicated CD shows now transfer to hard drive in a fraction of real time, which can save you real money!

Scott Studios' recent customers have been ripping CDs and doing fast no-dub exports from multi-track editors to MPEG or uncompressed Scott Studios systems for years.

Now Scott Studios honors customers of our legacy systems with our new TLC 4 APT. TLC stands for Trim, Label and Convert. Now that we've added APT-X capability, TLC 4 APT is now compatible with older SS, AXS, DCS and Maestro air studio systems!

Audio quality is awesome because you get a direct digit-for-digit transfer from compact disc to hard drive.

TLC also imports and exports BWF (Broadcast Wave Format) audio as well as the upcoming AES Cart Chunk standard that virtually every major digital audio vendor promises to support.

TLC is available either with a Scott 1.4 GHz. Pentium 4 1RU slim rack mount computer, or as software only for use on your PC.

CD ripping time varies according to processor and CD ROM speeds, so the faster and newer your Pentium and CD ROM, the faster your music rips onto hard drive.

Stations interested in a free trial of TLC 4 APT can download a test version from scottstudios.com or tlc4apt.com. The free trial lasts 10 days or allows 20 APT-X exports for quality evaluation.

TLC 4 APT handles APT-X, MPEG and uncompressed import and export as well as MP3 import. TLC 4 APT is only $1.500 per copy including 90 days of toll-free phone support. This small investment pays for itself in a few months by ripping show CDs to reduce weekend board operator payroll. On-site installation and training is optionally available. Pay by check, Visa, MasterCard or American Express. Order by phone, mail or Internet.

For copy or sales office computers that want to audition spots but do not need to rip CDs or import spots, a Play-Only TLC 4 APT is only $500 per copy.

For stations wanting to expand APT-X systems to triple-overlap or add Scott's Voice Tracker, a few APT audio cards are still available.

TLC 4 APT clients who later upgrade to new SS32 or Computer Concepts' Maestro systems can continue to use TLC with the latest digital studio equipment.

Scott Studios now offers time saving CD Ripping and no dub multi-track production to stations using older Scott, AXS, DCS and Maestro digital audio systems. It's TLC, which stands for Trim, Label and Convert. TLC 4 APT imports and exports between APT-X, MPEG and uncompressed WAVE audio. TLC also converts MP3 audio to any other format.

24/7 Technical Support: 888-SCOTT-411
(972) 620-2211 FAX: (972) 620-8811

8 8 8 4 3 8 7 2 6 8 8
888-GET-SCOTT

Scott Studios
13375 Stemmons Freeway, Suite 400
Dallas, Texas 75234 USA

World Radio History

Every great connection starts with a NEUTRIK® connector

and every NEUTRIK connector starts with an innovative design

new

Easycon®

- Gold IDC or SOLDER contacts standard. No more tarnished connections
- 3 parts only…for the fastest field or production cable assembly on the market
- A cable strain relief that grips like a vise–without damaging the attached wire.

new

2-pole Speakon®

- 2 poles only–reduced cost and assembly time
- Mates with 2 or 4 pole Speakon receptacles
- Integrated strain relief for all cable sizes 6–10mm
- Combination pozidrive and slot screw terminals

new

75ohm BNC

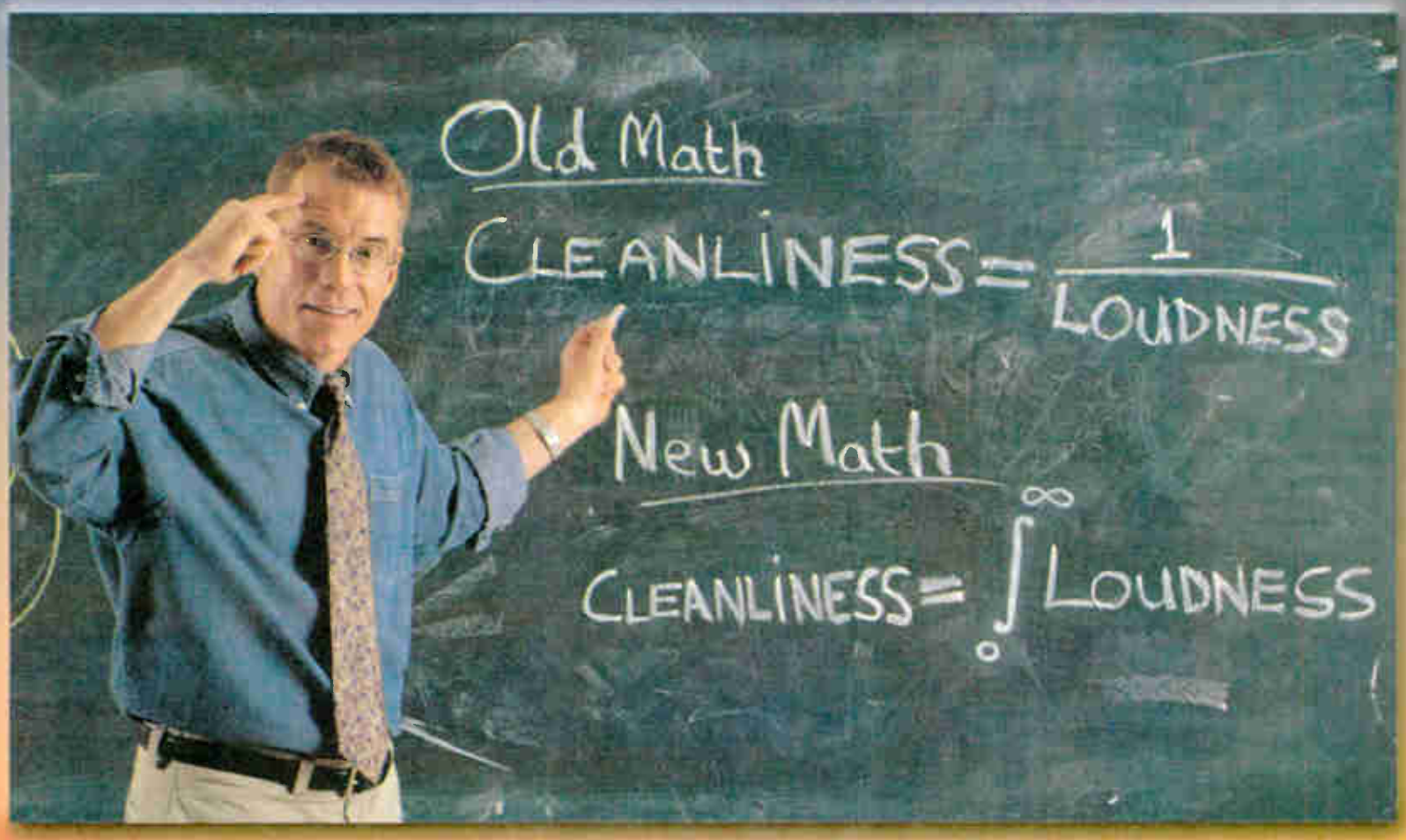
- Built to be a "true" 75ohm connection for DTS/HD. A totally new design that includes a rear twist boot for easy turning onto the mating jack.
- Bulkhead jacks are available in a "D" series housing or as a single feed-through in isolated or grounded versions.
- Parts are precisely machined, not diecast for rugged reliability.
- VSWR/Return loss: ≤ 1.10/>26 dB up to 3GHz.

NEUTRIK USA, INC. 195 Lehigh Avenue, Lakewood, NJ 08701-4527 **www.neutrikusa.com**
phone:732-901-9488 | fax:732-901-9608 | E-mail: info@neutrikusa.com

NEUTRIK®
CONNECTING THE WORLD

World Radio History

Process This!



Introducing

The NEW Aphex 2020MkII

The original Aphex Model 2020 audio processor set the standard for audio quality, loudness and extended coverage. Not content to sit on its laurels Aphex continued to research ways to improve performance even further. The result is the 2020MkII.

New processing algorithms and circuit designs, in addition to the fifteen proprietary circuits* from the original, allow even greater loudness without sacrificing a clean, natural sound. The MkII's increased flexibility also gives a station the ability to create its own unique sonic signature. New features include a split band optical high frequency limiter, a low distortion overshoot compensated low pass filter* (with no spurs), improved remote control interface, RDS, and dual composite outputs.

Audition the new 2020 MkII on your station and you'll find that Aphex has really done its homework— creating a processor with performance and features unmatched at any price. The 2020MkII —in a class by itself.

APHEX SYSTEMS

Improving the way the world sounds℠

11068 Randall Street, Sun Valley, CA 91352 U.S.A
818-767-2929 Fax: 818-767-2641 www.aphex.com

*(patented or patent pending)

World Radio History

Booth

▶ Continued from page 35

its products promise a 30-to-40 dB drop in noise level. One recent client is Franz Russell, the South Carolina announcer known as the voice of Duracell Batteries.

it will fit, the layout of the room and what the talent will be doing in the booth," said Binns. "Our company can build in lighting and shelves, but it certainly depends on how many people will be in there and what they will be doing."

Acoustical Solutions is based in Richmond, Va., and has a 12-year history

Voice-Over Booth by VocalBooth.com

When considering the purchase of an announce booth, Michael Binns, owner of Acoustical Solutions, recommends careful analysis of surrounding facilities and desired purposes.

"You have to consider the area where

in this industry. The company can supply the materials for a do-it-yourself application or a completed project.

Construction and sales of an announce booth definitely is a niche market. A niche within the niche is

Web Sites for Selected Booth Suppliers

Acoustical Solutions: *www.acousticalsolutions.com*

Acoustic Systems: *www.acousticsystems.com*

APW Enclosures: *www.apw.com*

Industrial Acoustics: *www.industrialacoustics.com*

Middle Atlantic Products: *www.middleatlantic.com*

VocalBooth.com: *www.vocalbooth.com*

WhisperRoom: *www.Whisperroom.com*

building the equipment enclosures to go within the booths.

Art Foxall, business development leader at APW Enclosure Products, is in that business and can supply premade or standard enclosures. Middle Atlantic Products is another supplier of equipment enclosures.

Public Relations, a firm representing Middle Atlantic Products.

Even though the isolation booth is one product in the broadcast industry that can never be put online or turned into 1s and 0s, it still has seen steady improvements over the years. No longer stuffy, overheated and heavier than a submarine, the booth has given a new flexibility to studio facilities.

Whisper Room Enclosure With Optional Soundwave Deflection System

"With these noisy hard drives, you really need to keep the equipment in those booths silent," said Chris Nicholson, account executive at Griffin

Ken R. is a former broadcaster who now writes full time.

PRODUCT GUIDE

Superior Stabilizes Power Surges

Stabiline Transient Voltage Surge Suppressors from Superior Electric are designed for mission-critical and high-magnitude transient exposure Category A, B and C for broadcast and other specialized applications.

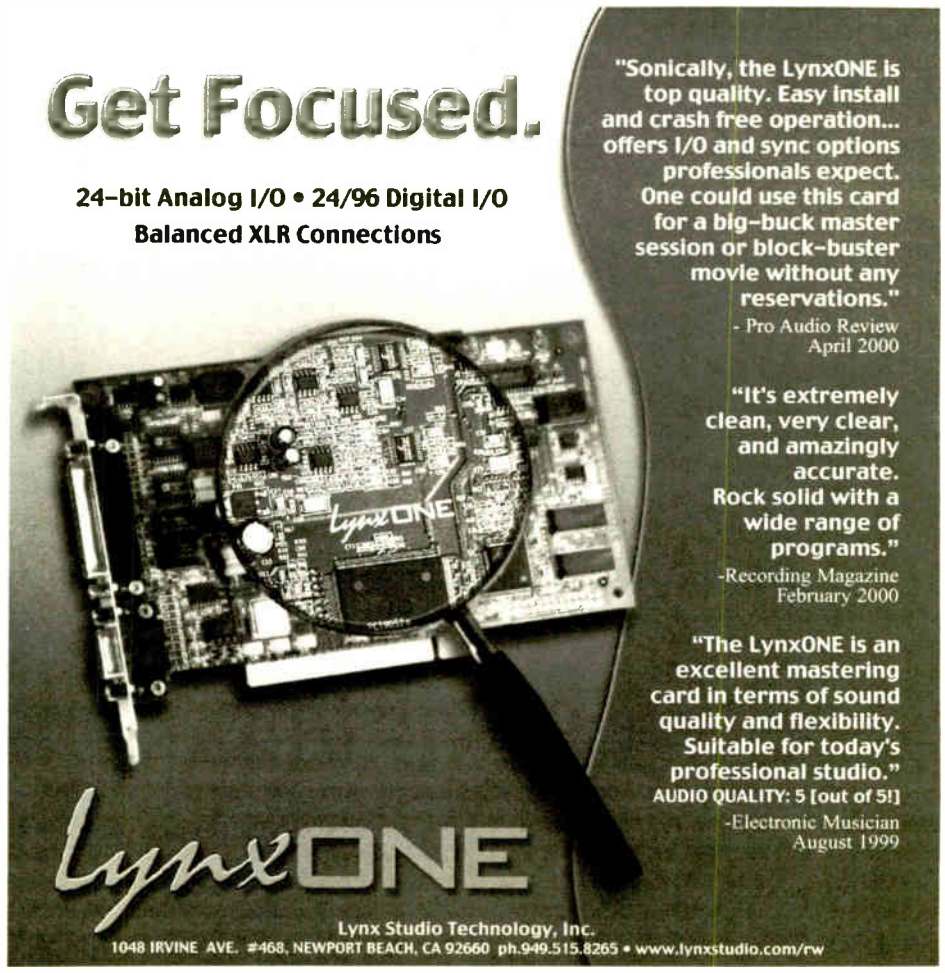
The TVSS series provide continuous on-line surge protection through a fail-proof fuse.

Models are available for full-rated current capacity to 300,000 amperes. Units typically are installed in service entry panels, large distribution panels and non-service entrance distribution panel boards.

The system features a suppression filter assembly, which enhances current sharing by minimizing impedance, conducts cumulative current through a copper bus and distributes it to multiple MOV paths.

Other features include "all modes protection," which safeguards electrical modes such as L-N, L-G, L-L and N-G; individually fused MOVs; disconnect models with safety interlock, entry doors; seven-year product warranty and options such as standard and advanced monitoring and a hand-held tester.

For more information contact Superior Electric in Connecticut at (860) 585-4500, fax (860) 582-3784 or visit the Web site at www.superiorelectric.com.



World Radio History

PRODUCT EVALUATION

Fusion Fosters Friendly Flexibility

Mike Mann

Fairlight On Air bills its Fusion product as equally suitable for radio broadcast, production, editing and other audio applications.

The flexible architecture of the system seems appropriate to the busy multitasking environment of a modern audio facility, where personnel may have to perform various tasks using the same equipment.

Elements combined

The Fusion concept combines the traditionally disparate elements of acquisition, production, presentation and distribution by using a system of local and central DSP frames linked via fiber or twisted-pair MADI links, controlled by a number of remote mixing surfaces.

A typical radio-station configuration might comprise two conventional control rooms, a newsroom and a central machine room.

Each of the four areas has a local DSP frame, with the three production rooms linked to the machine room via a 56-channel MADI fiber.

In order to accommodate individual needs, there are modular fader panels containing a block of four faders and associated controls in each room. Local I/O are hooked up to the satellite DSP racks.

Routing to and from external lines is achieved using the machine-room DSP frame, but under the control of local operators. Local subsystems can become as complex as the situation demands with analog and digital I/O, synchronization modules, multichannel MADI connections and control I/O.

Stored and recalled

Routing can be stored and recalled manually, or set to run to a schedule with different feeds available to and from each area for every program.

Users may define this on a daily basis, with up to three "special days" for holiday or event programming. For radio automation, the Fusion system integrates with Fairlight On Air CoSTAR software.

Fairlight On Air claims that the cost of a Fusion system is competitive with the analog equivalent. This claim holds up when one considers the various external processing, monitoring and routing devices.

Users can allocate equalizers, transient limiters, compressors, noise gates, expanders, de-essers, subsonic filters and mix-minus feeds to audio paths as required, with the user-chosen configuration stored in flash EPROMs.

The Fusion uses this type of storage extensively, giving it an operational advantage over less-well-designed digital solutions. The DSP engine is functional one second after power-up.

Modular emergencies

Even though the Windows-based configuration software might take somewhat longer, this is not needed in normal operation. Suffice to say, in a studio involving any kind of automation, it will not be the Fusion desk that holds things up after a power problem.

Fairlight On Air Fusion System

Modules in the DSP racks and fader panels are hot-swappable for on-air emergency maintenance. Communications between DSP racks and local control surfaces (or other DSP racks) is via a CAN-bus system — a reliable and simple system developed for the automotive industry.

The modular nature of the DSP racks addresses the need of mixing and matching digital and analog sources. It is possible to use the same card slots for modules providing four analog connections or a pair of dual AES/EBU I/O with input sample-rate converters.

Modules in the DSP racks and fader panels are hot-swappable for on-air emergency maintenance.

The 19-inch DSP racks are available in 3- or 6-RU versions and six formats. The simplest, the Fusion 3100, is a standalone unit that can house up to eight I/O modules.

The Fusion 3100 has CAN-bus and RS-232/422 connections and a single power supply. Additionally, it can act as the basis for a typical 12-input, eight-output mixer/workstation.

At its most sophisticated, the 6300M DSP rack is 6 RU high and can handle 96 audio I/Os, three multichannel links and has dual redundant power supplies.

Operation of the Fusion control surfaces is an exercise in simplicity.

Many broadcast facilities cannot afford the technical expertise to manage complex operations around the clock. As a result, a clear division exists between engineering and operational tasks.

Operate the mix

Operators find themselves in front of a basic mixing surface. Each channel has a fader, five pushbuttons and a display, while a central control unit provides a single rotary control for assignable functions, as well as dedicated monitor level controls and many assignable keys.

The installer can build each console to use the space available — subject to a minimum of four and maximum of 20 stereo faders.

A 1-RU pushbutton panel and desk-mounted talkback control panel are available, and can be used to integrate the Fusion DSP racks with the outside world.

The system uses a Fairlight bargraph, VU meters or analog PPMs.

The only real drawback to the Fusion concept stems, ironically, from the very flexibility that makes it so usable.

Buyers of this system will need to make absolutely certain when drawing up their wish list that they have allowed for every eventuality. If the financial controller ever gets his/her head around the potential that the system offers for saving money on conventional processing, routing and infrastructure, s/he may never open her/his checkbook for anything else.

Mike Mann is a contributor to Audio Media, a sister publication of Radio World.

Product Capsule: Fairlight On Air Fusion System

Thumbs Up

- ✓ Flexible setup
- ✓ Can be designed to fit stationneeds
- ✓ Hot-swappable modules and fader panels
- ✓ Long-term value outweighs initial cost

Thumbs Down

- ✓ Maybe too much flexibility
- ✓ Initial cost depending on setup confusing

For more information contact Fairlight USA in California at (800) 432-4754, Fax: (323) 465-0080 or visit www.fairlightonair.com.

A Kick in The CAN

Don't feel left out if you have never heard of CAN. It is not an acronym you would encounter often at the station.

CAN stands for *Controller Area Network*. Originally developed by Bosch, the sparkplug people, for complex communications between controllers and modules in automobiles, it is turning up in industrial automation, interior building automation, medical diagnostic devices and in the Fairlight system.

Each controller connected through a CAN chip is called a *node* and generally controls other hardware or pulls in data from a sensor. Nodes connect to a common bus; all nodes can read the data on that bus simultaneously.

CAN has been around for more than 10 years in European passenger cars, truck and off-road vehicles. High-volume markets, such as appliances and industrial control have hiked the CAN sales figures to the point where, by spring 1997, more than 50 million CAN nodes had been installed.

CAN moves fast, too. Data can be transmitted in blocks of zero to eight bytes at a maximum rate of 1 Mbit per second (Mbps) for networks up to 40 meters. Longer network distances cause the maximum transfer rate to be reduced to 50 kilobits per second for a 1 km network distance. Naturally, automobiles are somewhat shorter than this.

A remarkable body of information regarding CAN is available at the Bosch Web site at *www.can.bosch.com/index.html*. You will also find licensing information in case you want to incorporate CAN into a major project of your own design.

— Alan R. Peterson

News Updates Every Business Day
RW Online
http://www.rwonline.com

World Radio History

Travis

▶ Continued from page 36

of us in the "showbiz" industry is discovering is just how difficult it is to get work.

As far as I'm concerned, I want all of my energy and attention to be spent on my "art." The way I figure it, if I'm any good, I shouldn't need to work so hard so I can get work! Well, the rest of the world hasn't supported that concept.

In southern California, most performers I know who have any success, say the job is "getting the work." The "work" is the reward.

The rule here is: You have to have an agent, but don't expect any agents to start getting you much work until you're getting the work yourself anyway.

The next question from people when they first learn this is, "Well then, why do I need an agent?"

You will find then, that you will want an agent but for reasons that don't have that much to do with getting work.

My point is that — assuming that Miami is anything like southern California — what you probably need to do is start getting the work yourself.

It will seem impossible at first — the process will still be difficult after you've got lots of experience — but if you stick with it, you will find a way that that works for you to find work.

When work comes in, you will, after time, start getting "in-the-loop," and you will learn not only where the agents are, but also who's hot and who's not.

Expect to make a few mistakes along the way, and always keep in mind that there are a lot of people out there who make a good living taking advantage of performers.

I expect that there are some good agents in Miami — you might check with your local SAG and AFTRA offices. Also one of the best ways to get hooked up with a good agent is to get referrals from those who are agent's customers — video and multimedia companies, etc.

Good luck!
Travis

Dear Travis,

I am a broadcast veteran of both radio and TV and have decided to delve into the world of voice-over. I'm also a music writer down here in south Texas.

When you're your own boss, the only management you can honestly complain about is yourself.

My question is: some of my NAFTA colleagues out of Houston insist that I have to live there or in Austin or generally a bigger market to find work. I have a list of potential agents that they (NAFTA) provided for me. I've not contacted any yet because my mini home workstation is not quite set up yet. Once that is accomplished, is it possible to find representation and work through the modern miracles of technology? In light of my domestic situation with children involved, I wish to remain living right where I am. Please give me some feedback.

Jeff Koski
Corpus Christi, Texas

Hi Jeff,

Here in southern California, there's a saying often quoted about "Showbiz": "The only rule is that there are no rules!"

I've found that the bigger the market, the more work there is available. However, the bigger the market, the more people there are to do the work.

It seems, *from what I've been told by people around the country, that overall, the smaller markets tend to benefit talent, in terms of the work/talent ratio. Here in southern California (an extreme example) there are literally thousands of production companies, but there are over 100,000 people who consider themselves to be professional voice-talent/actors, etc.*

The majority of these people will not have even one paying job this year.

Most of us in the voice-over business (even those with good agents) are actually small companies, which means we are responsible for getting our own business. A small market may not support an agency, (each agent needs many talent types — they only get a percentage.) while it still might support a number of performers. It seems to me that you might get considerably more work in your own community than you would find in a larger city. Remember, most agencies will find work for people in their own neighborhood.

Every place is different, however, so it's really up to you to determine your own situation. There are plenty of people in much smaller communities that have built up good-sized operations working out of their own "smaller" markets. One thing you can count on, however, is that finding work in the entertainment field is seldom easy, no matter where you are.

One thing I did when I was first starting out was I went through the index to the yellow pages, and marked every business type that might need voice-talent. I then contacted as many of those businesses as I could. Some wouldn't immediately come to mind, such as telephone system operators, convention display/public relations companies, cable TV system operators, etc. If you've worked in broadcasting in your community, you probably already have a number of good contacts and referrals to get you started.

Just remember, it takes everyone years to get established — I'm pretty sure that's true no matter where you are. (There are always exceptions to everything, of course.)

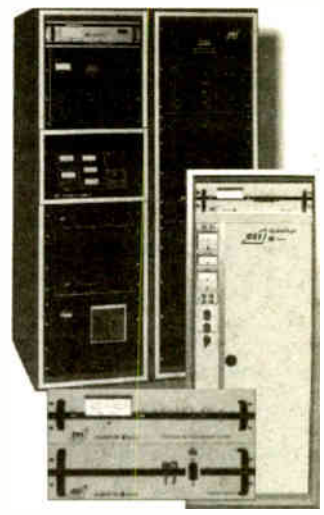
Good luck on your career.
Travis

THE SOURCE FOR SOLUTIONS

For the last 30 years QEI has supplied innovative FM transmission solutions

HIGHLY RELIABLE SINGLE TUBE GROUNDED GRID FM TRANSMITTERS

For 15 years QEI has manufactured a line of technologically advanced grounded grid FM transmitters that provide outstanding performance and reliability.



SINGLE PHASE HIGH POWER FM TRANSMITTERS

QEI was the first broadcast equipment supplier to offer high-power FM transmitters able to operate from single phase AC power sources. These products allow the development of many transmitter locations where providing 3 phase power would be cost prohibitive.

COST EFFECTIVE SOLID-STATE FM TRANSMITTERS

QEI has been manufacturing solid-state FM transmitters since 1975, longer than any other US manufacturer. The QUANTUM Series FM transmitters are power efficient and very competitively priced. They are designed in 600-watt increments so you can buy precisely the amount of power output needed.

QEI also manufactures the finest FM Modulation Monitor and Test System available and the CAT-LINK Digital STL/TSL System.

Contact QEI today and let us put our innovations to work for your station. Contact our sales department at 800-334-9154 (International 856-728-2020) or by e-mail at qeisales@qei-broadcast.com.

QEI

Web site http://www.qei-broadcast.com
QEI CORPORATION
PO Box 805 Williamstown NJ 08094 USA
800-334-9154\856-728-2020\856-629-1751 Fax

QUALITY ENGINEERING INNOVATION

World Radio History

BOTTOM LINE BROADCASTING

Here are three ways Eventide can help:

Consolidation brings market efficiencies, but also big headaches and challenges. It's essential for management to keep track of multiple stations. And keeping a legal record of what was said and when commercials aired is also more important than ever. Several groups have standardized on **Eventide Digital Audio Loggers**. Our economical VR204 records up to 550 hours on a tiny palm-sized cassette. VR204 records up to 4 channels simultaneously so you can keep tabs on the competition's spot loads, play lists and talent while you record your own stations. New!! Now Eventide loggers let you record/play in Hi-Fi for full "broadcast quality." Ideal for show replays, time zone delays, etc.

Eventide's **BD500 Broadcast Delay** makes talk shows run smoother and sound better, for less. The BD500's multiple dump feature divides the delay time into several "slices" so you're still safely in delay even right after dumping an offensive remark. It's the hassle-free talk solution... even when air talent is working without a producer. No other delay offers Eventide's high quality patented catch-up technology for clean audio combined with fast catch-up. And it's the only delay with optional digital inputs and outputs for new all-digital studios. Yet the BD500 costs thousands less than our previous model. See how much easier talk shows can be with Eventide's 4th generation BD500 Broadcast Delay.

Want to increase creativity without adding personnel? Add life to drive-time shows? Win new advertisers with better station-produced spots? An **Eventide Ultra-Harmonizer®** brand effects processor really does all that. Designed specifically for radio and production, the new DSP4000B Ultra-Harmonizer features radio effects designed by production whiz Jay Rose. Hundreds of comic voices, sound effects, reverbs, pitch changers and more are instantly accessible at the touch of a button. Plus, the DSP4000B has superb Timesqueeze® time compression /expansion capability. Shorten a 60 second national spot to allow for a local tag. Squeeze or stretch a music bed to fit the spot. The DSP4000B has optional digital I/O to interface easily with digital editors and consoles. It's the radio effects box designed to bring stations more business and more listeners.

The bottom line: Eventide broadcast products are potent tools for today's radio. To learn more, talk to your broadcast distributor, call Eventide direct at 201-641-1200, or see our website, www.eventide.com.

Eventide
the next step

One Alsan Way, Little Ferry, NJ 07643
Tel: 201-641-1200 Fax: 201-641-1640
Email: broadcast@eventide.com Web: www.eventide.com

Better managed, better sounding radio yields better results.

World Radio History

Free Software: End of the World?

Free Automation Software from Arrakis Systems Turns Heads, but Manufacturers are not Worried

Alan R. Peterson

When Arrakis Systems brought a box-load of CD-ROMs bearing DigiLink Free software to NAB2001, the buzz spread across the floor in fairly short order.

The company intended for the simple, easy-to-use digital playback system to be used on inexpensive garden-variety computers. Rather than run up a price tag of several hundred to several thousand dollars for the program, the company handed out free CDs to anyone who wanted to try DigiLink Free for themselves.

Six hundred complementary discs walked off the first day, with hundreds more quickly reordered from the home office. Arrakis employees burned CD-ROMs on-site while customers waited in line, like so many Sunday brunch patrons staked out at an omelet station.

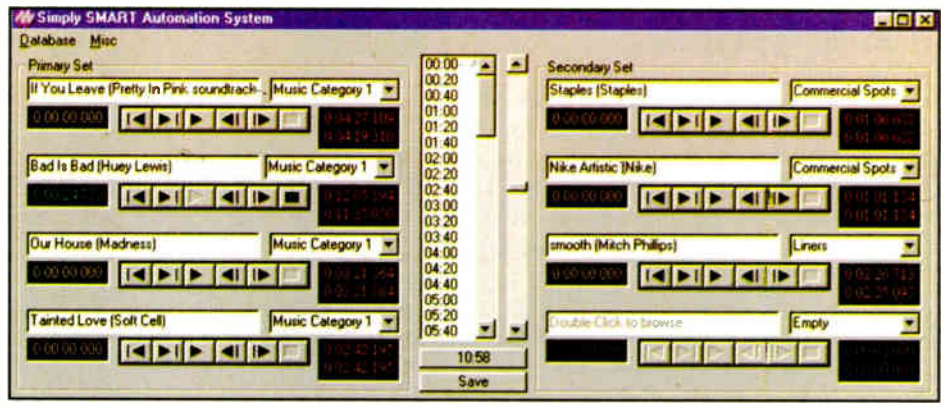
Given the desire on the part of radio managers to run a station as inexpensively as possible, coupled with the awareness of free software as enjoyed and encouraged by the Linux camp, would competitors have to come up with their own free products to stay in the race? Once Arrakis Systems showed stable audio playback was possible on common hardware — and for free — would it spell the end of the high-priced systems offered elsewhere?

Perception

Not likely, said the competition. Which was fine by Arrakis Systems, as that was not the company's primary intention anyway.

RW contacted several prominent manufacturers to find out if such a "free software movement," whether real or perceived, would affect what those companies will be doing and if more freeware was on the way.

To put things in perspective, DigiLink Free was offered for free at the NAB convention, but the company does not *support* it for free; a 900-telephone number was set up for paid technical support of the software product.



Simply SMART Free Automation System by SMARTS Broadcast Systems

The instructions accompanying DigiLink Free clearly state that the software is offered as-is and the user must decide if it is right for him or her. As long as the host PC is not also used for word processing or Web surfing, performance should be stable.

Free upgrades will be available from the Arrakis Systems Web site as they are written, suggesting that the program was not tossed out into the open merely as a novelty.

"We view this as a legitimate product," said Rod Graham, vice president of the Arrakis broadcast division. "We will improve it as customers use it and make suggestions. It would be virtually

See TRENDS, page 48 ▶

USER REPORT

Scott Studios System Is My Best Friend

by Jon Rivers
Morning Show Host
KLTY(FM)

DALLAS I have no idea why everyone isn't using the Scott Audio System by **Scott Studios**. The Scott system is the easiest studio system in the world. In fact, it's the radio personality's best friend.

Scott's touch screen frees air talent to be creative and concerned about content. The simple screen layout means that announcers don't worry about mechanics, and they can focus on what they want to do on the air.

The Scott touch screen is fast and intuitive. I can do whatever I want even if a bit changes. Audio plays instantly from the play buttons.

Even if I have to go deep into the cart walls, I can play any of our sound effects and jingles within one or two seconds.

Avoid nightmares

As host of a busy morning show for decades, I can tell you that some other digital systems are absolute nightmares for major-market air talent.

Most other systems are obviously not designed by disc jockeys or with the disc jockey in mind. The systems are not laid out for those of us who need effective tools for our fast-paced work environment.

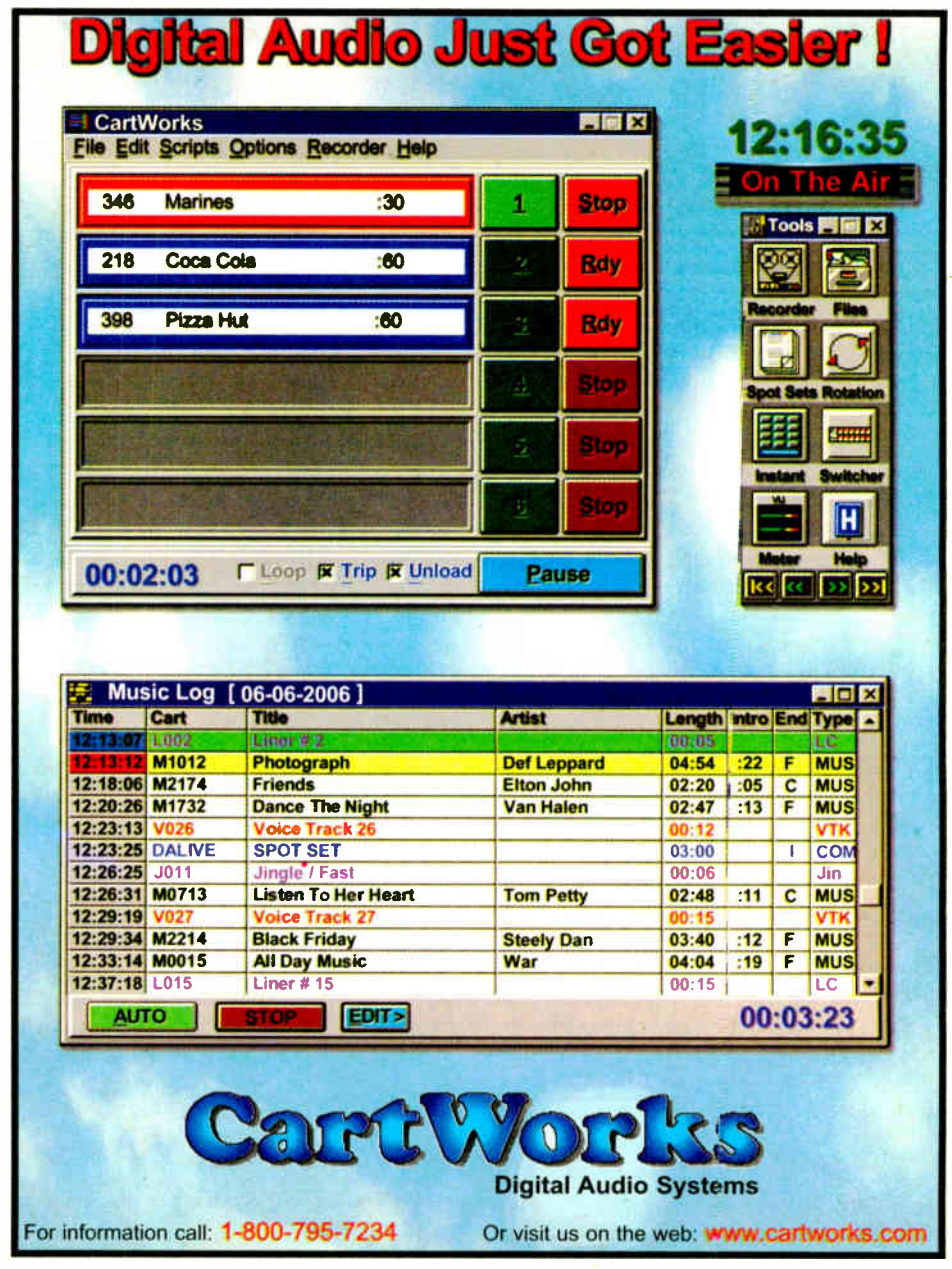
Digital systems should enhance our shows, and many other systems do just the opposite. After using some systems, I wonder if their designers asked, "How hard can we make it?"

But with the Scott system, everything is right where it should be. Buttons that need to be big are big. Those that should be out of the way are out of the way. The Scott system takes air talent out of bondage and into the light of day.

Ease-of-use and intuitive control for all announcers are high points of the Scott system.

We run our program log through separate faders. Then Hot Keys run through other faders. My producer has his own touchscreen that parallels mine and the newsroom has another touch screen to build news actualities,

See SCOTT, page 53 ▶



World Radio History

USER REPORT

Eagle Radio Has Eye for Maestro 3

by Jay Thouvenell
Director of Engineering
Eagle Radio Inc.

SAINT JOSEPH, Mo. Eagle Radio owns or operates 23 stations in Kansas, Missouri and Nebraska and we have been using **Computer Concepts** products in some shape or form since 1991.

Prior to 1999, most of our stations owned the DOS-based DCS product, which still serves some of our markets well. But in our Saint Joseph, Mo., market, we purchased two competitive stations and created a satellite network and AgInfo center, which were added to the existing two stations with DCS.

Jock Operates the Maestro 3 at KKJO(FM)

Horizons expanding

We found that our multi-station networking and the creative challenges of voice tracking were leading us to look beyond the DCS we were using. Operators needed voice tracking in order to spend a minimum of time recording their work in the studio while allowing for the greatest level of creativity.

We wanted a Windows system with a user-friendly screen so that memorizing "shortcut keystrokes" would no longer be a large requirement of operating the system. Furthermore, we needed greater disk capacity for our music libraries for differing formats as well as easy entry for production.

Also a major consideration was that the system had to have digital AES/EBU audio.

We found all of our requirements and many other benefits in the Computer Concepts Maestro. We began using Version 2 of the Maestro and then upgraded to our current Version 3.

This latest version gives us so much more capability and options than previous versions of DCS or Maestro.

Our AC station, KKJO(FM), is operating a new air chain and transmission system that has enhanced delivery of our audio. Also with a new taller tower, the increased audience gave us the opportunity for AES digital playback.

With the Audioarts RD-20 console, we are able to use the AES digital port of the Maestro and it stays digital right up to our Omnia processor.

But more important to the staff is the voice-tracking production. With Maestro 3, you can record the announcer audio and "slide" the music or promo beds back and forth to achieve the proper timing.

Now the voice track can "nail the post" every time. The voice tracking was fairly easy to set up and has been a real benefit in times when finding a part timer to fill a shift on a holiday, which used to be a problem.

Conducting the concert

Also important to our Saint Joseph operation is the use of the Maestro to administer a satellite network. Our AgInfo Center market reports air several times a day and we use the Maestro to playback the audio for each feed as well as provide the relay cues to the affiliates.

With the audio switcher, we pulse the necessary relay commands as well as provide switching to allow other networks to utilize our idle time.

Another benefit of the Maestro 3 system is that there are several modes of system operation. Live-assist allows the system to perform simply and effectively for audio playback, which operates solely at the user's direction.

The satellite mode allows relay or contact closures to provide the Maestro with instructions on how to respond to the needs of many satellite formats from any network provider. Also of interest for stations wishing to voice track, is the "Cruise Control" and "Local Automation" modes, which allow continuous operation from the program log and certain "rulesets" to be utilized.

This enables the Maestro to intelligently match the amount of music needed an hour with predetermined rules that will subtract or add elements as needed. We are using these in fairly simple forms but many users find that they can truly customize their unattended sound to their needs.

From the aspect of the engineer, I have found that the support technicians are extremely knowledgeable. Even after a support issue has been resolved, it is not surprising to find the staff following up. As a result, we have placed a great amount of trust in this relationship.

Additionally, the actual Maestro hardware has been very reliable. We found that the CPU cases that Computer Concepts uses are extremely tough and take rough abuse, intentional or not.

We also have Maestro units in several locations in our company due to their features. We are upgrading the older DCS systems to Maestro in a move towards WAN to allow the sharing and transferring of files via the Internet and other means.

Our commitment to the Maestro 3 platform will continue to grow, along with the support from Computer Concepts.

For more information contact Computer Concepts in Kansas at (913) 541-0900, fax (913) 541-0169 or visit www.computerconceptscorp.com.

TECH UPDATE

Management Data Serves Broadcast

The DigaSystem by **Management Data Media Systems** is a news-oriented production and content exchange. The system has been upgraded for planning and scheduling radio programming. The addition is known as Broadcast Server.

The system is comprised of applications for scheduling, on-air playout and importing data from other systems. The system is also compatible with the Web, DAB and WAP.

The Broadcast Server brings together elements within a central database that stores all data and actions of the broadcast schedule. Its XML-based tree structure enables a multi-user mode and ensures data integrity.

Additionally, the DigAIRange is a scheduling client that provides planning and scheduling of radio programs incorporating all audio assets. Schedules can be created for stations, individual shows, specific time spans or according to user-defined criteria.

The on-air client, DigaROC, is the delivery tool for completed schedules. It offers a total of four audio channels — two for playlists, one for pre-fade listen and one for the integrated jingle bank.

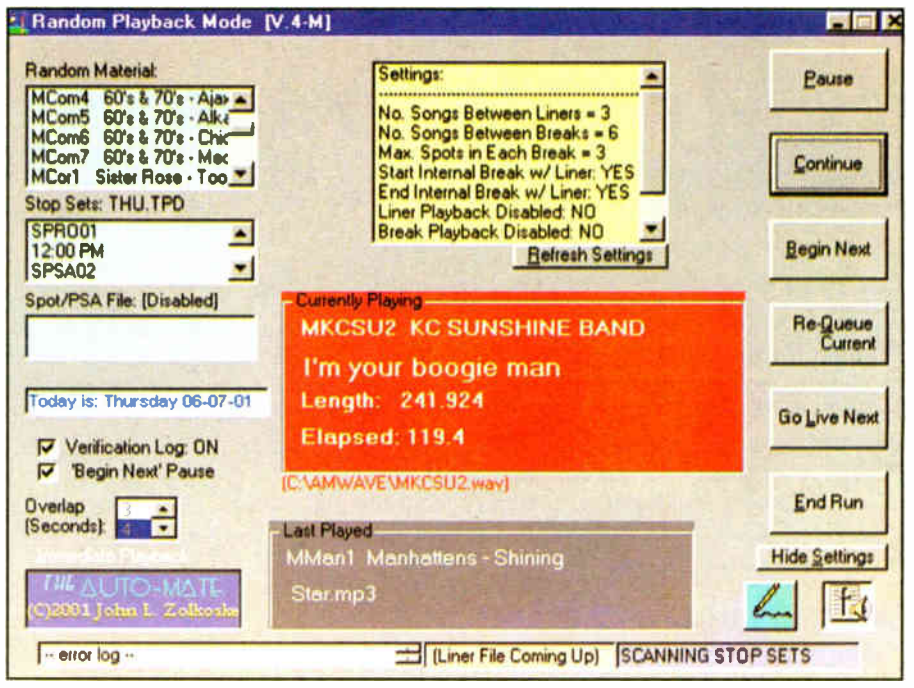
For more information contact Management Data Media Systems in Virginia at (540) 341-8550 or visit the Web site www.mdata-us.com.

TECH UPDATE

Auto-Mate Ventures Into Windows

Auto-Mate Systems has released the 32-bit version of its on-air automation software for Windows 95, 98 and ME. Auto-Mate for Windows employs music on hard drive, cart replacement and a random playback mode. The Windows version also contains features that were not possible in previous DOS versions, including simultaneous record and playback and an audio overlapping feature.

The system has the ability to record and play any Windows media-supported format. It has a built-in audio recorder with VU meters. The Windows version also has a WAV/MP3 importer that can prepare hundreds of recordings for use with the Auto-Mate in a matter of minutes.



In playback mode, the user can easily select material from categorized lists of spot, liner and music material, or let the Auto-Mate do all of the work with a unique random playback mode.

The random playback mode selects its own music and rotates liners on a schedule chosen by the user. It inserts a legal ID near the top of the hour. Auto-Mate for Windows also allows the programming of scheduled stopsets within random playback mode. Stations can insert scheduled commercials, PSAs, news, weather and other announcements at predetermined times.

Auto-Mate Systems also sells pre-built DOS systems or will install the software in a unit that the user ships to the company. Auto-Mate for Windows is available for $249.95.

A free download and 30-day trial is available by going to the Auto-Mate Web site *www.wvi.com/~automate* or *www.lpradio.com.* A CD-ROM is also available.

For more information contact Auto-Mate Systems in Oregon at (503) 769-2886, fax (253) 669-3214 or visit the Web site at www.wvi.com/~automate.

World Radio History

Innovation begins with a fresh look.
How are we doing so far?

Telos

www.telos-systems.com/smartsurface

SmartSurface, Telos and the Telos logo are registered trademarks of TLS Corporation. Copyright 2001, TLS Corp.

World Radio History

TECH UPDATES

Master Control Gets a Boost

RCS Master Control has received an update, which adds new features including a voice track editor, segue editor for custom segue shaping and a fade segue editor with individual volume controls.

The RCS HotKey also has new features including hookplay.

Proofaudio is a recent addition that file checks all audio for inconsistencies prior to airing.

The system adds a liner bank scheduling/assignment function for satellite programs. Also, Master Control has enhanced its Internet licensing and upgrade capabilities.

For more information contact RCS at (914) 428-4600, fax (914) 428-5922 or visit www.rcsworks.com.

Wicks Gets Traffic Under Control

Control Tower software is designed to provide data warehousing capability to all **Wicks Broadcast Solutions** Traffic and Billing Systems.

With Control Tower, sales managers and financial officers have near-real time access to key information needed to run their business — information electronically gathered from all stations on multiple traffic systems. This information is viewable as a report or as a spreadsheet and is accessible at the corporate office or station securely via the Internet.

The system provides analysis, charting and reporting capabilities for data collected from Wicks traffic programs. Detailed assignment of goals and targets can be matched against actual and projected sales.

Control Tower gives the sales manager the ability to set revenue goals by station and income type — such as local, national and trade accounts — and to track sales by agency, account, station, industry category and income type.

Sales managers can also use the system to measure sales activity and monitor how inventory is sold, compare actual sales with established goals and create pacing reports comparing year-to-year sales.

For the corporate financial officer, the system aggregates all information generated at the station and market level, and presents simple-to-read reports and graphs via a web browser. Access to this information is available remotely through the Internet.

For information call (541) 271-3681 or visit www.wicksbroadcastsolutions.com.

Our address has changed

...our commitment is the same

In keeping with an illustrious legacy, Crown Broadcast has begun adding a new chapter to the rich history of the Crown name. To meet the needs of broadcasters worldwide, Crown Broadcast has taken a proactive approach in researching and developing new technology.

We are committed to ushering in the Twenty-First Century with a range of technically innovative products designed to anticipate the changing dynamics of world broadcasting, while keeping the heritage of rugged reliability that is Crown.

In the coming months, visit our website to see new ideas, new products, and new directions. Crown Broadcast is committed to keeping your investment paying off year after year.

Visit us at
www.crownbroadcast.com

FM 30

FM 100

FM 250

FM 500

CROWN BROADCAST ANNOUNCES FMX SERIES TRANSMITTERS AT NAB

Digital System Managament (DSM) structure
- Menu-driven digital control system and display
- Monitor and set transmitter functions at front panel
- Password protection of system control
- Sophisticated fault alert and logging

Remote System Management (RSM) option
- DSM structure accessible from any phone
- Natural voice communication from transmitter
- Password protected
- System operating functions evaluated and reset remotely
- Alert by phone in the event of system faults.

Crown FMX Series Transmitter models include the FMX 30, FMX 100, FMX 250, and FMX 500. DSM structure and the RSM option can also be retrofitted to current Crown transmitter models.

crown broadcast

Crown Broadcast
25166 Leer Drive
Elkhart, IN 46514-5425
219-262-8900

A division of International Radio & Electronics Corp.

Mediatron Starts Radio on Its Way

The **mediatron** MediaStation Radio Starter Set is an automation system created for small- to medium-size market stations.

This system of digital radio products is created for station management, recording, editing, CD ripping, cart replacement, live assist and 24-hour program automation.

The MediaStation system can be used on a single workstation system, on a two workstation setup or a multi-station network with audio file server. When the system is used on a two-PC workstation setup, the audio data is mirrored and saved in case of a hard-disk failure. When a user records or rips CDs on the production and scheduling workstation, all the audio data is copied to the on-air workstation.

For more information contact mediatron GmbH in Germany at +49-8131-8305-0, fax +49-8131-8305-25, e-mail mediastation@mediatron.com *or visit* www.mediatron.com.

Smarts Offers Dual OS

The X-2 Series Dual Operating System Smartcaster from **Smarts Broadcast Systems** is a solution for stations wanting a Windows-based automation system without potential problems associated with Windows reliability. The company addressed the problem by putting two separate computers, running two different operating systems, in the same case.

One computer runs Windows and drives the displays for the user interface. The other computer, running a different operating system, is dedicated to recording and playing audio.

Although the computers are in the same physical case, they are totally separate units and communicate via standard LAN and serial protocols.

Even a huge failure of the Windows processor will not take the audio off the air. The audio operating system allows for reliable operation with large disk drives that can store thousands of audio cuts.

For more information contact Smarts Broadcast Systems in Iowa at (800) 747-6278 or visit the Web site at www.smartsbroadcast.com.

World Radio History

PROPHET SYSTEMS INNOVATIONS

Every 96 Hours...

NexGen DIGITAL™

Own a Prophet for under $20,000

Another NexGen Digital System is Installed.

What do Clear Channel, CBS/Infinity, Sirius Satellite Radio, and the largest private group of stations in Mexico have in common?

NexGen Digital.

PROPHET SYSTEMS innovations

877/ 774-1010

www.prophetsys.com

sales@prophetsys.com

- Reliability
- Stability
- Flexibility
- Scalability up to 128 stations
- Wide Area Networking
- High speed digital audio extraction
- Automatic phone call recording
- Support 24 hours a day, seven days a week
- State-of-the-art training facility

What sets Prophet Systems apart from our competitors?

Our attitude towards service and support!

NexGen Digital, the latest generation in a long line of cutting-edge digital audio systems.

ONCE YOU GO PROPHET, YOU'LL NEVER GO BACK.

World Radio History

Trends

▶ Continued from page 43

criminal if we did not do that."

Graham admits that DigiLink Free had a grander purpose than simply running music. "It's an opportunity for sales promotion," he said. "People call up and tell me, 'I can't believe you *gave* me this. It does what I want it to do and now I have money I can use elsewhere.'"

Elsewhere — Consumers could use money on Arrakis furniture, audio consoles and perhaps a step-up to the DigiLink 4-MAX satellite-ready automation system. A pop-up sales pitch accompanies DigiLink Free, touting the company's other products ready for purchase.

"It may not get us any direct cash, but it puts it forward to our other products," Graham said.

As for the paid support, Graham noted that almost no users have yet found a reason to call. "All you need to do is hit the Help feature and the manual comes right up," he said. "If you need to print the manual, it's part of the program."

Stock up now

Tom Spadea, president and owner of LPB Communications, can appreciate the benefit that such a loss-leader product offers customers.

His company stocks the full-featured SALSA digital automation system and the $99 IIGYS WebJockey software package intended for low-power broadcasters, Webcasters and smaller stations.

"Obviously, you won't be able to run the whole station on that one," he said. "Instead, we're building customer loyalty. It's a strategic offering instead of a specific one."

Spadea feels that one $99 purchase of WebJockey may lead to an LPB console, a Fidelipac on-air light or an Omnitronix transmitter being added to the invoice.

Meanwhile, Ron Burley, founder of Broadcast Software International (BSI) and the originator of the less-than-$1,000 WaveStation automation software, senses no real threat from the free software. "We've not lost a single order to DigiLink Free," he said.

"Customers look deeper. They see the support. There is the integration into the station, the training; a higher responsibility."

Burley acknowledged the position of importance the digital storage and playback system has and how free software may not be up to the task.

"Automation is the core of the station," he said. "Between traffic, programming and production, the efforts of the whole station funnel down into one box."

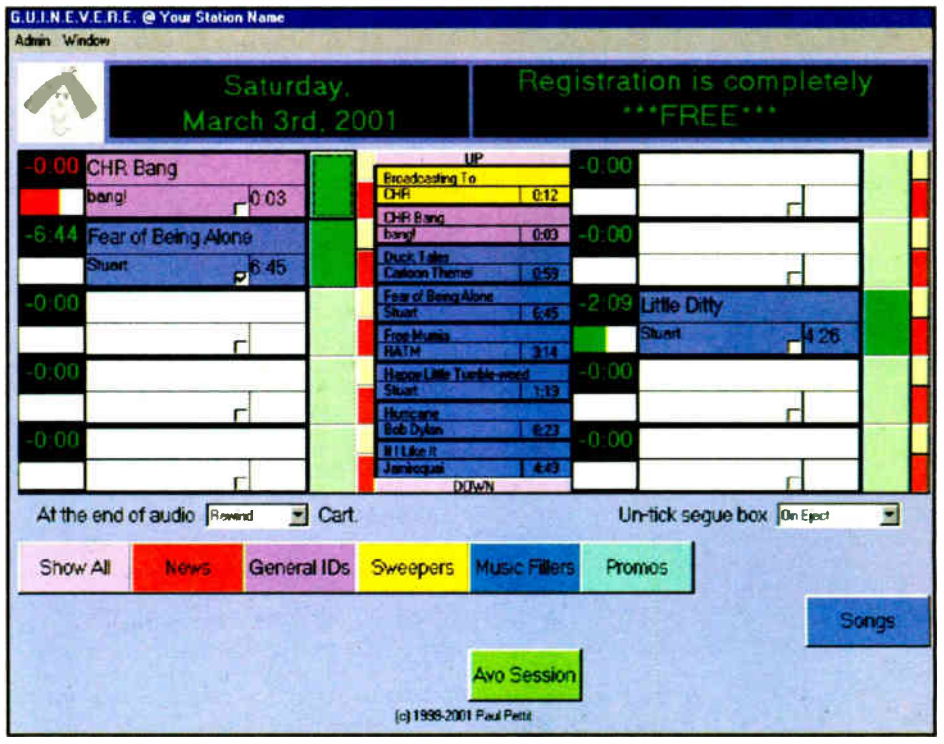
Burley was amused when asked whether or not BSI intended to offer a similarly free product or one less expensive than the $1,499 WaveStation.

"It's a 180 turn from the way it was just three years ago," he said. "When WaveStation was a two-slot playback system and cost $999, people would say, 'Wow, it does all that for $999.' Today it does so much more, but now people ask, 'Why is it so expensive?'"

Some company executives almost consider the Arrakis giveaway to be a stunt, executed with all the non-subtlety of a radio station publicity prank — among them, Dwight Douglas, vice president of product marketing for RCS and Dave Scott, president of Scott Studios.

Publicity stunt

"It's a stunt, like a station playing 15,000 songs in a row," said Scott. "The program might work for a wedding DJ, but it certainly won't raise the drawbridge any."



G.U.I.N.E.V.E.R.E. From OnAir Software

In addition to its own product line, Scott Studios acquired the BTSG product line from programmer Tommy Grey and re-christened it the Scott Studios D-I-Y line. Buyers interested in a Scott Studios product but not ready for a large cash outlay can purchase a software-only automation system with integral music scheduler but few other features for about $1,500.

Douglas defends the high-end RCS product line and its associated costs with its stability.

"Anybody who wants to run a radio station for 24 hours a day wants to have the stability and function of a solid system," he said. "Nothing is more important to radio stations than making sure spots play on the air and that the license is not jeopardized."

Don Backus, vice president of sales and marketing for ENCO, is among the manufacturers not panicking over the release of DigiLink Free. In fact, he puts it a little more succinctly than most: "They have established the value of the software (zero) and it is now up to the market to decide if it is worth it."

Evolving needs

Backus promotes a different model. "We prefer to offer a full-featured product at a competitive price, support it over the long run and continue to develop products to meet evolving station needs," he said.

ENCO offers the DAD$_{PRO}$ line of storage and automation systems and while Backus is not prepared to give software away for free, the company offers a relatively inexpensive $8,000 "small-market subset" of its larger units and a software-only solution for $4,000; not much more expensive than a cluster of triple-deck cart machines and record electronics.

According to Backus, "If you cannot afford $8,000 for a radio station, ask yourself if you really belong in radio."

John Schad, owner and president of Smarts Broadcast Systems, also came to the NAB show with a free automation system — Simply Smart — although his intention was actually to show how problematic a Windows-based program would be, compared to the stability of his company's DOS-based offerings.

"We wanted to show the difference between a serious automation system and something from Kmart," he said.

Schad actually welcomed the arrival of the Arrakis program by saying, "It can do nothing but help us, to get people to think digitally and get them off tape. For the stations, it helps keep payroll under control until a better system can be obtained. We're not at all worried about it."

Free download

Simply Smart can be downloaded free from the Smarts Web site, but the company considers it beta software and does not guarantee its suitability or reliability in running an entire station. Still, Schad considers it a workable solution for very small radio stations running overnight programming.

In fact, running broadcast audio using free software is nothing new, at least not in Europe. Ron Paley, manager of the MediaTouch division of OMT Technologies, pointed out how European "hospital radio stations" and the like are being driven by free players such as Nullsoft Winamp and a simple playlist generator; a limited practice being adopted in the U.S.

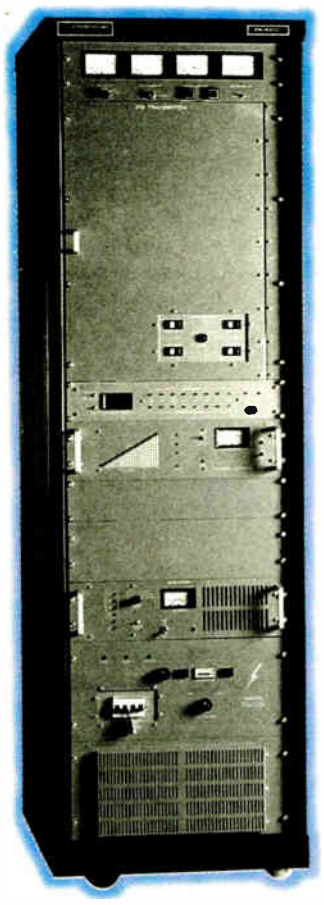
"I know a fellow running his college station out west with Winamp," he noted. "He picked up a copy of QuicPix, but uses Winamp at his station to play back programs. DigiLink Free is similar and is actually not a bad little offering."

QuicPix is his company's $399 instant-start audio playback software, affordable even for personalities to own their own copies. A more elaborate program, iMediaTouch, combines voice-tracking, CD ripping and full live-assist or automated operation for less than $1,000, filling a price vacancy left when BSI's price jumped to $1,499.

"We've taken a position to go under

See TRENDS, page 49 ▶

ARMSTRONG
FM Transmitters



Engineered for Reliability

- Power Levels from 1kW to 30kW
- High Efficiency, Grounded Grid Single Tube Design
- Wideband Quarter Wave Cavity for Lowest Synchronous AM
- Solid State Driver with Patch Around Capability
- Optional Automatic Power Control & VSWR Foldback
- Motorized Tuning Controls
- Advanced Overload & Protection Circuitry
- Automatic Re-start After Power Failure
- INEXPENSIVE!

ARMSTRONG
TRANSMITTER CORPORATION
4835 N. Street • Marcellus, NY 13108 • PH: 315/673-1269 • Fax: 315/673-9972
E-mail: info@armstrongtx.com • www.armstrongtx.com

World Radio History

Trends

▶ Continued from page 48

$1,000," said Paley. "It has the attention of some NPR affiliates and some of the 'majors' are curious."

Paley has yet to detect a ripple caused by Arrakis Systems. "I haven't noticed anything," he said. "But it's only got to help the industry. It's amazing how many people are still on tape."

Companies such as Prophet Systems, Dalet and Broadcast Electronics have targeted major groups and large installations as their customer base. Dalet, for example, has several hundred of its products in place at the new XM Satellite Radio installation in Washington. It would be a safe assumption to say that free software such as DigiLink Free would not affect this company's way of doing business.

Software, service, support

Robin Wang, director of marketing for Dalet, did have some observations on the topic, however.

"It's not just the software," said Wang. "Equally big are the service and the support. Even if we did give it away for free, the installation would just be a huge task. But people will be drawn to free software, especially those in the open source movement."

Open Source is a term coined in 1998 describing the history and even prehistory of Unix, the Internet free software movement and hacker culture, where numerous people modify and redistribute freely available source code for software to create a better product. Popular examples of open source software include the original Netscape Navigator browser and the Linux operating system.

Wang said, "We are seeing a reaction to a market that has matured very fast. There must be innovative ways to reach out to the market. The fruit is no longer hanging low."

In a succinct e-mail statement to RW, Ray Miklius, vice president of studio systems for Broadcast Electronics (BE), commented, "I'm sure the companies offering free software have significant up-sell strategies that they will attempt to employ. I don't think the typical new car salesperson tactics will work on professional broadcasters. Broadcast Electronics sells quality software at a fair price and we offer 24/7 support. You get what you pay for."

And Prophet Systems has hardly felt a bump from the announcement. According to Jackie Lockhart, director of marketing for Prophet Systems, entire solutions such as the company's $20,000 NS System are probably more suitable for a station looking for a stable and versatile platform.

"For the little public radio stations and the mom-and-pops out there, the NS (No Server) System is a good product," she said.

The expense comes in part from support, but also from the hardware. Prophet uses HP computers and robust disk drives that were purposefully spec'd out for the task at hand. "We could sell you the software, but you would have to buy the hardware we suggest, only because we know that is what is going to work," she said.

So is free broadcast automation software really a good idea?

Arrakis Systems seems to believe in it; otherwise the company would not be refining it along the way. Other manufacturers are somewhat pleased, as it weans remaining stations off of tape-based audio storage and could send customers their way once the limitations of the free program are revealed.

But if Arrakis had not done it, somebody eventually would have. Automation shareware programs and cart replacement products abound on the Internet, tempting many a frugal manager.

Some examples include DRS2000, AirMix, Radio Wolf and the free G.U.I.N.E.V.E.R.E. cart player from Britain's OnAirSoftware. A quick Web search for "radio cart replacement" or "broadcast automation" will present you with more choices than those at a sushi bar.

Additionally, Windows has no lock on broadcast automation. Even though the Windows operating system has overlapping audio support designed right into the DirectSound standard, alternative operating systems present their own possibilities.

Playback, playlisting

MegaSeg puts MP3 playback and playlisting capability into an off-the-shelf Macintosh computer. *Beosradio.com* offers TuneTracker, a $99 automation program that runs under the Be operating system (BeOS).

In fact, the company even provides a free distribution of the BeOS 5.0 Personal Edition operating system with the program.

And the Linux camp is not far behind, with servers and standalone boxes still in development by several commercial companies.

A little more Web searching will yield a free multitrack recorder — Quartz AudioMaster — for doing four-track production on a simple Celeron machine. It may be possible — but not necessarily desirable — to equip a smaller radio station entirely with traded-out PCs and freeware.

In spite of the tremor felt by the out-of-left-field debut of the Arrakis DigiLink Free program, it must be recognized that freely available software has been around since the dawn of the computer.

Whether or not it is right for any particular station is up to the discretion of that station and the technical acumen of the people that work there.

"After all, Bill Gates started a trend when he gave away his software years ago," Graham concluded.

No Tradeoffs
No Risks

Only Top Performance...

...at a cost savings means real value in any broadcast market. But don't take our word for it or let our 25-plus years in the business cloud the issue. Try these or any of our first-quality products at your station at no risk with our no-fault, 30-day return policy.

OMEGA_FM DIGITAL PROCESSOR/GENERATOR

NEW!

A fully-digital processor/stereo-gen without DSP chips! Our uncomplicated software-based design gives a big, bright and clean sound. A short signal path keeps latency low and your audio fresh and grunge-free.

"DAVID-II" FM PROCESSOR/STEREO-GEN

Famous the world over for a competitive, clean sound at a budget price. PWM processing and digital-synthesis coding guarantee great specs, easy setup and trouble-free operation.

FM MOD-MONITOR WITH PRESELECTOR

Accurate off-air modulation measurement with an easy-to-read display, 8 station presets, multipath metering and remote alarms. A companion subcarrier monitor/demod measures RDS, SCA and high-speed data.

OFF-AIR AM MOD-MONITOR

Features a built-in tunable preselector, two sets of peak flashers, program- and carrier-loss alarms and an RS-232 interface. An active outdoor antenna is optionally available.

RDS/RBDS ENCODERS/DECODERS

NEW!

Interactive encoder (shown) works with hard-disk automation to transmit song titles, contests and advertising. We make a low-cost "mini encoder" too, and a full-function RDS/RBDS decoder/reader.

Visit us on-line: www.inovon.com

Inovonics, Inc.

1305 Fair Avenue • Santa Cruz, CA 95060
TEL: (831) 458-0552 • FAX: (831) 458-0554

World Radio History

USER REPORT

LocalMax, BE Bring Service to ABC

by Chris Miller
Program Director
Classic Rock, LocalMax
ABC Radio Networks

DALLAS Approximately two years ago, ABC Radio Networks launched the LocalMax service, offering custom-tailored programming and production to affiliates worldwide.

LocalMax provides a wide array of formats to affiliates in small and major markets in the United States, as well as American Samoa and Guatemala.

ABCs LocalMax is proud to deliver programming to our affiliates using the VaultXpress platform and AudioVault software from **Broadcast Electronics**.

Our talent at the network uses the AudioVault to create programming driven by local information and send that programming to affiliates using a TCP/IP connection. We can create promos, cut commercial production, deliver new programming elements, record voice tracks and provide complete schedules using the system.

With a high-speed FTP connection, we can deliver that content in the background while the system continues to make money on the air. The network and affiliate AudioVault systems communicate so well, practically all the affiliates have to do is schedule local commercials and collect the revenue!

Always on call

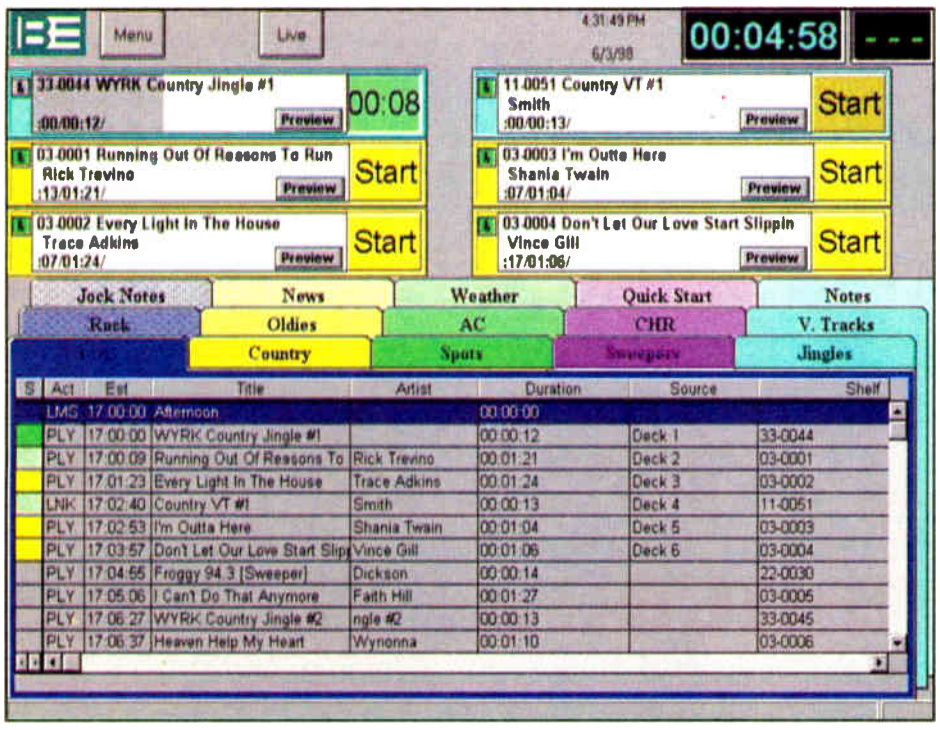
We have discovered one of the key benefits of working with BE is the responsiveness to the unique and often demanding requirements of LocalMax.

Over the course of our relationship, the company has continually asked for our feedback on the various applications and has incorporated many of these suggestions into new software versions.

BE representatives have gone out of their way to become familiar with how we use the AudioVault — even talking with the air talents that use the system on a daily basis. Their willingness to become involved in the success of the LocalMax project has resulted in enhancements to the software, ultimately benefiting our affiliates and our air talent.

The company also works closely with our affiliates to meet their specific needs. BE's familiarity with the LocalMax project from a network and affiliate perspective has resulted in the evolution of a virtually hands-free product. When presented with unique challenges, BE has shown an amazing ability and desire to meet them head on.

The BE customer support staff has also worked closely with us. Since the launch of LocalMax, the staff has tracked the questions and situations that have most often arisen. As a result of this tracking, the company is developing a CD-ROM user's manual specifically tailored for LocalMax clients, saving our affiliates time and effort.



AvAir Live Top Decks

Local introduction

The CD-ROM will also serve as an excellent introduction to LocalMax and the AudioVault for new station employees.

LocalMax is proud of its achievements over the past two years. By embracing new technologies, we have been able to offer an expanding list of services to our clients. BE has taken an active role in this area as well.

One of the questions BE hears from us a lot is "Can we develop a system that does ... "

The company's staff has consistently met the challenges we have presented and surpassed our expectations. It's not uncommon to have BE engineers call *us* with "How would you like to be able to offer your clients ... ?"

The attitude of BE in all phases of our working relationship has helped LocalMax grow and aided us in better servicing our clients.

For more information contact Broadcast Electronics in Illinois at (217) 224-9600, fax (217) 224-9607 or visit the Web site at www.bdcast.com.

TECH UPDATE

PSi Moves to the Next Generation

The NexGen Digital NS, from **Prophet Systems Innovations**, is an automation broadcast system for smaller stations or radio groups.

For less than $20,000, stations or broadcast groups that do not need the features found in the full NexGen Digital Broadcast system can purchase the fully expandable NS system.

The latest full version, NexGen Digital Broadcast version 2.1, will be released in June 2001.

Features include the ability to search across all audio and create a list box of audio events that can be dragged and dropped into the control room log.

Also included in the system is the ability to export data on currently playing events via TCP/IP or serial commands, and an optional 3-D Control room. The expanded automatic telephone call recorder enables stations to obtain weather, traffic and other reports without station intervention. The new e-mail notification of system status ensures stations are kept up to date at all times.

For more information contact Prophet Systems Innovations in Nebraska at (877) 774-1010, fax (308) 284-4181 or visit the Web site at www.prophetsys.com.

USER REPORT

BTE Swears by ASI, BSI for Audio

by Greg Case
President
Broadcast Technical Engineering

FORT WAYNE, Ind. For the past few years, audio card technology has been rapidly changing.

As a contract broadcast engineering and consulting firm for radio, Broadcast Technical Engineering is constantly on the search for new technology to meet our customers' needs. **Broadcast Software International** (BSI) software packages and **AudioScience** audio cards are first-choice products for our company.

Up to spec

The AudioScience 4346 audio card — which is being distributed exclusively by BSI — incorporates a number of key features we desire. The card decodes and plays both MP2 and MP3 audio files, utilizes relay and trigger logic, and allows up to four streams of stereo audio.

One of the most noted features of the ASI 4346 is the MP3 decoding capability. Within the last year, MP3 files have become commonly used in the professional broadcast market. The growth of the MP3 format is due to the ease of audio file transfer across radio stations and professional recording studios.

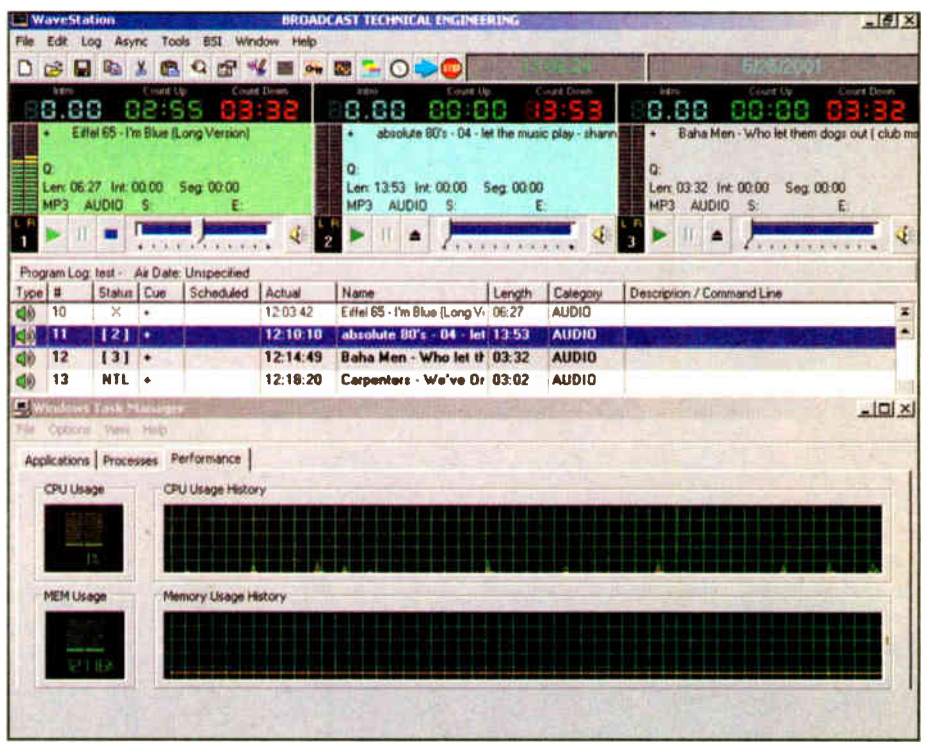
The sound card enables us to play both MP3 and MP2 files decoded on the card. The most significant advantage of on-board decoding is the freeing up of other system resources, namely the CPU.

Typical sound cards that do not decode the playback audio use upwards of 6- to 35-percent CPU time for audio playback. The ASI 4346 uses almost no CPU time, measuring only 1- to 2-percent use of the CPU while playing either MP3 or MP2 files.

This reduction in CPU time improves stability and performance of the automation system over time. Further testing showed three MP3 files could be played simultaneously and would only utilize 8- to 12-percent CPU time.

On a typical sound card, simultaneous playback of three MP3 files would

See BSI, page 57 ▶



BSI WaveStation

World Radio History

In the Spotlight!

The Broadcast Richardson name may be new to you, but its ideology is not...servicing the customer.

Broadcast Richardson has combined the technical, integration and consulting expertise of the recently acquired Broadcast Richmond with the wide product offering and unsurpassed service of Richardson Electronics.

Complementing its specialized, value-added services, Broadcast Richardson draws from its 200+ product lines to offer you true inter-product integration.

Broadcast Richardson is prepared to lead the way in the broadcast industry. Turn to us for your next component, equipment or system need!

- **Transmitter Components**
- **AM, FM, TV, HF Transmitters**
- **Studio Equipment**
- **Broadcast Systems**
- **Antennas**
- **Cable TV**
- **Microwave**
- **Satellite**
- **Webcasting**

Call Today!
800-348-5580

More than 60 locations worldwide to serve you.

E-mail: broadcast@re l.com

Internet:
www.broadcast-richardson.com

630-208-2200
Fax: 630-208-2550

© 2001 Richardson Electronics, Ltd. MK1089

A Featured Presentation...
From one of our 200 product lines!

SOUND DEVICES

Broadcast on the Internet! Broadcast Remotely!

Sound Devices presents the USBPre™ for computer-based audio production. The USBPre offers, in one compact package, all the hardware required for serious location recording, test and measurement, webcasting and music production.

BROADCAST RICHARDSON

Integrated Solutions

World Radio History

Products & Services SHOWCASE

We hang out with some of the best

O.C. White Co.

Mic Boom Arms

♦We hang with Frasier, Howard & Don...they get noise-free, precision mic placement

♦New model 14199 especially for studio integrators

♦Order from your favorite dealer today!

ALLIED INDEPENDENT REPRESENTATION

Contact Dave Burns (765) 935-3893

Email: dbocw@aol.com

AES3 Switching And Distribution

Made Easy with the *AES-200*

Features:

2 Input AES3 Switcher

2 XLR Outputs, 2 BNC Outputs

Remote Control/Status

Uses:

Main/Alt. Transmitter Audio Switching

Digital Studio Switcher

Professional Digital Dubbing

Broadcast Devices, Inc.

5 Crestview Avenue

Cortlandt Manor, NY 10567

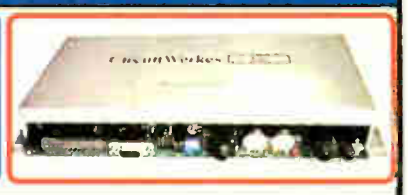
Tel. (914) 737-5032 Fax. (914) 736-6916

Website: www.Broadcast-Devices.com

bdi

Embedded Control Over Audio

Easily control network local inserts or Internet streaming!



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

Cool Problem Solver!

- Encodes 25, 35 & 25/35 combination tones (can also generate 50 & 75Hz or 19 & 27Hz).
- Tunable notch filters remove subaudible content from program material prior to tone insertion.
- Jumper-set precise tone duration.
- Model SEN-6 List Price only $399.00

*50 & 75 Hz tones may require external input filtering to avoid false tripping.

(352) 335-6555 http://www.circuitwerkes.com

CircuitWerkes, Inc. - Serving Broadcasting Since 1990

SIX MILLION THUNDERSTORMS HIT PLANET EARTH EVERY YEAR! IT TAKES ONLY ONE TO PUT YOU OFF THE AIR!

STATI-CAT

The STATI-CAT LIGHTNING PREVENTION SYSTEM provides a continuous, low-resistance discharge path for the static electric charge on tall structures. Dissipation points are 1/8" stainless steel rods.

This affordable and rugged system has proven itself in the field for over 15 years.

Cortana Corporation Inc.

Write or call for a free brochure and design

P.O. Box 2548, Farmington, N.M. 87499-2548

Toll Free Ph: 888-325-5336 • Fax: 505-326-2337

The Traffic C.O.P. for Windows™

The Affordable Alternative in Traffic Software

Once you view our FREE CD demo, we know you will want the software.

Still the same low price

Still the generous small market discounts

WALK

No Obligation!

See what the Traffic C.O.P. for Windows can do for you!

Call Now (800) 275-6204

www.broadcastdata.com

THE RAMSEY PX1

35W FM STEREO EXCITER/TRANSMITTER

- Frequency Agile – 87.5 to 108.0 MHz
- Digitally Synthesized PLL
- Temperature and VSWR Protected
- 120/240/12 VDC Power with Auto Battery Back-up

ONLY $1795.95

The PX1 was designed to fill the needs of the low power or community broadcaster. Set-up and use is fast and simple with just 5 buttons to access all parameters – power, frequency, modulation, and more. The 2-line vacuum fluorescent display gives you "at-a glance" verification of all important functions. The micro-controller continuously monitors frequency, temperature, deviation, etc. and makes subtle adjustments on the fly-like a "virtual" station engineer.

Two balanced inputs (XLR) are provided, as are inputs for SCA and RDS (BNC) RF Output connection is type "N", output power is adjustable from 1 to 35 Watts.

If you're setting up a new station, we also supply consoles, microphones, antennas, feedline, and more

AVCOM-RAMSEY TECHNOLOGIES

793 Canning Parkway • Victor, NY 14564

Order Toll-Free: 800-446-2295

www.highpowerfm.com • sales@ramseyelectronics.com

May we present...

YOUR AD

RADIO WORLD'S

Products and Services Showcase provides a perfect medium for marketing your products and services.

For more information, contact your sales representative or Simone Mullins at

703-998-7600, ext. 154

to request a media kit.

Have them your way!

ENCORE SERIES™ Multiple Amplifier Arrays

Configurable circuitry to fit your needs as:

Four or eight microphone or line independent channels, low noise balanced clean inputs, gains to 82dBm, active or transformer balanced +24dBM outputs, optional phantom power.

- Microphone, Line Buffer, Distribution and Level Matching Amplifiers.
- Sum and Difference Networks
- Level and Impedance Matching
- Interface Phone Lines
- Drive Headphones
- Make a simple Mixer or Press Box

ATI

AUDIO TECHNOLOGIES, INC.

328 W. Maple Ave., Horsham, PA 19044

(215) 443-0330 • Fax: (215) 443-0394

800-959-0307

http://www.atiguys.com

UL LISTED CE

Call or write for free detailed brochure

World Radio History

Scott

▶ Continued from page 43

traffic, sports, sounders and spots.

KLTY does remotes — anything from my house in a freak snowstorm to a recent remote from the Gospel Music Association show in Nashville.

All we need to control our Scott system is a laptop, touch screen and an Internet connection. It's as fast at the remote location as it is in the studio.

Two seconds

When we interviewed recording artists, they mentioned songs and we played it in 2 seconds from the remote. Jocks from other cities were amazed at what we do on remote with our Scott system.

We went through an ownership change and built new studios with another digital system. It had flat-panel touch screens, rack-mount cases, hard drives in the file server and workstations, digital ins and outs, but it was an announcer's nightmare.

Scott's touch screen frees air talent to be creative and concerned about content.

We had used a Scott system for six years and the whole staff — including our manager — lobbied to get one again. Scott hard drives are much faster and don't choke when we have lots of events happening.

The power supplies are redundant and right up front of the rack case, as are the air filters. The hardware is far superior to that of the other digital system.

Friends forever

On the technical side, KLTY sounds superb. All music is uncompressed at 44.1 kHz, just like the CD. Scott has the best CD ripper.

My producer can put a 5-minute song in the system in half a minute. We trim levels and segue points in a flash—all from our desk! It's amazing!

Production with the Scott Studios system is also a gem. It interfaces digitally with our Audicy, and spots and promos are done quickly and sound great.

The Scott system is ideal for the bustling atmosphere at KLTY — the easy-to-use interface, its outstanding remote capabilities, failproof hardware and excellent production capacity make it my best friend in the studio.

For more information contact Scott Studios in Texas at (800) SCOTT-77, fax (972) 620-8811 or visit the company Web site at www.scott-studios.com.

TECH UPDATE

Automation Control Fits in One Rack

The PSC II from **Broadcast Tools** is intended to control any automated scheduling devices — up to two RS-232 and/or RS-422 serial devices, 16 SPDT relays, auxiliary serial ports and relays — in a single rack space.

The system uses non-volatile memory for the two serial control ports and each of the 64-control macros may have up to 32 characters, including control characters.

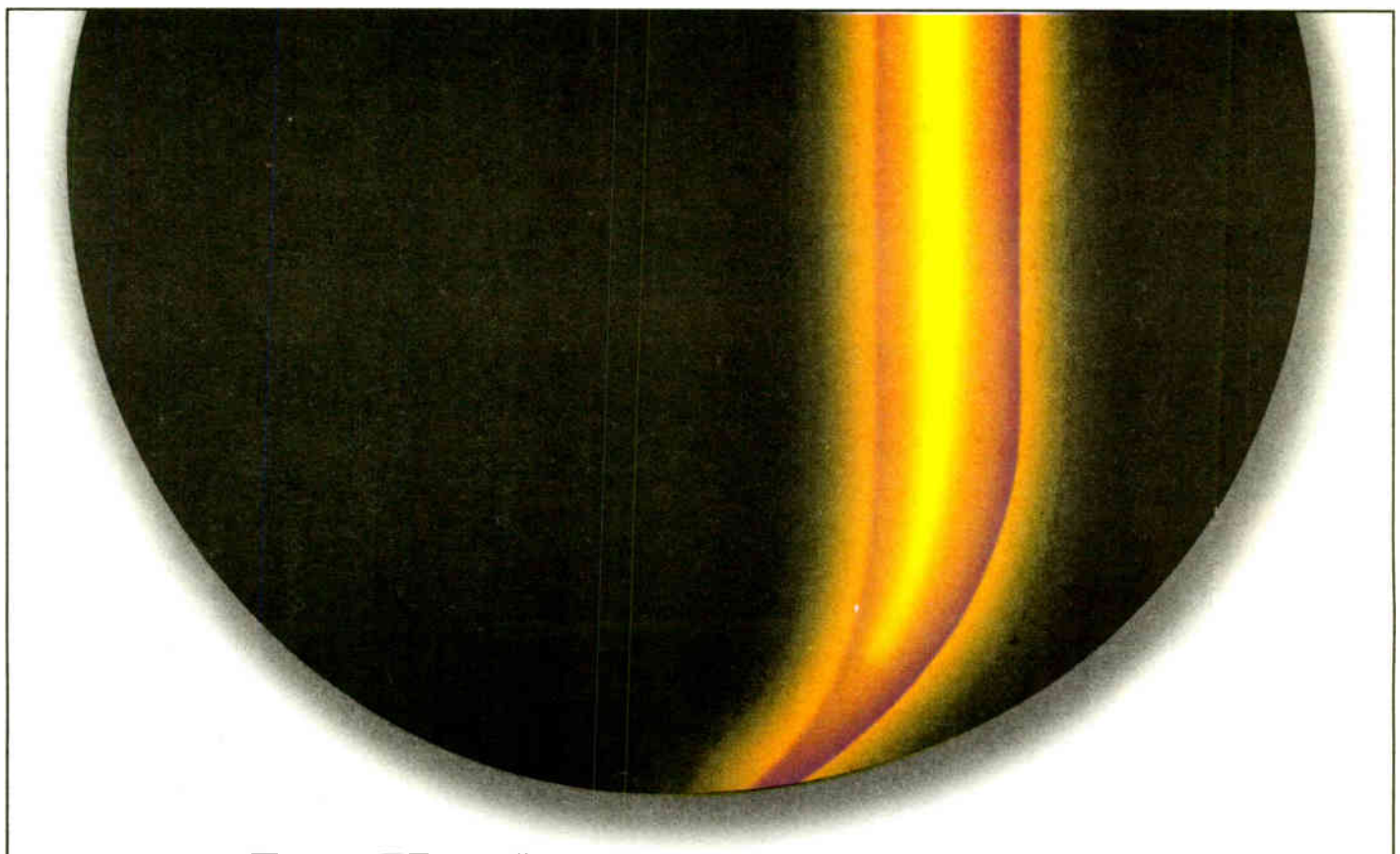
The unit's non-volatile memory also contains 199 scheduled events. Remote contact controllers can also be used for sequencing.

The system is furnished with a Garmin 12-channel GPS receiver with embedded antenna and it is equipped with an optional RS-485 GPS receiver input for receiver separation up to 1,000 feet.

The PSC II uses the GPS master time to determine when to execute scheduled events.

The unit is equipped with a 4800-baud RS-232 serial port with UTC time and date. The system can be programmed with any non-dedicated computer and communication software, such as ProComm, Windows Terminal or Windows 95/98/ME/XP/2000/NT.

For more information contact Broadcast Tools at (360) 854-9559 or visit the Web site at www.broadcasttools.com.



Radio Power

Talented people, working together, generate a lot of energy. We've combined the talents of Jones Radio Network and Jones Broadcast Programming into one powerful team.

Talents like Delilah, Lia, and Dave Wingert, who transform your nighttime into prime time. Like Chris Byron, Weissbach, and from Cox Radio, Clark Howard and Neal Boortz, who turn on talk listeners with help and humor.

Our music programmers empower hundreds of stations with everything from song-by-song music logs and consulting to live 24-hour formats.

We're Jones Radio Networks. Two talented programming teams are now one focused radio company, committed to helping you become a Radio Power.

Daypart Personalities · 24 Hour Formats · News & Talk · Music Programming & Consulting · Research & Prep

JONES RADIO NETWORKS

Seattle 800.426.9082 Denver 800.609.5663 New York 888.644.8255 jonesradio.com

JONES RADIO NETWORKS

World Radio History

Products & Services SHOWCASE

Remote tools

Designed by broadcast engineers for broadcasters, our flexible line of remote access and control equipment gives you elegantly fuinctional solutions to your control requirements without the need for "custom boxes".

DC-8A Dial-Up Remote Control
Controls and monitors 8 external devices from any touch-tone telephone with extremely flexible programmable features.

PSC Programmable Schedule Controller
Stores and controls up to 160 events with Hour/Minutes/Seconds, Day/Month/Year, or Day of Week with Daylight Savings Time correction. 20 SPST relays and/or 32 serial custom commands provided.

MSO-8 Control Panel
Provides a convenient way to add front panel control to our smaller profile products with eight LED-indicator-equipped switches.

SRC-1616L Serial Remote Control
Equipped with 16 opto-isolated and CMOS/TTL compatible inputs and 16-Relay (Form C) outputs that may be controlled from a host computer, or a pair of units can be used in a stand-alone configuration (relay extension cord).

MC-16 Telephone Hybrid/Coupler
Full featured telephone line coupler/hybrid provides 32 programs; 32 ASCII strings (DTMF to ASCII); 64 macros; 16 relays; auto answer; 4-digit access codes and much more.

BOS, ROS & PBB-24 Switch Panels
The BOS offers 12 N.O. dry contact switches with status LEDs in a desktop panel. The ROS is similar, but in a single-space rack unit. The PBB-24 provides 24 momentary buttons that can be programmed to output ASCII character strings.

SRC-8 Serial Remote Control
The SRC-8 provides a means of adding 8 channels of remote control to RF, wireline and fiber type STL systems and may also be used with dedicated modems (full & half duplex models).

SSM Smart Silence Monitor
Monitors any stereo or two independent monaural sources and generates alarms indicating loss of carrier when white noise and/or silence is detected.

UI-4II Universal Interface
Perfect for adding logic functions to mechanical switches/relays, adding remote functions to transmitter control/logic, detecting phone line "ring", etc.

Check out our web site for product information, list pricing and a list of distributors!

Internet: www.broadcasttools.com E-mail: bti@broadcasttools.com
Voice: 360 . 854 . 9559
Fax: 360 . 854 . 9479

BROADCAST tools inc.
Innovative Problem Solving Tool For Broadcast

Incredibly Flexible DTMF Control

The DS-8 Programmable DTMF decoder

Bridge the DS-8 across your audio source and get eight individually programmable relay outputs. Each closure is activated by its own code of one to four digits long. Each relay can be set up as momemtary, latching or interlocked with other relays! Use the DS-8 for remote audio switching, automated program recording, secured remote EAS control, you name it! Optional rack mount (pictured) is available. A two unit R.M. is also available.

NEW PROBLEM SOLVER!

The DS-8 features include:

- Each of the eight relays may be independently programmed for codes and mode.
- Program it with any DTMF phone.
- High quality metal enclosure can be wall or table mounted. Low cost (optional) rack mount available.
- All connections on screw terminals
- Retains settings after a power failure
- List price is just $299.

Call your favorite dealer or visit our web site for the latest info and downloadable tech manuals!

CircuitWerkes
3716 SW 3rd Place
Gainesville, Florida 32607
(352) 335-6555 / fax 380-0230
http://www.circuitwerkes.com

EVERY STATION WANTS:

RELIABILITY
DEPENDABILITY
STABILITY

THE PHANTOM DIGITAL AUTOMATION TRAFFIC & BILLING

REGISTER DATA SYSTEMS * 800-521-5222*
WWW.REGISTERDATA.COM

ERI ELECTRONICS RESEARCH, INC.

SHPX Series FM Antenna

For single or multiple frequencies
15 Mhz diplex bandwidth
120 kw input power rating

Accept No Imitations!

www.ERIinc.com 812-925-6000

Without Advertising A Terrible Thing Happens...

...NOTHING

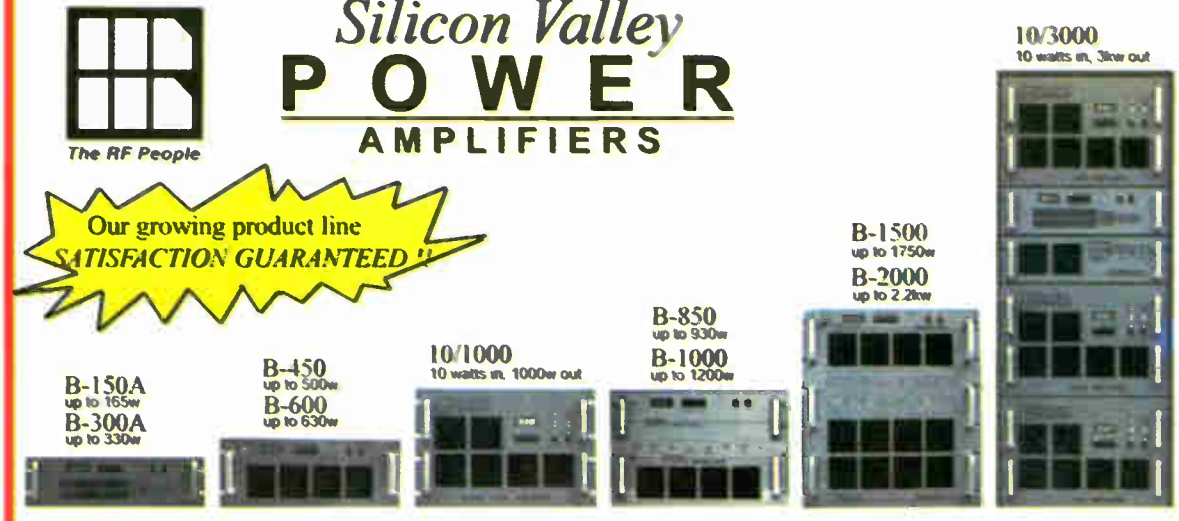
Place your ad here and reach key broadcast professionals with purchasing power.

Call your area sales representative or Simone Mullins @ 703-998-7600 ext. 154 to request a media kit.

The RF People

Silicon Valley POWER AMPLIFIERS

Our growing product line
SATISFACTION GUARANTEED !!



Phone:- (408) 986 9700 **e-mail:- sales@svpa.com**

Fax:- (408) 986 1438 Website:- www.svpa.com

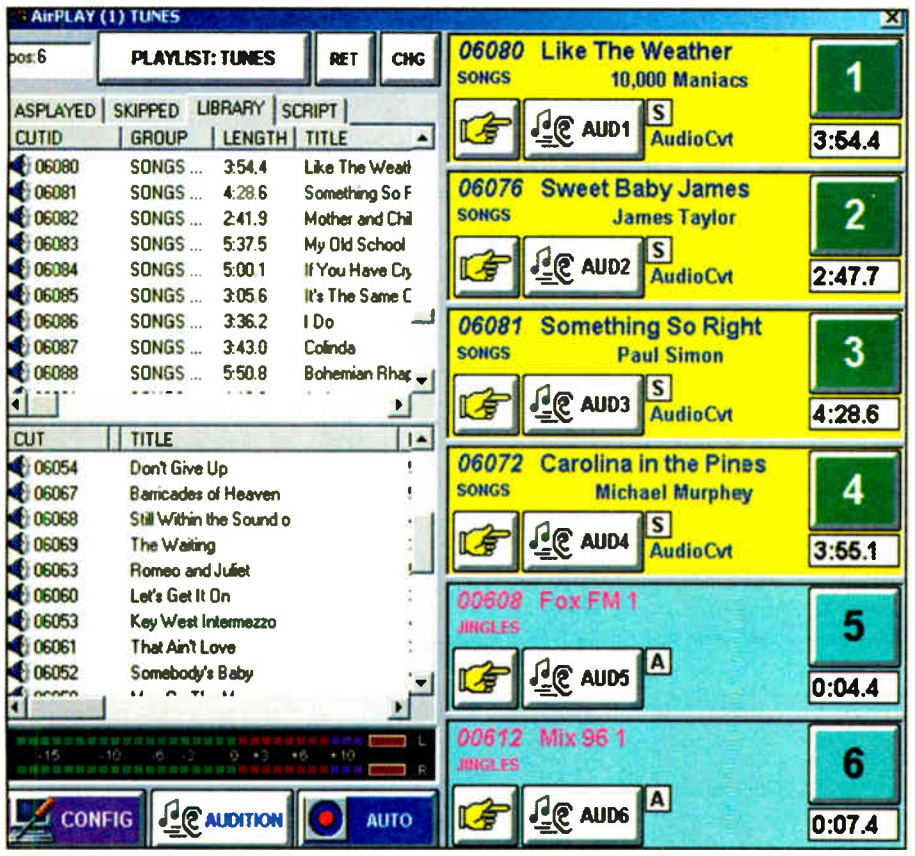
World Radio History

TECH UPDATES

Enco's DAD Set Up for AirPlay

The ENCO Systems AirPlay is a new software module and user interface for $DAD_{PRO}32$.

The module is a new virtual machine within an automation system intended for live-assist use.



With easy-to-read cut information and many customizable features, AirPlay is a fourth-generation user interface. Almost everything on the machine can be customized by the end user — from number of playback slots to the background and foreground colors of slots.

The module takes advantage of higher screen resolutions available on larger monitors and can be used on its own or together with other DAD machines such as Mini-Array or Script.

For more information contact ENCO Systems Inc. in Michigan at (800) 362-6797, fax (248) 476-5712 or visit the Web site at www.enco.com.

On Air Digital Explores Radio

On Air Digital USA released its latest version of the RadioSuite Explorer, featuring a point-and-click distribution function for multiple station applications.

The RadioSuite Explorer is a Windows-based application used by the RadioSuite System for database file management and creation. The application ties the Linux-based RadioSuite HD with off-the-shelf Windows editors, rippers, wire capture and MPEG encoder applications.

For more information contact On Air Digital USA in Texas at (972) 481-8700, fax (972) 481-9499 or visit the Web site at www.onairusa.com.

Encoda Manages Channels for Radio

DAL Channel Manager, from **Encoda Systems**, integrates large-scale radio operations of up to 1,000 channels and provides a flow of information between traffic, material management and on-air automation.

The system works with a range of broadcast hardware and provides a transfer of schedules and as-run logs with any Encoda traffic product via a local area network. The engine-client-server architecture automates master control switching and playback and allows schedule editing and viewing, media management and distributed control from any authorized workstation on the network.

The additional components include: Content Manager, a material preparation and ingest control system that times and catalogues all daily scheduled program and spot material; Ingest Manager provides a timed, automated recording and routing system of satellite feeds; LinkServer provides a near-real-time information exchange between DAL Channel Manager and Encoda traffic material management products; Remote Manager automation connects unmanned, regional sites with channels managed and controlled from the DAL Channel Manager system at a central location; Receiver Manager controls the positioning of satellite dishes and tuning of receivers for acquiring pass-through channels and Network Monitor supervises, controls and monitors media delivery for terrestrial, satellite and cable networks.

For more information contact Encoda Systems Inc. Colorado at (303) 237-4000, fax (303) 237-0085 or visit the Web site at www.encodasystems.com.

Jutel, IBM Enable DAB Automation

IBM and Classic FM, a British classical music radio station, selected **Jutel**'s RadioMan as a broadcast content management solution.

RadioMan is a scalable system that integrates and controls the different tasks involved in the management of radio stations including scheduling and program planning, content production and versioning and broadcasting of programs for multiple new-media channels.

RADIOMAN ~ by Jutel ~

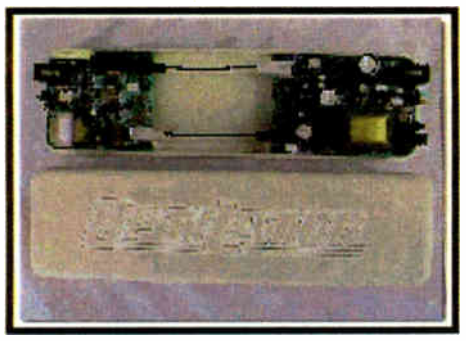
With the system, Classic FM aims to integrate its output across digital radio and new-media platforms, providing its listeners with increased access to program data and a range of new facilities, adding value for the listener while increasing the commercial potential of the station.

For more information contact Jutel Oy in Finland at +358 8 551 4801, fax +358 8 551 4810 or visit the Web site at www.radioman.fi.

World Radio History

Products & Services SHOWCASE

OPTILATOR™.com



Fiber Optic Modem Protection

Lightning Protection that keeps on working!
Fiber optic protection impervious to Lightning.
You have read about it in Radio World Magazine
Milliamp gain on the POTS line. For more technical information call toll free 888-471-1038, phone: 727-548-5418. Call Gentner, Burk, Harris, BGS, Continental Wholesalers, or your local distributor. See our web page: http://www.optilator.com It is for real!

The Ultimate Lightning Protection!

S.C.M.S., Inc

Charlotte, N.C

25 Years of Service 1976-2001

- ✓Competitive Prices
- ✓Extensive Rental Fleet (RF Codecs Test Equipment, Audio)
- ✓Experienced Staff
- ✓Used Trade-Ins Welcomed
- ✓New and Rebuilt RF and Audio
- ✓Custom Studio Design and Furniture
- ✓Representing Over 600 Quality Manufacturers
- ✓Turnkey Installations Available

You Know We Know Radio

800-438-6040 • www.scmsinc.com • Fax 704-889-4540

REMEMBER THE *CORTANA* FOLDED *UNIPOLE ANTENNA?*
WE STILL MAKE IT WITH THE SAME HIGH QUALITY MATERIALS AND WORKMANSHIP.
IT FEATURES...

- **Broad Bandwith** *for better sound,*
- **Grounded antenna** *for lightning & static electricity,*
- **Eliminates Isocouplers** *in VHF & UHF antenna lines,*
- **Best Antenna For Directional Arrays.**

Also

Detuning systems for anything that distorts your AM coverage pattern: towers, power lines, tanks or any metal structure.

For information call, fax or write:

nott ltd.
4001 La Plata Hwy
Farmington, NM 87401
phone 505-327-5646 fax 505-325-1142

Affordable Custom Broadcast Furniture

Designed, Constructed, Delivered and Installed by

STUDIO TECHNOLOGY

TEL: 610-640-1229
FAX: 610-296-3402

email: sales@studiotechnology.com
web: www.studiotechnology.com

32 Pennsylvania Avenue, Malvern, PA 19355

THE COST EFFECTIVE ALTERNATIVE TO MANUFACTURER SERVICE

SERVICE, REPAIR & CALIBRATION

- STL's • RPU's • TSL's
- Exciters • Optimods
- AM/FM Monitors
- Remote Control Systems

SPECIALIZING IN EQUIPMENT BY

- Belar • Marti
- Moseley
- McMartin
- TFT
- And others...

WE ALSO PROVIDE

Free, over-the-phone technical assistance
STL loaner/rentals
PCL 505 Certification

SQUARE ONE TECHNICAL SERVICE

2198 Hubbard Lane, Grants Pass, OR 97527

(541) 471-2262

Summit Voicetracking Services

851 Tucker Rd. #37 Tehachapi Ca. 93561 (661)822-4754
www.summitvoicetracking.com

Top 100 Market Talent
America's Best Talent At or BELOW Minimum Wage*

Any Station, Any Format, And Daypart!
We have the BEST Talent You'll EVER find in one place. Whatever Format you need Voice tracking Talent for WE'VE GOT IT!

Local Daily Shows
Local Weather, News, Community Info, Your PSA's, ...Our Voice, Your Show!

Monthly Specials
Check out our Website for a new special every month!

Easy Contracts
Monthly, Quarterly, 6-Month, or Annual Contracts Make Hiring Your Next Talent Easy!

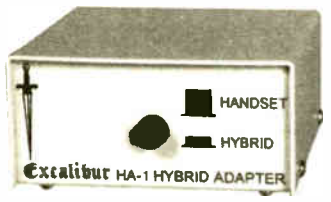
Market Exclusivity
We will never place our Talent in the same Market twice. Call to book your favorite Talent Before you hear them across town!

No Hassel
No Sick Days, Vacation, Pay Raises, No Shows, Whining, or Botther. Everyday you'll recieve your tracks via the Net HASSEL FREE!

Call Today For Your FREE Media Kit and Demo
(661) 822-4754
Or check us out online at
www.summitvoicetracking.com
Depending on Market

Excalibur Electronics

HA-1 Hybrid Adapter



The HA-1 Hybrid Adapter allows you to use your favorite broadcast hybrid with almost any telephone — old, new, single line, multi-line, etc. Since the HA-1 hooks up through your telephone instrument's handset connector, no connection to the telephone line is needed. With the HA-1's front panel push-button out, your telephone functions normally. With the button pushed in, the handset is disconnected and your hybrid is now on line; nothing could be simpler or easier. The performance of your hybrid will be the same as it would be if hooked up directly to a C.O. line.

EXCALIBUR ELECTRONICS, INC., CHANTILLY, VIRGINIA
Call your favorite radio broadcast dealer today for Excalibur products!

Efficient Effective Affordable

RADIO WORLD'S
Products and Services Showcase provides a perfect medium for marketing your products and services.

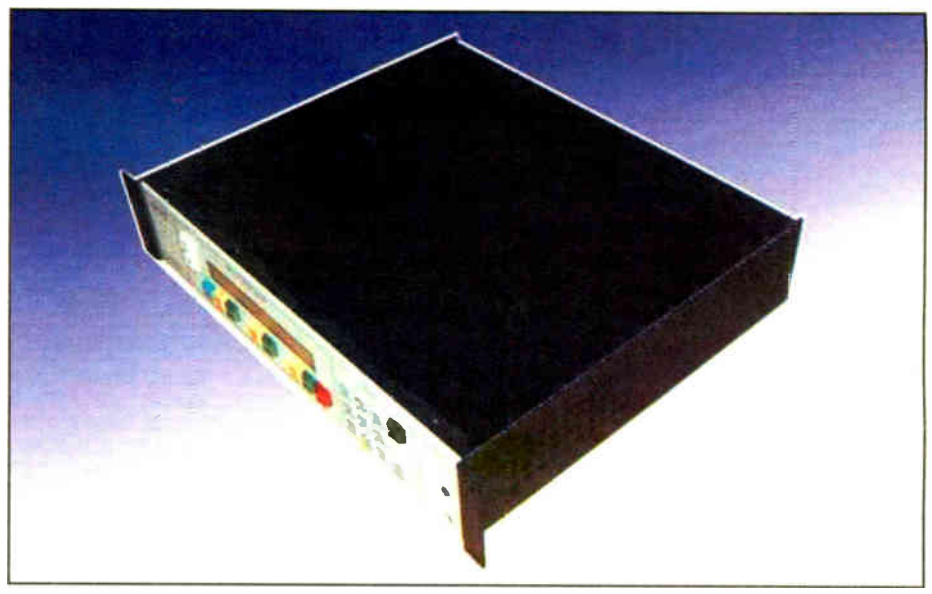
For more information, contact your sales representative or Simone Mullins at
703-998-7600, ext. 154
to request a media kit.

Radio World

World Radio History

TECH UPDATE

Arrakis Creates Maximum Automation



DL4-Max from **Arrakis Systems** features a two-studio system for on-air and production, satellite and hard-disk automation, live assist, one-week automation scheduling, voice tracking and segue editing for hard-disk automation.

The system also includes one-week timed record schedule with switcher for news. The DL4-Max can import traffic and music schedules and export play logs.

The unit includes a seven-channel satellite switcher, seven-input record switcher and a front-panel pushbutton control.

A one-year warranty on the hardware and 90 days or 300 minutes of phone training are included with the purchase of the system.

The DL4-MAX is available in several configurations, which include 210 hours of storage capacity and playback control from the front panel or from console closures.

For more information contact Arrakis Systems in Colorado at (970) 224-2248, fax (970) 493-1076 or visit the Web site at www.arrakis-systems.com.

BSI

▶ Continued from page 50

use approximately 40-percent CPU time. Even with the fastest CPU on the market, a card with onboard decoding capabilities is the preferred means to decode and play audio files.

Play 'em all

Very few sound cards on the market are capable of simultaneously playing four different streams in stereo. The ASI card performs this function effortlessly. The card is also capable of recording while playing.

The advantage of on-board decoding is the freeing up of other system resources, namely the CPU.

Another advantage of the ASI 4346 is that it utilizes relay and trigger logic capabilities. This reduces the number of audio cards needed from four cards to one and reduces the need for other trigger and relay devices for a complete automation system. The end result is better performance, less peripheral slot usage on a motherboard and easier installation. This application is worthwhile in all market applications.

Broadcast Technical Engineering plans to utilize the ASI card with our BSI WaveStation installations. The ASI 4346 audio card is an effective solution to improve the efficiency and performance of our WaveStation Automation systems.

For more information contact BSI in Oregon at (888) 274-8721, fax (541) 338-8656 or visit the Web site at www.bsiusa.com.

AudioTX Communicator Software ISDN and IP Network audio codec for Windows 98/NT/2000 ● Uses Standard Sound and ISDN cards
● Connects to all other MPEG 2, MPEG 3 and G.722 codecs
● Ideal for Studio or On-the-road use in a Laptop

ISDN & IP PC AUDIO CODEC

Key Lock Version $725, Dongle Version $790

AudioTX Communicator is big on audio quality, reliability and ease of use - but low on price.

As an ISDN codec, Communicator offers MPEG 2, MPEG 3 and G.722 coding plus G.711 telephony and connects in mono or stereo to all other MPEG 2, MPEG 3 and G.722 codecs for remote broadcast, STL, voice-over work, reporting and news-gathering.

As an IP-based codec, Communicator works over any IP-based network - from Ethernet to ATM or a Satellite link, Leased-line connections or even over the internet using ADSL, DSL, Cable Modem or other high speed connection.

All you need to get connected is a standard Sound card and an ISDN card installed in your PC or Laptop, plus AudioTX Communicator.

Audio TX Communicator

Download a FREE, fully working trial version today.

www.musicamusa.com

Tel: 732-739-5600

Email: sales@musicamusa.com

Distributed exclusively in the Western Hemisphere by MUSICAM USA

World Radio History

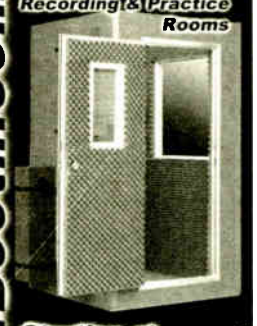
BROADCAST Equipment Exchange

"Broadcast Equipment Exchange" accepts no responsibility for the condition of the equipment listed or for the specifics of transactions made between buyers and sellers.

ACOUSTICS

Want to Sell

AcousticsFirst™ Toll Free 888-765-2988
Full product line for sound control & noise elimination.
www.acousticsfirst.com

VocalBooth.com
Multi Purpose Recording & Practice Rooms

Starting at $1499
Affordable Portable 4x4, 6x6 & larger
(541)330-6045

AMPLIFIERS

Want to Sell

Crown stereo power line, $195. J Price, 214-321-6576.

ANTENNAS/ TOWERS/CABLES

Want to Sell

240' ROHN 80 @ HARDWARE AVAILABLE @ INSTALLATION AVAILABLE @ 870-972-5418.

AM GROUND SYSTEMS: Reliable, On-time Installation, Quality Workmanship, Ground System Evaluation & Repair. www.amgroundsystems.com, 1-877-766-2999.

TOWER SITE 2000 COMPLIANCE
Antenna site signs
Registration signs
FCC-OSHA tower signs
Tower site products
610-458-8418
www.antennaID.com
Antenna ID Products

Dielectric 3-5/8" motorized four port coaxial switch . Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

Shively FM 6810-4R-DA, 4 bay, full wave with radomes, 30' long, good for 98.7 ro 102.7 mHz, pole mount, $5000 FOB Colorado Springs. Jim Bruneau, KGFT, 6760 Corporate Dr, #340, Colorado Springs CO 80919. 719-531-5438 x124.

Want to Buy

FM antenna to work on 88.3 mHz. Bill Lacy, Star Radio, 6910 NW 2nd Terrace, Boca Raton FL 33487. 561-912-9002.

RW Online

AUDIO PRODUCTION

Want to Sell

Presonus ACP22 stereo compressor/limiter/gate, new, $235; Auditronics stereo sliders model 340-560 +extender boards 110EX6-2-A & 110-EX9-2-A, BO; Fostex line amp model 5030, 8 channels, $195; Aiwa cassette deck model AD6900 MK II, $750; Otari auto locator CB111, $195; Altec AM-FM receiver M-725A, $195. J Price, 214-321-6576.

Gentner Digital Hybrid III; Musicam USA Prima CDQ 110, 20 kHz stereo bi-directional codec. James Phillips, WZOM, 301 Third St, Defiance OH 43512. 419-782-8591.

Digigram PCX80, excellent high end audio card, 8 outs or 4 stereo outs, AES/EBU in/out, stereo or 2 mono in, used in Multi-track & automation, w/manuals, driver disk, breakout cable, $2500/BO. Frank Hertel, WPSR, 8611 Slate Rd, Evansville IN 47720. 812-963-3294.

Space is available!
For more information, call 1-800-336-3045, ext. 154.
Radio World

AUTOMATION EQUIPMENT

Want to Sell

The Auto-Mate: Automation software for Windows. Exceptional value. Free trial. Auto-matesystems.com. 503-769-2886.

DCS Dos-based digital audio system. Great for audio storage & playback. Would make a great simple replacement for carts at a small, limited budget operation. Dewayne Forbis or Chris Jessie, WLOC, POB 98, Horse Cave KY 42749. 270-786-4400.

Digilink III Systems (2) complete with cables & manuals, currently operating & will be avail on 5/15/01, BO. Angie Sugalski, WCN, POB 444, Spartanburg SC 29304, 888-989-2299.

UDS On-Air Digital System. Upgraded in 2000 with OAS software for log generation & automation interfacing. Would make great back up for existing UDS system or would be great, light automation system for station on small budget. Dewayne Forbis or Chris Jessie, WLOC, POB 98, Horse Cave KY 42749. 270-786-4400.

BAI automation live assist with (2) Revox r-r, cart carousel, 6' Gates rack, very good condition, $800. John Wilsbach, WMSS, 214 Race St, Middletown PA 17057. 717-948-9136.

Broadcast Tools PSC, version C programmable schedule controller & USC-16 Universal satellite channel controller, brand new, never used, $500. Mike Moore, WLOE, Eden, North Carolina. 336-627-9563.

CART MACHINES

Want to Sell

Instacart 48 tray units. One mono, one stereo with spare trays. Removed from Format Sentry automation system last year, BO. David Lurtey, WBJU, 1700 Wade Hampton Blvd, Greenville SC 29614. 864-370-1800, ext 2734.

COMPLETE FACILITIES

Want to Sell

NEW OR USED COMPLETE PACKAGES
STUDIO/STL/TRANSMITTER/ANTENNA OR ANY COMBINATION OF ABOVE
-LEASE OPTIONS-
-EMERGENCY RENTALS-
-REMOTE BROADCAST RENTALS-
SCMS, Inc. (800) 438-6040
"You Know We Know Radio"

CONSOLES

Want to Sell

Wheatstone 3224 console. Excellent condition. bkbirge@unity.ncsu.edu. 919-835-9767.

Vestax PMC-15mkII; Autogram 8 channel on-air console. Don Noordyk, WSHN, 517 N Beebe St, Freemont MI 49412. 231-924-4700.

Auditronics 800MI or 8005I, modules or replacement hybrids. Jim Nelson, KFLR, 702 E Thunderbird Rd, Phoenix AZ 85022. 602-978-2035.

Gatley 16 x 8 audio board with quad monitoring XLR concenters on all inouts, outputs, 4 effects returns with EQ, EQ on every channel, in a custom console, $500. Art Baker, Broadcast Productions of America, 804 E 38th St, Indianapolis IN 46205. 317-925-7371.

Harris Stereo 80, 8 mixer-rotary pots, fair cond, $1800 +shpg. Joseph Bahr, WVIS FM, POB 6556, San Juan PR 00914. 787-725-3732.

Quantum QM-168 & QM-120, 16 x 8 audio board with patch bay & console, this is a recording console, $3000. Art Baker, Broadcast Productions of America, 804 E 38th St, Indianapolis IN 46205. 317-925-7371.

Shure M-267, 5 channel mic/line, mixer, rackmounted, gd cond, will pay to ship, $325. D. Meyer, Santa Barbara CA, 805-962-8273.

Want to Buy

Auditronics Airmaster 90 console. Parts needed, Wheatstone part number is 390-003A. Dave Bear, KUBA, PO Drawer 232, Yuba City CA 95992. 530-673-1600.

MCI processor board PCA 2500-0611. J. Price, 214-321-6576.

LIMITERS/ AUDIO PROCESSING

Want to Sell

Orban Optimod 6200. Brand new, never used, factory-sealed carton. $5000. Compare. Mike Webb, KIRO, 206-283-0914.

CRL SG800, SMP 800, SEP 800, SPP 800, complete set. Don Noordyk, WSHN, 517 N Beebe St, Freemont MI 49412. 231-924-4700.

Orban 8000-A, $1600/BO +shpg. Joseph Bahr, WVIS FM, POB 6556, San Juan PR 00914. 787-725-3732.

Orban 8100A refurbished. James Phillips, WZOM, 301 Third St, Defiance OH 43512. 419-782-8591.

ProTools Mix 24 system. Complete system, almost new, $8500 including computer. Phil or Joel, The Production Block, 906 E 5th St, Austin TX 78702. 512-472-8975.

Want to Buy

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

MICROPHONES

Want to Sell

Altec 683B, $295; EV 654A, $125. J Price, 214-321-6576.

Want to Buy

GOLDEN MIKE ORIGINAL AWARDS WANTED. PAYING TOP DOLLAR! 615-352-3456, fax: 615-352-1922, email: billbryantmgmt@home.com

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

Shure SM5B microphone. B Giordano, WODS, 170 Soldiers Field Rd, Boston MA 02134. 617-787-7589.

RCA 77-DX, 44-BX, KU-3A's, WE-639's, On-Air & recording lights wanted, top dollar paid! 615-352-3456, FAX: 615-352-1922. E-mail: billbryantmgmt@home.com.

MISCELLANEOUS

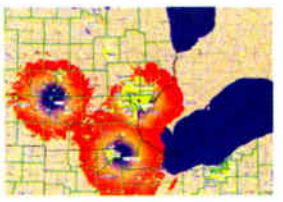
Want to Sell

mikeflags.com

Looking for parts to service various ancient equipment? Cart decks, r-r's, etc. We may have what you've not been able to find! Dewayne Forbis or Chris Jessie, WLOC, POB 98, Horse Cave KY 42749. 270-786-4400.

ROTRON BLOWERS AND PLATE BLOCKERS
new & rebuilt for Elcom, Harris, CCA, CSI, McMartin. Goodrich Ent. 11435 Manderson St. Omaha, NE 68164
402 493 1886 FAX 402 493 6821

Sony, professional CD Jukeboxes. Compatible with various systems, have 4. Will sell separately or all, great back-ups & for parts. Dewayne Forbis or Chris Jessie, WLOC, POB 98, Horse Cave KY 42749. 270-786-4400.

BROADCAST ENGINEERING CONSULTING SOFTWARE
Professional software packages for preparing FCC applications and plotting coverage. For Windows and NT.

✓ Create "real-world" coverage maps with Longley-Rice, TIREM, PTP & other models using polygon map features.
✓ Prepare concise FCC model coverage maps and allocation studies using USGS geographic map databases. Census calculations, tower and airport databases.
✓ Search for AM, FM, TV, DTV & LPTV channels with graphics oriented programs and FCC databases.
✓ Plot STL paths in 3-D using NGDC terrain databases... and more!
V-Soft Communications
800-743-3684
www.v-soft.com

Peter Dahl plate XFR, new never used, $5500 +shpg. Joseph Bahr, WVIS FM, POB 6556, San Juan PR 00914. 787-725-3732.

Want to Buy

TURNTABLES, PREAMPS, TONEARMS. 612-869-4963.

MONITORS

Want to Sell

Used Mod Monitors, McMartin & Belar. Many to choose from, tuned & calibrated on your frequency, full guaranteed. Goodrich Ent. 402-493-1886.

Delta digital antenna monitor up to 6 towers. James Phillips, WZOM, 301 Third St, Defiance OH 43512. 419-782-8591.

Yamaha MSP5 powered studio monitors, almost new, $400/pr +shpg. Joel Block, The Production Block, 906 E 5th St, Austin TX 78702. 512-472-8975.

RECORDERS

Want to Sell

Otari MX5050 BII, 2-track, varispeed, 15IPS, $895. Sam Bogart. 817-467-0158.

Sony MD5-B2P mini disc player, BO. Rob Lankton, Lankton Engineering, 5053 Ocean Blvd #18A, Siesta Key FL 34242. 941-544-6842.

Sony mini disc recorder/players (3); Panasonic SV-3800 DAT players (2). Don Noordyk, WSHN, 517 N Beebe St, Freemont MI 49412. 231-924-4700.

Tanberg Model 15-21 Series 15 reels (2), like new, need belts, $50/pr. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

Ampex AG350 mono r-r with Ampex solid state electronics & in a custom console, in gd cond, $500. Art Baker, Broadcast Productions of America, 804 E 38th St, Indianapolis IN 46205. 317-925-7371.

Ampex AG-440, mono r-r in Ampex console, $600. Art Baker, Broadcast Productions of America, 804 E 38th St, Indianapolis IN 46205. 317-925-7371.

Ampex AG440B 4 trk 1/2" r-r R/P in a custom console in gd cond, $1000. Art Baker, Broadcast Productions of America, 804 E 38th St, Indianapolis IN 46205. 317-925-7371.

Otari MX-5050BII & MX-55, (2) Otaris with very little use, call for complete details, $2500/both. Pat Appleson, Pat Appleson Studios, 757 SE 17 St, #358, Ft Lauderdale FL 33316. 954-587-7900.

Scully 280-B mono r-r in custom console in good cond, $800. Art Baker, Broadcast Productions of America, 804 E 38th St, Indianapolis IN 46205. 317-925-7371.

Tascam 688 multi track recorder mini studio; Fostex 16 trk r-r with remote keybad & all cables; 16 channel studio master mixer board. All in very good condition. James Sealey, WMAF, PO Box 621, Madison FL 32340. 850-973-3233.

Tanberg Model 15-21 Series 15 reels (2), like new, need belts, $50/pr. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

REMOTE & MICROWAVE

Want to Sell

Gentner TS612 with 2 phones. Don Noordyk, WSHN, 517 N Beebe St, Freemont MI 49412. 231-924-4700.

REMOTE EQUIPMENT RENTAL
Silver Lake Audio
(516) 763-1776
silverlakeaudio.com

World Radio History

REMOTE & MICROWAVE (cont.)

WE RENT FOR LESS
Hotlines — FM Exciters
Zephyrs — STL's
Nexus — FM Pwr Amps
Audio — Test Equipment
If we don't have it, we will get it!
SCMS, INC. (800) 438-6040
"You Know We Know Radio"

Marti RPT-30 RPU transmitter on 455.800, $1000. Rob Lankton, Lankton Engineering, 5053 Ocean Blvd #18A, Siesta Key FL 34242. 941-544-6842.

Burke TC-8, $1000. Joseph Bahr, WVIS FM, POB 6556, San Juan PR 00914. 787-725-3732.

Conex Celljack in very good condition, $175. John Wilsbach, WMSS, 214 Race St, Middletown PA 17057. 717-948-9136.

Moseley 606C, tested on your frequency. James Phillips, WZOM, 301 Third St, Defiance OH 43512. 419-782-8591.

REPAIR SERVICES

DENON
CD CART PLAYERS
DN-950FA, DN-951FA,
DN-961FA
REFURBISHED W/90 DAY WARRANTY
PRO DIGITAL INC.
610-353-2400
SALES@PRODIGITALINC.COM

SATELLITE EQUIPMENT

Want to Sell

SATELLITE C/Ku gear, www.daveswebshop.com.

STATIONS

Want to Sell

AM/FM Combo in Southwest Missouri. 25,000 watt FM, 1,000 watt Daytime AM. Owner will carry note. 417-326-6445.

Want to Buy

AM or FM station located in RI, MA or CT area. Non commercial or commercial. No station to small, will consider partnership. Michael Cardillo, 151 Morgan St, Cranston RI 02920. 401-942-8341.

TEST EQUIPMENT

Want to Sell

Ampex 300E vacuum tube voltmeter, $30; B&W Nidek 400 distortion meter, $20; Bellatine Labs Model 314 electronic voltmeter, cord cut, $20; Beta Scope non destructive thickness gauge, $30; Eico 250 AC VTVM & amp, $20; Electronic Designs model 100 electronic voltmeter/ohmmeter, $25; GC Electronics 36-616 CRT tester & rejuvenator FC & BW, manual & case, $15; HP 330C distortion analyzer, $25 ea; HP 400D (4) vacuum tube voltmeter, $40/all 4; NRI model 12 vacuum tube voltmeter, $25; Weston Instruments model 1240 tester, $20. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

IFR 1200S service monitor/spectrum analyzer, $6000. Rob Lankton, Lankton Engineering, 5053 Ocean Blvd #18A, Siesta Key FL 34242. 941-544-6842.

Tektronix 7L14/7L18 spectrum analyzer, $4500/BO. Rob Lankton, Lankton Engineering, 5053 Ocean Blvd #18A, Siesta Key FL 34242. 941-544-6842.

Tektronix digital multimeter DM 501A, $150; Tektronix digital multimeter DM 502A, $150; Eico 150 solid state signal tracer, $100; Nuvistors (assorted), $25. J Price, 214-321-6576.

Want to Buy

Potomac Instruments FIM-71, FM/VHF field strength meter. Rick Levy, Broadcast Signal Lab, LLP, 64 Richdale Ave, Cambridge MA 02140. 617-864-4298.

TRANSMITTERS

Want to Sell

BE FM-30, 30KW FM. Continental Communications. 314-664-4497. Email: contcomm@fiastl.net.

Continental 315-R "Power Rock" pulse modulated 5KW AM transmitter. Continental Communications. 314-664-4497. Email: contcomm@fiastl.net.

CONSULTANTS

EVANS ASSOCIATES
Consulting Communications Engineers
FCC Applications • Design • Field Engineering • Tower Detuning
Upgrade & Relocation Studies • AM Directional Array Tuning & Proof
EXPERTS IN:
TV • DTV Transition • FM • Directional Antennas • RF Exposure
210 S. Main St., Thiensville, WI 53092. (262) 242-6000. FAX (262) 242-6045
http://www.evansassoc.com Member AFCCE

Consulting Communications Engineers
EMC Test Lab
• FCC Applications and Field Engineering
• Frequency Searches and Coordination
• AM-FM-CATV-ITFS-LPTV
• EMC Test Lab-FCC and European (IEC)
OWL ENGINEERING, INC.
E-mail: info@owleng.com 1-800-797-1338 Fax (763) 785-4631
8899 Hastings St NE, Minneapolis, MN 55449 (763) 785-4115 Member AFCCE

T. Z. Sawyer
Technical Consultants
www.sawyer.com
AM-FM-TV-LPTV
• FCC Applications & Exhibits
• Experimental Authorizations
• AM Directional Antennas
• High Power Antenna Arrays
• Frequency Studies
• Class Upgrades
• STL Applications
• Station Inspections
1-301-913-9287
FAX: (301) 913-5799
5272 River Rd. #460, Bethesda, MD 20816

Herb Kravitz Broadcast Engineering
Contractors/Consultants
AM~FM
Professional Technical Support
Comprehensive Field Service
phone 609-347-4821
fax 609-347-6397
hkradio@msn.com

PC - SOFTWARE
AM FM TV Search Programs
Signal Mapping—STL Paths
RFHAZ—US Census PopCount
FAA Tower—Draw Tower
Doug Vernier
Engineering Consultant
1600 Picturesque Drive
Cedar Falls IA 50613
VSoft
800-743-DOUG

System One Communications
Broadcast Constructors & Consultants
Houston, Texas
888-625-5649
- AM-FM Site Construction Specialists
- Complete Tower Service
- Antenna & Transmission Line Diagnostics
- Custom Studio Designs & Furniture

MUNN-REESE, INC.
Broadcast Engineering Consultants
AM - FM - TV
P.O. Box 220, 100 Airport Dr.
Coldwater, MI 49036
517-278-7339 or Fax 517-278-6973
wayne@munn-reese.com

GRAHAM BROCK, INC.
BROADCAST TECHNICAL CONSULTANTS
Full Service From Allocation to Operation AM/FM/TV/Al 'X Services:
Field Work;Antenna and Facilities Design
Over 35 years engineering and consulting experience
912-638-8028
202-393-5133
www.grahambrock.com

MULLANEY ENGINEERING, INC.
Consulting Engineers
•Design & Optimization of AM Directional Arrays
•Analysis for New Allocation, Site Relocation, And Upgrades
AM-FM TV LPTV
Wireless Cable
(MDS/MMDS/ITFS/OFS)
•Environmental Radiation Analysis
•Field Work
•Expert Testimony
9049 Shady Grove Court
Gaithersburg, MD 20877
Phone: (301) 921-0115
Fax: (301) 590-9757
email: mullengr@aol.com

FM FREQUENCY SEARCH
$99
FM APPLICATIONS - $1,199
Amendments & Upgrades
Field Work • Site Construction
MX Resolutions • Petitions
Coverage Maps - $39
MBC Consulting
(800) 219-7461
www.mbcradio.org

dataworld
Market Analysis
Engineering Software
Ethnic/Demographic Data
Custom Full-color Mapping
Sales Marketing Packages
www.dataworld.com
800-368-5754
info@dataworld.com
fax: 301-656-5341

M Celenza
Communications Consultants
TV-$550; LPTV-$550; FM-$250;
AM Freq Searches-Call for quote
Applications, Amendments & Upgrades
Antenna Structure Registration,
Field Work Avail
631-928-0077
Fax: 631-928-1905

Communications Technologies, Inc.
Broadcast Engineering Consultants
AM FM TV LPTV
Cellular/PCS Site Analysis
P.O. Box 1130, Marlton, NJ 08053
Phone: (856) 985-0077
Fax: (856) 985-8124
Internet: commtechrf.com
Clarence M. Beverage
Laura M. Mizrahi

FASTER...
MORE ACCURATE RADIO COVERAGE
• Real Time 3-D Displays
• Interference calculations
• Cost effective mapping
• Fully integrated databases
• Used by the FCC
• Latest standards built-in
RADIO SOFT
Visit us on the the web at www.radiosoft.com
109 West Knapp Ave. • Edgewater • FL • (386) 426-2521

Radiotechniques
402 Tenth Avenue - PO Box 367
Haddon Heights, NJ 08035
Consulting Engineers
Voice 856-546-9008 - Fax 856-546-1641
E-Mail ted@radiotechniques.com
AM - FM - TV
FCC Applications
Directional Antennas
Field Work
Transmitter Plant Design
Acoustics and Sound
Edward A. Schober, PE
Principal Engineer
Member AFCCE

AM Annual
NRSC Spectrum
Measurements
Low Cost Flat Fee
We make trips all across the U.S.
Call to get on our schedule.
T and T Measurements
800-687-9161
email: ltaft@2fords.net
tandtmeasurements.com

PROMOTE YOUR BUSINESS!
SPACE IS AVAILABLE!
Call Simone Mullins for more information at 1-800-336-3045, ext. 154.

IMAGINE
Your Ad
Here!
Call Simone Mullins
for details
703-998-7600, ext. 154.

Structural Analysis
ERI
Electronics Research, Inc.
7777 Gardner Road
Chandler, IN 47610
(812) 925-6000
www.ERIinc.com
REGISTERED PROFESSIONAL ENGINEERS
STRUCTURAL ANALYSIS
ERI Incorporated 1943
TOWER REINFORCING

DISTRIBUTOR DIRECTORY

The following distributors serving the broadcast industry would be glad to help you with any of your requirements.

CORNELL-DUBILIER MICA CAPACITORS
FROM STOCK
JENNINGS VACUUM CAPACITORS
FROM STOCK
JENNINGS VACUUM RELAYS
SURCOM ASSOCIATES
2215 Faraday Ave., Suite A
Carlsbad, California 92008
(760) 438-4420 Fax: (760) 438-4759
e-mail: link@surcom.com web: www.surcom.com

...Some people get hooked on broadcast equipment big time...they think about it...dream about it...talk about it all the time...for example...us...
RADIO! The beat goes on!
CROUSE-KIMZEY OF ANNAPOLIS
tops in broadcast equipment
1-800-955-6800
ask for Kathleen
kkannapolis@worldnet.att.net

Save Time & Money!
Call us for your
Broadcast Equipment needs
We provide Studio & Transmitter packages
New & pre-owned equipment
AM, FM, LPTV
530-542-2591
Your Solution to Broadcast Equipment requirements!
Kidd COMMUNICATIONS

STUDIO FURNITURE?
STURDY CUSTOMIZED SYSTEMS FOR EVERY NEED AND BUDGET!
WHY PAY ANY MORE?
SPACEWISE®
800-775-3660
info@spacewise.com

World Radio History

POWER TUBES REBUILT
1/2 THE COST OF NEW!
ECONCO
TEL: 800-532-6626
INTL: +1-530-662-7553
FAX: +1-530-666-7760
www.econco.com
SE HABLA ESPAÑOL

TRANSCOM CORP.
Serving the Broadcast Industry Since 1978
Fine Used AM & FM Transmitters and Also New Equipment

300W	FM	1988	Harris FM300K Solid State - Single Phase
1 KW	FM	1981	Harris FM 1K - Single Phase
1 KW	FM	1968	Harris FM 1H - Single Phase
1 KW	FM	1978	RCA BTF 1E1
2.5KW	FM	1984	Harris FM 2.5K Single Phase
2.5KW	FM	1980	Harris FM 2.5K Single Phase
2.5KW	FM	1979	Harris FM 2.5K Single Phase
2.5KW	FM	1976	Collins 831D Single Phase
3.8KW	FM	1994	Continental 814J Solid State
5 KW	FM	1967	Collins 830E
5 KW	FM	1985	BE FM5A
5 KW	FM	1979	Harris FM 5K
6 KW	FM	1994	Henry 6000D
10KW	FM	1974	Harris FM10H/K

1KW	AM	1976	Harris MW1
1KW	AM	1981	Harris MW1A
1KW	AM	1981	Collins 828C-1 (314R)
5KW	AM	1980	Harris MW5A
10KW	AM	1983	Continental 316F
10KW	AM	1986	Harris MW10B
25KW	AM	1989	Nautel Ampfet 25 Solid State
25KW	AM	1985	CSI T-25-A1
50KW	AM	1978	Continental 317C-1
50KW	AM	1982	Harris MW-50B

Miscellaneous Equipment:
Belar AMM2B Mod. Monitor (1200 KHz)
Belar FM Mod. Monitor
Belar FM Stereo Monitor
CRL SMP-900 AM Stereo Matrix Processor
CRL MOF 800 Stereo De-Emphasis Filter
CRL SEC 800 Compressor

2655 Philmont Ave #200, Huntingdon Valley, PA 19006
800-441-8454 • 215-938-7304 • FAX No. 215-938-7361
VISIT OUR NEW INTERNET SITE: www.fmamtv.com
SEND YOUR E-MAIL REQUESTS TO: transcom@fmamtv.com

POWER Eimac YOU CAN TRUST
ISO 9001 Certified
The Choice of Successful Broadcasters Since 1934
NEW POWER TUBES
Triodes
Tetrodes
Pentodes
NEW SOCKETS & REPLACEMENT PARTS
Worldwide Availability
Made in U.S.A.
CALL 800-414-8823
Int'l (650) 592-1221
Fax (650) 592-9988
Visit our Web Site at www.eimac.com
CPI Communications & Power Industries Eimac division

TURNTABLES

Want to Sell

Technics SL1200mk2 T-T's (4) with extra styles. Don Noordyk, WSHN, 517 N Beebe St, Fremont MI 49412. 231-924-4700.

Space is available! To advertise, call 703-998-7600 ext. 154.

Looking to buy or sell used equipment?
You're in the right place!
Radio World Equipment Exchange
For more information, rates and dealines, call Simone at 1-800-336-3045, ext. 154.

EMPLOYMENT

HELP WANTED

SPORTING NEWS RADIO, America's #1 sports radio network, has an immediate opening for a broadcast engineer. Duties include proper installation and operation of broadcast equipment. Strong analytical skills, the ability to work in a team environment and the ability to communicate well are all pluses. Associate or Bachelors' degree in a technical field with a minimum 5 years experience in broadcast engineering required. SBE certification and/or FCC license preferred. If you are a bright broadcast engineer looking for a unique challenge, this is your chance to join Paul Allen's Wired World. Fax your resume to: 847-400-3033 Attn: Human Resources or e-mail resume to: mlobus@sportingnews.com. EOE.

Run your employment ad on our web site for only $2 per word!
Call Simone Mullins for all the details at 703-998-7600, ext. 154.
www.RWonline.com

POSITIONS WANTED

Cool, refreshing & extremely satisfying. That's Me! Hard working, goal oriented radio grad looking to raise your rating & explode into the business. Sterling, 918-245-6545.

Radio Announcer! Will work any shift in any state to get On-Air. Interested in Jazz, Blues or News. Charlie, 918-599-9964.

Recent grad from American Broadcasting School looking for On-Air/production. Experienced in Cool-Edit Pro. Willing to relocate. Bobby, 405-737-0694 or 580-444-2627.

Willing to relocate. Extreme confidence. There's nothing I feel that I cannot do. Natural talent. Trained & ready. On-Air or production. Terry, 405-751-0335.

Yes I'm exciting, Yes I'm talented, Yes you want me! Fresh young radio grad seeking a position in music, production or promotions. Darrell, 918-830-6004 or 918-591-9426.

American Broadcasting School graduate with four years job related experience. Seeking a position in production, on-air talent. Stephen Hufford, 972-216-1566.

Attention Program Directors. Rookies talent seeking a position at your radio station. Willing to relocate. Mark, 972-235-2804.

Cute + spunky = CoCo. A little spice to add to your station. Willing to relocate. Recent A.B.S. graduate. 214-335-8599.

Extremely diligent, intelligent, hardworking & most of all dependable. Experienced with leadership positions. Call Kris, 817-233-4842.

If they keep score, I can call it! Quality play-by-play voice. Hard working with live experience. Broadcasting school graduate, willing to relocate. Jon, 405-359-9184/parr21@yahoo.com.

King Norm, your new voice of authority & image expert. Top production skills. Will relocate. Call 972-254-0877 for an aircheck.

Looking for a young energetic voice to spice up your station? Look no further! Rookie talent willing to relocate. Can handle any format. Jeremie, 918-486-4937.

Molly Knott & I'm Knott on your radio, but I should be! On-air, copywriting, production experience. Will relocate. 817-923-2924.

Recent ABS graduate seeking immediate employment in radio Can work on-air, news dept or production. Absolutely willing to travel. Can work all formats. Landon, 405-275-9552.

ABS graduate seeking radio job anywhere in Central U.S. Production, traffic, news, or sales departments. Misty, 405-769-4607.

Eager & hard-working ABS grad would like the pleasure of working for your station. News, DJ, traffic. Janelle, 405-619-0692 or malaya626@yahoo.com.

Harris MW-10-B, 10KW pulse modulated AM transmitter. Continental Communications. 314-664-4497. Email: contcomm@fiastl.net.

Harris MW-50-B 50KW pulse modulated AM xmtr. Continental Communications. 314-664-4497. Email: contcomm@fiastl.net.

BEXT See a world of RF www.bext.com

1976 Sparta 602/625 25kW transmitter, excellent condition & working order. All documentation available. Jim East, WOLC, 11890 Crisfield Lane, Princess Anne MD 21853. jeast@wolc.org.

Gates BC-1T AM transmitter on 930 kHz, worked when removed from service. BO. Will Vos, Cascade Radio Group, 2219 Yew St Rd, Bellingham WA 98228. 360-734-9790.

OFF THE AIR?
Emergency Back-up Rentals
FM Exciters - STL's -
FM Pwr Amps - Antennas -
Studio & Test Equipment
SCMS Inc (800) 438-6040
"You Know We Know Radio"

Small AM transmitters, very little use, great for backup, emergency use or small AM station night transmitter. Dewayne Forbis or Chris Jessie, WLOC, POB 98, Horse Cave KY 42749. 270-786-4400.

Harris 10-H, 10 kW FM, call for price; Wilkinson 2500E, 2.5 kW, $3500 +shpg; CCA 1000-D, 1.0 kW FM, $3500/BO +shpg; Moseley 505/C STL xmtr. Joseph Bahr, WVIS FM, POB 6556, San Juan PR 00914. 787-725-3732.

Harris MX-15, recently aligned, $2000/BO +shpg. Joseph Bahr, WVIS FM, POB 6556, San Juan PR 00914. 787-725-3732.

FOR THE BEST PRICE
& 24 Hr service on transmitting tubes & sockets/parts, new & rebuilt call Goodrich Ent. at 402-493-1886 day or night, FAX 402-493-6821.

AMPEREX, EIMAC, SVETLANA 3CX400A7/8877, 3CX3000A7, 3-500ZG, 4CX250B, 4-400, 4CX400A, 807, 833C, ETC. Westgate 800-213-4563.

TUBES, Eimac, Svetlana
800-430-6683
Fax: 905-469-4291
www.hard-to-find.net
ams@hard-to-find.net

LPB low power AM xmtr, about 5-15 watts. James Phillips, WZOM, 301 Third St, Defiance OH 43512. 419-782-8591.

Gates 10 AM transmitter tuned 1460. Must pick up in NW Florida, just off I-10. $700/BO. Art Dees, WZEP, POB 627, DeFuniak Springs FL 32435-0627. 850-892-3158.

RCA BTF5ES2. Moved from Class A to C, removed from service, solid transmitter, $10,000. Larry Hestand, KGVE, POB 451749, Grove OK 74345-1749. 918-786-2211 or Cell #: 918-260-6200.

Want to Buy

Cash paid for FM translators or FM translation CP's. Call Bill at 561-912-9002.

1, 2, 5 kW FM transmitters. Bill Lacy, Star Radio, 6910 NW 2nd Terrace, Boca Raton FL 33487. 561-912-9002.

TUBES

Want to Sell

D And C Electronics Co.
NEW TUBES
We have the alternatives for all your needs, at the lowest prices, direct from OUR STOCK!!!
Svetlana
EIMAC, SVETLANA, PRO-TEK®, EEV and many others.
(352) 688-2374
PH: (800) 881-2374
FAX: (352) 683-9595
Eimac SE HABLA ESPAÑOL
WE EXPORT
VISA/MASTERCARD ACCEPTED

Radio World
5827 Columbia Pike, 1st Floor • Falls Church, VA 22041
PHONE: 703-998-7600 • FAX: 703-671-7409

Classified Advertising Rates
Effective January 1, 2001

	1x	6x	13x	26x
1-9 col inch (per inch)	$95	90	85	80
10-19 col inch (per inch)	$80	70	60	50
Distributor Directory	$120	115	110	105
Professional Card	$90	85	80	75
Station/Studio Services	$175	150	125	100
Classified Line Ad	$2/word			
Blind Box Ad	$15 additional			

Call Simone Mullins, Ext. 154, Classified Ad Manager, to reserve space in the next issue. Use your credit card to pay, we now accept VISA, MASTERCARD and American Express.

World Radio History

ACTION-GRAM

EQUIPMENT LISTINGS

Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations *only*. All other end users will be charged. This FREE service does not apply to Employment Help Wanted ads or Stations For Sale ads. These are published on a paid basis only. Send your listings to us by filling out the form below. Please be aware that it takes one month for listings to appear. The listings run for two consecutive issues and must be resubmitted in order to run again. Thank you.

Please print and include all information:

Are you currently a subscriber to Radio World?
❑ Yes ❑ No

Signature _____ Date _____

Contact Name _____

Title _____

Company/Station _____

Address _____

City/State _____

Zip Code _____ — _____

Telephone _____

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Broadcast Equipment Exchange on a **paid** basis. Line ad listings & display advertising are available on a per word or per inch basis.

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
_____
Price: _____

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
_____
Price: _____

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
_____
Price: _____

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
_____
Price: _____

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
_____
Price: _____

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
_____
Price: _____

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
_____
Price: _____

*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.

Broadcast Equipment Exchange
PO BOX 1214, Falls Church, VA 22041 · Tel: 800-336-3045 · Fax: 703-998-2966

ADVERTISER INDEX

This listing is provided for the convenience of our readers.
Radio World assumes no liability for inaccuracy.

PAGE	ADVERTISER	WEB SITE URL
3	360 Systems	www.360systems.com
52	Allied	www.ocwhite.com
55	Antex Electronics	www.antex.com
38	Aphex Systems	www.aphex.com
48	Armstrong Transmitters	www.armstrongtx.com
52	ATI	www.atiguys.com
26	Audio Processing Technology	www.aptx.com
2	Audioarts Engineering/Wheatstone	www.wheatstone.com
57	audioTXCommunicator/Musicam USA	www.musicamusa.com
64	Auditronics/Wheatstone	www.wheatstone.com
52	Avcom-Ramsey Technologies	www.highpowerfm.com
28	BALSYS	www.balsys.com
41	Belar	www.belar.com
60	Bext	www.bext.com
12	Bradley Broadcast	www.bradleybroadcast.com
52	Broadcast Data Consultants	www.broadcastdata.com
52	Broadcast Devices, Inc.	www.broadcast-devices.com
51	Broadcast Richardson	www.broadcast-richardson.com
21	Broadcast Software Int'l (BSI)	www.bsiusa.com
54	Broadcast Tools	www.broadcasttools.com
32, 33	BSW	www.bswusa.com
4	Burk Technology	www.burk.com
43	Cartworks/DBM	www.cartworks.com
52	Circuit Werkes	www.circuitwerkes.com
54	Circuit Werkes	www.circuitwerkes.com
7	Comrex	www.comrex.com
1	Continental Electronics	www.contelec.com
52	Cortana	cortana@cyberport.com
46	Crown Broadcast	www.crownbroadcast.com
6	Denon Electronics	www.del.denon.com
20	Digigram	www.digigram.com
54	Electronic Research Inc.	www.eriinc.com
17	ENCO Systems	www.enco.com
11	Energy-Onix	www.energy-onix.com
42	Eventide	www.eventide.com
56	Excalibur Electronics	See ad for contact information
28	Ghostwriters	www.radio-mall.com
22	Harris	www.harris.com
19	Inovonics	www.inovon.com
49	Inovonics	www.inovon.com
56	J Squared Technical Service	jsquared@cdsnet.net
53	Jones Radio Networks	www.jonesradio.com
16	Kintronic Labs	www.kintronic.com
29	Klotz Digital AG	www.klotzdigital.com
10	Logitek	www.logitekaudio.com
8	LPB Communications	www.blue5c.com
39	Lynx Studio Technology	www.lynxstudio.com/rw
25	MediaTouch	www.imediatouch.com
37	Neutrik USA	www.neutrikusa.com
56	Nott Ltd.	www.nottltd.com
9	Omnia, a Telos Company	www.omniaaudio.com
14	On Air Digital USA	www.onairusa.com
31	Prime Image	www.primeimageinc.com
47	Prophet Systems Innovations	www.prophetsys.com
41	QEI	www.qei-broadcast.com
27	Radio Computing Service (RCS)	www.iselector.com
5	Radio Systems	www.radiosystems.com
54	Register Data Systems	www.registerdata.com
56	S.C.M.S., Inc.	www.scmsinc.com
36	Scott Studios	www.scottstudios.com
15	Sierra Automated Systems	www.sasaudio.com
54	Silicon Valley Power	www.svpa.com
20	Sine Systems	www.sinesystems.com
23	SMARTS Broadcast Systems	www.smartsbroadcast.com
56	Stormin Protection Products	www.optilator.com
56	Studio Technology	www.studiotechnology.com
56	Summit Voicetracking Services	www.summitvoicetracking.com
35	Syntrillium Software	www.syntrillium.com
13	Telos Systems	www.zephyr.com
45	Telos Systems	www.telos-systems.com/smartsurface
63	Wheatstone	www.wheatstone.com

World Radio History

◆READER'S FORUM◆

Polka

Someone sent me a copy of Ken R.'s article on polkas (RW, May 23, "All Great Polka Hits, All the Time"). Thank you for writing about polka music. I would like to share some information with you.

First of all, there are many more than 75 stations playing polka music in this country. We have close to 100 radio shows listed in the Midwest alone. They are listed in the Cleveland Polka Association monthly newsletter.

There is a 24-hour-a-day, 7-day-a-week Internet cybercast of Polka music at *www.247polkaheaven.com*. I am the director of 247 and we are averaging more than 200,000 hits each month.

We originate in Cleveland. We went on the air Nov. 20, 2000, and our numbers grow each month by word of mouth. We have more than 30 IJs (Internet Jockies) broadcasting their programs and we touch on all polka styles and nationalities. I receive e-mails from around the country and the world each day.

I am amazed every day. I was happy to read about WTKM and really respect what they are doing in Hartford, Wis.

Please let them know that they are not the only ones playing polka music, almost full-time. In fact, 247 is playing polkas full-time. Spread the word. Thanks for your interest in polka music.

Ray Zalokar
Director
247Polkaheaven.com
Cleveland

Grown-up interns

I really enjoyed the article about the comeback of Doug "Greaseman" Tracht, *and* Alan Peterson's "internship" ("Lending a Hand in the Grease Pit," RW, April 25).

While Alan may well be the world's only 43-year-old radio station intern, I'm most likely one of the only 46-year-old radio station interns. Yup, I do my thing at KMFB(FM) Mendocino, Calif.

I do occasional fill-ins for Sister Yasmin, the reggae jock there, and I've done engineering during the holidays, spent hours cleaning up the whole studio complex with a shop vac, straightening things out and such, and I've used Radio World as a source to find vendors for equipment at KMFB.

I do a little bit of everything, the usual intern stuff. And once in a while, the manager, Bob Woelfel, lets me go on the air after the reggae show to do my own music show if I want.

I have radio in my blood. I started as a boy in the mid-1960s, with my AM radio, staying up late at night listening to exotic stations from across the country. I learned later it was called DXing, and I had more than one tired and groggy school morning because of it.

In 1979 I went up to KFJC(FM) in Los Alto Hills, Calif., where I learned about radio and its mixed personalities, human and otherwise. I did several shows during my time there.

I love everything about radio. I've been a DJ, a member of the engineering department and assistant production director, written record reviews for the music department, done plenty of production — all of it with carts, reel-to-reel and splicing tape.

I've climbed the transmitter tower to set up RPU links for a remote broadcast. I've performed routine maintenance on various pieces of station equipment, resoldered many broken headphones, and spent hours under the console in the production studio upgrading the wiring. I've designed fliers for the promotion department, gone out and put them up, and even sold some underwriting.

Three years ago, I even (cough) helped start up the now defunct Free Radio Point Arena, and I designed and built their Web site. However, I moved north up the coast, before they actually went on the air.

As you can see, I love radio too! I just want to thank you, Alan, for sharing *your* love of radio with us, through your articles in Radio World.

Derek Hoyle
Intern-Contractor
KMFB(FM)
Mendocino, Calif.

Rookies seeking employment

As a public radio oldies DJ on WRDV(FM), Hatboro, Pa., I read RW selectively; the technical stuff is of limited interest, and largely incomprehensible, to me.

Nonetheless I've been enjoying it for years, and today happened to glance at the Positions Wanted section (April 25, "Employment").

I was struck by the earnest desperation of these young people to enter our business: "Green broadcasting grad" ... "Rookie willing to travel" ... "Great ambition, fresh from school." Thirteen out of 16 total.

As one who started in 1961, stopped when reality set in in 1962, and returned "publicly" in 1988, I have to wonder: Do these energetic youngsters have any clue how difficult success in this business is to achieve? Do they know that all their hard-won creatively is likely to be sacrificed on the Altar of Format?

That only at (or near) the top is even a middle-class wage to be found?

I do not profess to be a student of radio today, or yesterday. But I learned four decades ago that you have be both very good and very lucky to succeed in radio. Not just to exist, but to succeed. Not being sure I was either, I chose to return to college after a fun year at WSSV in scenic Petersburg, Va.

It's exciting to be where these young people are. Daunting too. I wish them success, but also wish them a Plan B.

Rich Reinhart
Staff Announcer
WRDV(FM)
Hatboro, Pa.

Support Radio Regional Events

Gimme an "R!"
Gimme an "A!"
Gimme a "D-I-O!"
What does that spell?
Internet? Uh, no. Television? Nope.
Multimedia? We don't think so.
It spells *RADIO*, by gawd — a focus of the greater telecommunications industry that seems to be getting lost in the shuffle when it comes to trade shows. "R" could also stand for "regional."

The American Radio Manufacturers Association held its annual regional expo June 4 and 5 in Columbia, Md. This is a true regional radio show for the East Coast crowd.

Organizers Vince and Robin Fiola of Studio Technology put together the gathering, featuring 19 exhibitors, educational breakout sessions, a combined SBE regional meeting, rides in iBiquity Digital's field-test van and free food throughout the day (the best way to attract engineers).

According to Fiola, about 60 people attended the combined Baltimore-Washington-Fort Meade, Md. SBE meeting. Overall, about 200 people showed up for the two-day event.

"The advantage of the regional show is that it's less expensive for people to travel to see a lot of the same things they'd see at the bigger shows," said Fiola. "There's much more one-on-one time with manufacturers, and you are not standing four to five people deep in a line of folks waiting to ask a question."

With fewer engineers working in our industry in general, and station management seemingly more hesitant to give a cluster's chief engineer time to attend a big show, the regional show is part of the answer.

A regional gathering provides educational workshops at a venue close to home. At this year's ARMA show, the SBE agreed that attendance at some sessions would be applicable for SBE recertification. A two- or three-hour road trip is much easier on stretched station budgets than a round-trip plane fare.

Plus, you can stop at the Sunoco and get a whole *bag* of pretzels (a Big Grab even!) instead of the tiny pretzel portion on an airline flight.

"The concept of ARMA is to move it around," said Fiola. "We'll be doing a show in the Baltimore/Washington area for as long as they'll have us. We are open to going south and to the northeast and west for more regional shows."

Radio and regional fit together.

— RW

Write to Us

RADIO WORLD
READER'S FORUM
P.O. Box 1214
Falls Church, VA 22041

radioworld@imaspub.com

—EDITORIAL STAFF—

Paul J. McLane	ext. 117	Editor
Sharon Rae Pettigrew	ext. 126	Managing Editor
Leslie Stimson	ext. 129	News Editor/Wash. Bureau Chief
Laura Dely	ext. 198	Business Editor/GM Journal
Bernie Cox	ext. 183	Associate Editor/Studio Sessions
Thomas R. McGinley	—	Technical Adviser
Alan Peterson	—	Technical Adviser
T. Carter Ross	ext. 120	Editor-In-Chief (International)
Marguerite Clark	—	Editor (International), Milan
Christine Joaquim	ext. 138	Managing Editor (International)
Rogelio Ocampo	ext. 121	Latin America Editor in Chief
Karina Gerardi	ext. 137	Latin America Editor
Renata Beck	ext. 196	Latin America Assistant Editor
Michael Hedrick	ext. 146	Editorial Assistant
Linda Sultan	ext. 141	Editorial Assistant
Peter Finch	—	Editorial Assistant, Milan

—EDITORIAL CONTRIBUTORS—

W.C. Alexander, Bruce Bartlett, Frank Beacham, Read Burgan, Harry Cole, Troy Conner, Vince Ditingo, Mark Durenberger, Ty Ford, Scott Fybush, Harold Hallikainen, Paul Kaminski, Peter King, Mel Lambert, Mark Lapidus, Carl Lindemann, Naina Narayana, Tom Osenkowsky, Ken R., Rich Rarey, Bruce Rogow, Randy 5tine, 5teve Sullivan, Travis the V/O Guy, Barry Umansky, Tom Vernon.

Radio World
Vol. 25, No. 14 July 4, 2001

Telephone: (703) 998-7600 • Business Fax: (703) 998-2966 • Editorial Fax: (703) 820-3245
E-mail: radioworld@imaspub.com • Web site: www.rwonline.com

—ADVERTISING SALES REPRESENTATIVES—

US Southeast & Mid-Atlantic: John Casey	330-342-8361	Fax: 330-342-8362	e-mail: jdcasey@imaspub.com
US Northeast & Central: Sandra Harvey	765-966-0669	Fax: 765-966-3289	e-mail: ads4salesc@aol.com
US West: Dale Tucker	916-721-3410	Fax: 815-352-1698	e-mail: dtucker@imaspub.com
Classified Ads: Simone Mullins	703-998-7600 x154	Fax: 703-671-7409	e-mail: smullins@imaspub.com
Germany, Austria: Dagmar Hänle	+39-02-7030-0310	Fax: +39-02-7030-0211	e-mail: dhanle@imaspub.com
France: Silvia Di Stefano	+39-02-7030-0310	Fax: +39-02-7030-0211	e-mail: sdistefano@imaspub.com
European Sales Mgr., Africa, Middle East: Raffaella Calabrese	+39-02-7030-0310	Fax: +39-02-7030-0211	e-mail: rcalabrese@imaspub.com
Japan: Eiji Yoshikawa	+81-3-3327-2688	Fax: +81-3-3327-3010	e-mail: callems@msn.com
Asia/Pacific: Wengong Wang	+86-755-5785161	Fax: +86-755-5785160	e-mail: wwg@imaschina.com
Latin America: J.O. Lima e Castro	+55-11-3873-1211	Fax: +55-11-3673-1499	e-mail: limcas@uol.com.br

NEXT ISSUE OF RADIO WORLD JULY 18, 2001

For address changes, send current and new address to RW a month in advance at P.O. Box 1214, Falls Church, VA 22041. Unsolicited manuscripts are welcomed for review: send to the attention of the appropriate editor.

—ADMINISTRATION & PRODUCTION—

Stevan B. Dana	President/CEO
Carmel King	VP/Group Publisher
Marlene Lane	Editorial Director/COO
Chuck Inderrieden	CFO
Eric Trabb	Sales & Marketing Director
John Casey	Associate Publisher
Lisa McIntosh	Production Director
Annette Linn	Production Department Manager
Davis White	Production Publication Coordinator
Kathy Jackson	Ad Traffic Manager
Christopher Duerk	Senior Graphic Designer
Julie Wielga	Marketing Manager
Sheryl Unangst	Circulation Director
Robert Green	Circulation Manager
Alexander Sisson	Accounts Receivable

Radio World (ISSN: 0274-8541) is published bi-weekly by IMAS Publishing (USA), Inc., P.O. Box 1214, Falls Church, VA 22041. Phone: (703) 998-7600, Fax: (703) 998-2966. Periodicals postage rates are paid at Falls Church VA 22046 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 1214, Falls Church VA 22041. REPRINTS: Reprints of all articles in this issue are available. Call or write Joanne Munroe, P.O. Box 1214, Falls Church, VA 22041; (703) 998-7600; Fax: (703) 998-2966.

Copyright 2001 by IMAS Publishing (USA), Inc. All rights reserved.

—Printed in the USA—

World Radio History

Wheatstone

DIGITAL AUDIO NETWORK ROUTER

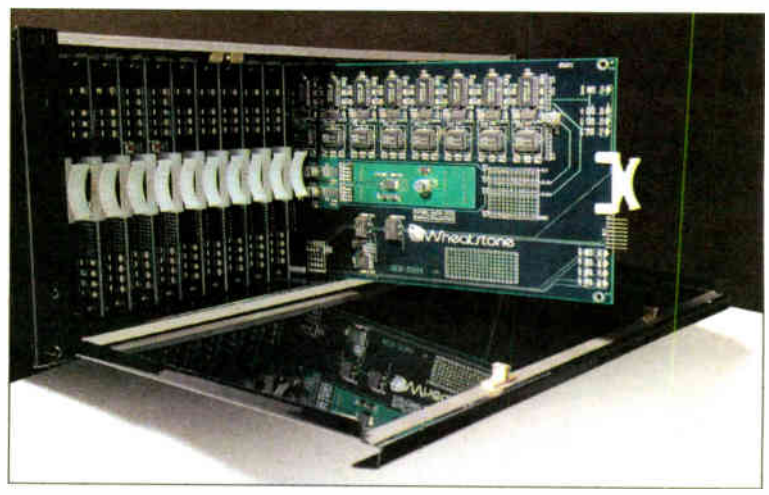
- *BI-DIRECTIONAL FIBEROPTIC OR CAT-5 INTERLOCATION CONNECTIVITY*
- *ALL DIGITAL DOMAIN AES SWITCHING*
- *ANALOG OR DIGITAL (AES SAMPLE RATE) INPUTS*
- *BOTH ANALOG AND AES DIGITAL OUTPUTS*
- *SERIAL CONTROL AND DISPLAY WITH WHEATSTONE CONSOLES*

THE 2001 MAKES AUDIO NETWORKING PRACTICAL. It's simple to install, easy to learn, and certain to reduce system costs. Compact enough for small applications, yet stackable for tremendous growth potential, it's design consists of 7"rackmount digital routing cages, each capable of handling 512 simultaneous audio channels on its backplane.

Units can be stacked to suit particular card complements (analog or digital input and output cards or optical network cards) but more significantly cages can be separated by great distances and network their audio through either bidirectional fiberoptic links or a single CAT-5 wire. **ONE INTERCONNECT DOES IT ALL:** 64 channels of simultaneous bidirectional digital audio, intercage communication, X-Y controller commands plus auxiliary RS-232 data streams. This single interconnect between your studio and central rackroom can save you tens if not hundreds of thousands of feet of wire in a typical installation.

The 2001's graphic based setup software is intuitive and easy to use, with all the authorization and security levels you could want. And of course we have a full complement of control panels and PC applications to choose from—all designed for straightforward operation and a rapid learning curve.

With 25 years of experience, Wheatstone has the infrastructure in place to help you build your OWN infrastructure. Contact us for answers.



MIXED SIGNAL SWITCHING is easily accomplished with a choice of AES digital or ANALOG 24-bit A>D input cards, and of course 24-bit digital or 24-bit D>A ANALOG output cards, all of which can be serviced from the front of the cage. All signals are routed entirely in the digital domain.

Wheatstone Corporation
tel 252-638-7000/fax 252-635-4857/sales@wheatstone.com
www.wheatstone.com
copyright © 2001 by Wheatstone Corporation
specifications and features subject to change without notice

World Radio History

THE AUDITRONICS TRADITION
Continues

OUR BRAND NEW 2600 SERIES is the PERFECT UPGRADE for those thousands of stations that have had AUDITRONICS consoles over the past thirty years. Designed for the **TIGHTEST** of BUDGETS, it is nonetheless the ***highest performance*** console Auditronics has ever offered!

A **MODULAR DESIGN**, the 2600 features twelve input channels, a monitor module with control room, studio, cue, headphone and talkback circuits, and an output module with PROGRAM, AUDITION, both pre and post fader MONO outputs, and independent meter selection. Optional line selector and tape remote modules are also offered.

This countertop design fits efficiently in only 25 by 26 inches of space, and like all our consoles is fabricated from steel to withstand the rigors of a broadcast environment.

tel 252-638-7000/fax 252-636-4857/sales@wheatstone.com
600 Industrial Drive, New Bern, North Carolina, USA, 28562

AUDITRONICS

www.wheatstone.com

copyright © 2001 by Wheatstone Corporation

World Radio History