

Talk Into the Mic

Buyer's Guide has the latest microphones, speakers and amps.

Page 41

Boston Takes N.Y.

How good is the Boston Acoustics Recepter Radio?

Page 22

Radio World

\$2.50

The Newspaper for Radio Managers and Engineers

April 7, 2003

INSIDE**NEWS & ENGINEERING**

▼ A small-group owner says IBOC is no cure for bad coverage.

Page 5

▼ War words: A book by Howard Blue looks back at radio's role in another conflict.

Page 20

▼ How our military trains those flying psy-ops broadcasters.

Page 24

**GM JOURNAL**

▼ Radio station licenses are up for renewal. Barry Umansky delves.

Page 31

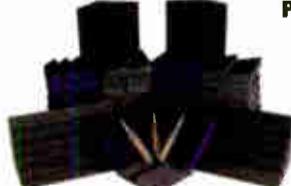
▼ Perspective on the NAB show from radio folks north of the border.

Page 35

**TIME TO ROOMINATE**

▼ A chief engineer in Wisconsin takes home a prize package from Auralex Acoustics.

Page 4



Sign Up For
NewsBytes
Weekly Digest at
www.rwonline.com

**'Kinstar' Antenna Nearly Ready?**

Top-Loaded Cage Monopole AM Antenna Field Levels Approach Those of a Conventional Quarter-Wave

by Randy J. Stine

BRISTOL, Va. Satisfied with data collected at a test site last fall, developers of the Kinstar low-profile AM antenna say they are moving forward with plans to begin selling the new technology in the United States.

Star-H Corp. and Kintronic Laboratories Inc. are partnering to develop a short electrically charged antenna suitable for applications where tower local zoning ordinances limit the height of new broadcast towers (RW, Jan. 1).

Field-strength measurements taken last

See KINSTAR, page 6 ▶

After the Fire on Mt. Washington

Page 3

NAB Honors John Reiser

WASHINGTON John Reiser recalls his days as an FCC field inspector with a chuckle.

Just an example: He once visited a southern Michigan radio station and discovered that parts of the two-tower array had been painted not with obstruction orange but with school-bus yellow.

Turns out the engineer had been supplied by his manager with paint on trade from a local hardware store. The engineer, however, was slightly color-blind.

True resource

Reiser can recite countless stories about poorly kept operating logs and defective remote control equipment.

After hundreds of facility inspections and regulatory meetings, he is being honored for his 39 years of service at the FCC with the NAB Engineering Achievement Award, given to industry leaders for significant contributions to the advancement of broadcast engineering. Reiser accepts the award this week at the Technology Luncheon in Las Vegas at NAB2003.

"John was a true resource for broadcasters during his career at the FCC," said John Marino, NAB vice president of science and technology. "He

See REISER, page 10 ▶

GREAT COMPANY**EXCELLENT PEOPLE****CELEBRATED PRODUCTS**

NAB
Booth N2403

IDT Continental Electronics
INTEGRATED DEFENSE
800.733.5011 www.contelec.com



FCC Makes It Easier to Go Digital

WASHINGTON AM and FM stations may now go digital without first applying for and receiving special temporary authority from the FCC. Under a new notification process, a station may simply write the commission a letter detailing the specifics of its digital operation within 10 days of beginning to transmit a digital signal to coincide with its analog signal.

Interim operation

Only Ibiuity Digital Corp.'s in-band, on-channel digital audio broadcasting system is approved for use in the United States.

Data the FCC needs in the notification letter include the date interim operation began; a certification that the IBOC facilities conform to the Ibiuity hybrid specifications; the name and telephone number of an engineer the FCC may call in the event of an interference complaint; transmitter power output and, if separate analog and digital transmitters are used, the power output for each unit; a certification that analog effective radiated power remains as authorized.

Also included must be a certification that the interim operation would not cause human exposure to levels

RF radiation above that allowed; any station that cannot certify compliance must submit an environmental assessment and may not begin IBOC operations until the FCC rules on the RF radiation levels.

If applicable, the letter also must include any power reduction in an AM station's primary digital carriers.

Sample letter

A sample notification letter is on the FCC's Web site at www.fcc.gov/mb/audio/digital.

The procedure is intended to help the agency monitor development of

terrestrial digital radio, including its technical impact on analog service.

STAs already granted for IBOC operations are good for six months. The FCC is requiring stations granted such authority to convert to the notification procedure before their STAs run out.

Stations implementing IBOC must broadcast the same programming on their analog and digital signals and use their licensed main antenna. The commission has not authorized interim operations that employ separate antennas; this notification process may not be used for those operations.

FMs may use the system, now branded as HD Radio, both day and night. AMs must restrict their IBOC operations to daytime hours. An AM station with authority to operate between 6 a.m. and local sunrise (pre-sunrise hours) and between local sunset and 6 p.m. (post-sunset hours) may operate its hybrid IBOC system during those periods.

A copy of the notification letter must be posted next to the station license and a copy retained in the station's public file. Notifications should be sent to Digital Radio Notification, 445 12th St., S.W., Room 2-B450, Washington, D.C. 20554.

— Leslie Stimson

Newswatches Page 7

NEWS

Kinstar' Antenna Nearly Ready?	1
NAB Honors John Reiser	1
FCC Makes It Easier to Go Digital	2
Maine Stations Recovering From Fire	3
Is There Anybody Out There?	4
IBOC: No Cure for Bad Coverage	5
Arbitron, Elephants Debated	7
Newswatch	7
Bid to Kill Maryland's Noncompetes Fails	8
War Boosts World-Band Sales	12

FEATURES

BBC Confirms Digital Commitment	14
Ankele at 80: Boards, not Bored	16
Workbench: Engineering True Confessions	17
What We Can Learn From DTV	18
People News	19
Blue Book Recalls Words at War	20
Annual AM NRSC Measurements	21
Boston Acoustics Takes New York	22
'Commando Solo' Back at Work	24
The Development of Wire Gages	26
Spectrum Policy: Property or Commons?	27

GM JOURNAL

License Renewal Is Tricky Biz	31
Smoothjazz.com Reverses Model	31
AM 770 Serves S.E. Montana	32
Web Radio Ratings	32
Canadian Attitudes to NAB Mixed Country Radio Faces the Music	35

BUYER'S GUIDE

Great River, Great Sound	41
WKSU On-Air With A-T Mics	43
Heil Sound Gives Bang for Buck	43

OPINION

52-54

THE AMAZING LITTLE MIXER



ALM

Routes any INPUT to any FADER...

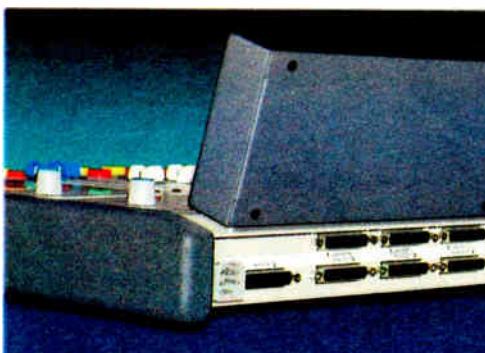
OR ANY INPUT TO YOUR MONITORS!
The new ALM-12d console from Auditronics combines the benefits of a router and a console—all into one cost effective package. It's got everything you need: twelve faders plus two caller faders, four mic pre-amps and of course control room and studio monitoring, built-in cue and headphone amplifiers, and a concealed headphone jack.

It's got the high end features too, like bright LED dot matrix source displays above faders and monitor pots, and 24 bit A>D and D>A ins and outs. Its AES digital inputs have sample rate convertors so it works

with virtually any digital source gear you have. It can run your source machines too—up to eight of them—all opto-isolated. It even has DSP digital metering that simultaneously displays VU columns and peak hold full scale digital so you can be assured of pristine performance. It has powerful caller tools that generate MXMs automatically, and you can program any of its four MXMs to be pre or post fader.

And because it's AUDITRONICS, it's built tough as steel, and will be easy to maintain.

DIGITAL CAN BE EASY—JUST CALL AUDITRONICS!



Digital so easy you don't install it—you CONNECT IT!

tel 252-638-7000/fax 252-635-4857/sales@wheatstone.com
600 Industrial Drive, New Bern, North Carolina, USA, 28562

copyright © 2002 by Wheatstone Corporation

AUDITRONICS
www.auditronics.com

Maine Stations Recovering From Fire

by Steve Jess

PORTRALD, Maine Citadel Communications station WHOM(FM) in Portland, Maine — "the largest radio station in North America" — is still recovering from a fire that knocked it off the air.

The station's transmitter was destroyed when two buildings on Mount Washington, N.H., burned on Feb. 9. A temporary replacement has restored service to most, but not all, of its vast coverage area. Two other stations were thrown off the air by the fire as well.

Aerial photographs show the burned-out shells of two buildings on the 6,288-foot peak, the highest point in New England. Several nearby structures were not damaged.

The fire was discovered at 4 p.m. A meteorologist and an intern from the Mount Washington Observatory, a weather monitoring facility on the peak, ventured outside to take readings, according to Scot Henley, marketing director for the observatory.

They heard the fire alarm ringing on the Power House building, which also housed the main and backup transmitters for WHOM, and saw that it was full of smoke. A few minutes later, the building was engulfed in flames. The fire spread to a smaller, adjacent building housing a standby generator.

Observatory staff fought the blaze with fire extinguishers, which proved

futile against the flames and 70 mile-per-hour winds, Henley said. The four people stationed at the observatory evacuated in a snow tractor, fearing a repeat of a fire in the 1940s that destroyed all buildings on the peak.

Burned itself out

When the observatory staff returned on Monday, Henley said, the generator buildings were still burning, and WHOM's standby antenna had been damaged, but no other structures were affected.

No one was hurt. The fire burned itself out by Tuesday. The location makes a response by firefighters impractical; and temperatures on the mountain are so cold that water won't flow in fire hoses.

Estimates put the total damage at \$1 million to \$2 million, said Herb Calvitto, a communications specialist with the state of New Hampshire.

Because of the remoteness of the location, kerosene generators power the transmitting equipment on the state-owned site. Calvitto, speaking for state authorities, said the initial investigation pointed to a generator as the cause of the fire. "It looks like one of the generators started an exhaust fire on the wall."

Kerosene is used because of extremely cold temperatures that would turn diesel fuel into jelly. "It's like the Antarctic up there," said Jim Von Dongen, spokesman for the New Hampshire Department of

Emergency Management.

The site houses antennas for two radio stations and a microwave relay for a third, as well as relays for telephone companies and repeaters for a host of federal and state agencies, Von Dongen said. The site has housed TV facilities as well, but the station is no longer on the mountain.

Temporary generators were hauled up the mountain, enabling two radio stations and several government agencies to resume service within two weeks. However, reconstruction of the site must wait until the weather becomes hospitable, probably in May, according to Tim Moore, WHOM's operations director.

Four days after the fire, he said, "The temperature on the summit was 35 below zero, and the winds were 87 miles an hour gusting to 101."

Broadcasters scrambled to find alternate ways to deliver signals to listeners. Moore said WHOM was back on the air three hours after the fire.

"One of our sister stations appears on two frequencies, 94.3 and 93.9, that's WCYY and WCYI ... We took the 93.9 frequency, which has a transmitter located in Litchfield, Maine," he said. Litchfield is about 70 miles east of Mount Washington.

"Within 24 hours after that, we were on from WBML's auxiliary site in New Gloucester, Maine, which basically took down ... three bays of their six-bay auxiliary antenna and put up a two-bay Shively."

By mid-March, WHOM had returned to the air from Mount Washington using its undamaged main antenna, a new transmission line and a 4 kW transmitter.

"We have, with the eight-bay Shively and the height of the mountain, reclaimed virtually all of our coverage area," Moore said.

Other stations affected

Generators that power the site were destroyed, affecting other stations as well.

Citadel's WPKQ(FM), based in Conway, N.H., uses a transmitter in a nearby building that did not burn. It returned to the air on Friday, Feb. 21 using a temporary generator. WPKQ rebroadcasts the programming of WOKQ(FM) in Portsmouth, N.H.

Portland news/talk station WLOB(FM), owned by Atlantic Coast Radio LLC, lost a microwave repeater that linked its Portland studio to its transmitter on Black Mountain, Maine.

Owner J.J. Jeffrey said that 48 hours after the fire, WLOB returned to the air using a Comrex Hotline POTS codec to relay audio to the transmitter. In late February, the Citadel stations were helping WLOB set up a temporary microwave feed to Black Mountain, bypassing Mount Washington, he said.

The station carries the same programming as WLOB(AM), which has "decent coverage" of the Portland area, Jeffrey said; but he was glad to get the FM signal back on the air.

The many public-safety services that occupy Mount Washington were back on by Feb. 21, according to Herb Calvitto.

See FIRE, page 10 ►

Hot Scene on Cold Mountain

The smaller burned-out building visible here is the "Old Power House," through which WHOM's main and standby transmission lines ran. The FAA and Yankee Microwave had equipment rooms here; it also housed a standby power generator.

WHOM's main tower with antenna is the ice-covered structure above. The small stick on the left corner of the small building is WHOM's standby antenna.

The larger burned-out building formerly housed TV equipment. The left section was the transmitter room, where WHOM's transmitter was located. The Alford free-standing tower is to the left of the TV building and was used for WMTW's standby antenna. At the bottom of the photo is the old base of WMTW's main antenna.

WHOM's transmitter is now in another building, not visible, along with Yankee Microwave's temporary setup.



HD-Ready Radio Antennas

IBOC Hybrid Combiners

Television Antennas

EL Series UHF

UHF Panel

New possibilities with ERI

Structural Reinforcement

ERI
NAB Booth # N2738

Electronics Research, Inc.
7777 Gardner Rd.
Chandler, IN 47610
ph: 812.925.6000 www.eriinc.com

Is There Anybody Out There?

The list of U.S. radio stations on the air with HD Radio, or planning to go soon, is lengthening, as we saw in a chart in the March 26 issue of Radio World. We'll update the list next time and in each issue containing our new *HD Radio News* section.

An interesting twist to the rollout is that virtually no one can hear HD Radio. We've asked more than one station manager or engineer how their signals sound in HD Radio who have replied, "It sounded good on the digital receivers when the Ibisquity folks were here. We don't have our own receivers yet."

It's a reminder of the other important rollout yet to come: receivers. We're watching intently. The success of digital will depend in large part on how radio stations and receiver manufacturers market the concept in its opening months.

Meanwhile, perhaps for its next incentive, Ibisquity Digital should offer a free digital receiver or two to every station that agrees to put HD Radio on the air.

★ ★ ★

Our story on John Reiser in this issue

Elmer A. Goetsch, chief engineer of WXPR Public Radio in Rhinelander, Wis., is the winner of a package of four prizes from Auralex Acoustics in our New Technology Sweepstakes.

The D36 Roominators Kit is suitable for applying spot acoustical treatment to studios and adding a designer look. It includes 18 DST-112 panels in charcoal gray, 18 DST-114 panels in a choice of four colors and Tubetak Pro adhesive.

The Alpha-DST Roominators Kit, shown, includes Designer Series Treatment products with more design flexibility. It includes 32 DST-112s in charcoal gray, 32 DST-114s in a choice of charcoal gray, purple, burgundy or forest green, four LENRD-DSTs in charcoal gray and Tubetak Pro adhesive.

The GRAMMA, or "Gig" and

is part of my commitment to bringing to you the thoughts and opinions of radio industry newsmakers.

Radio World had featured Reiser on our front page a while back. So this March, when he was named recipient of the NAB's Radio Engineering Achievement Award, readers already knew who he was and why he was considered a leader in the field.

Among the goals I set when I took the editor's job was to retain the established mix of product and technology coverage familiar to readers while adding more stories about the people dimension — the human side of radio, and of engineering in particular.

Every decision in radio — "What format should our station adopt," "What processor should we buy," "How much should we pay the new engineering assistant" — is driven by human considerations. An industry of copper and fiber, ether and electrons really is one of flesh and blood, brains and emotion.

My predecessors moved Radio World in this direction and I have sought to expand it further. The result of our policy has been a series of inter-

Recording, Amp and Monitor, Modulation Attenuator," is used to float an amp or loudspeaker with acoustic isolation, beneficial with guitar and bass amps, PA stacks and subwoofers. MoPAD Monitor Isolation Pads provide sonic isolation between monitors and whatever they are resting on.

Retail value: \$527.90.



views with owners, engineers, regulators and others who affect the way you and I go about our jobs every day.

Just in recent years, the list of interview subjects has included Lowry Mays, Glynn Walden, Mike Dorrough, Craig Snyder, David Baden, Bill Suffa, Gary Kline, Jeff Littlejohn, Donn Werrbach, Margaret Bryant, Mike Starling, Deana Coble and many others.

We've heard from FCC chairmen, inventors, U.S. senators, radio market managers, suppliers and programmers in their own words. This approach is highly unusual in radio trade publishing, and unique in radio technology reporting.

Some individuals were known to readers. Others have come to the industry's attention through our coverage. All of them have expressed opinions that reflect or influence our radio world.

I welcome your ideas for future profiles and interviews. Write to me anytime at radioworld@imaspub.com.

★ ★ ★

Will your salary increase 5.9 percent this year? There's a good chance your company's income will.

Radio revenue in Arbitron markets is expected to go up that much in 2003, according to BIA Financial Network, which also reports that revenue increased 7.2 percent last year over the year before.

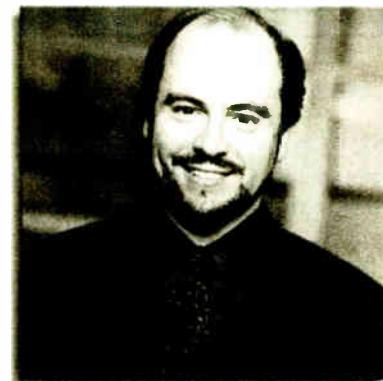
I'm glad revenue is on the upswing. I hope radio salaries will follow. People need good news in their pay envelopes.

★ ★ ★

The Broadcasters' Foundation presents its 2003 Pioneer Awards this week during the NAB convention. Recipients include several with significant radio credentials.

The honorees are George G. Beasley, chairman/CEO of Beasley Broadcast Group; Frank Boyle, president of Frank Boyle Co.; Richard D. Buckley, president/CEO of Buckley Broadcasting; Elizabeth Murphy Burns, president of Morgan-Murphy Stations; Al Masini, founder of TeleRep; and W. Russell

From the Editor



Paul J. McLane

Withers, Jr. president/CEO of Withers Broadcasting. The Chairman's Award goes to foundation director Tony Malara. Congrats to all.

The wonderful Broadcasters' Foundation provides anonymous financial grants to people in acute need due to critical illness, advanced age, death of a spouse, an accident or other serious misfortune. Visit www.broadcastersfoundation.org.

★ ★ ★

Among the intriguing presentations this week in Las Vegas is one by Steve Church of Telos Systems.

Church is introducing an approach to systems interconnection called Livewire, an audio network based on Ethernet. Radio World got an advance glimpse at his presentation and we'll be exploring it with Church in print shortly.

In the past, Church has been savvy enough to invest time in educating broadcasters about how technology can help them. He did it with hybrids and with ISDN, and was among the first to do so in the broadcast arena.

Ethernet is an area in which radio has much to learn. If history is an indication, others will be talking more about this topic soon.

★ ★ ★

Those who really want to go into the Broadcast Engineering Conference in depth can order a copy of the proceedings from the NAB for \$95. The printed book includes a searchable CD-ROM. Visit www.nab.org/nabstore.

Lynx
Advanced software for the GSC3000 and VRC2500 transmitter remote control systems.

Did you get your free transmitter control software?

- Real-time event logging
- Customized report writing
- Expanded connectivity options
- Easy transition from previous versions

tel 800-255-8090 / fax 978-486-0081 / sales@burk.com / www.burk.com

BURK
TECHNOLOGY

ALL NEW VERSION 4

The screenshot shows the Lynx software interface. At the top, there's a yellow starburst graphic with the word "NEW". Below it, the interface is divided into several sections:

- Events for: All**: Shows a list of events with columns for Time, Site, Unit, Type, and Chn. Message. Examples include "ROCK 97.5 Transmitter Motor 3 Ch 375.67113 KV" and "ROCK 97.5 Transmitter Motor 6 Ch 617.66269 KV".
- Event Types: All Types**: Shows a list of events with columns for Time, Type, and Event. Examples include "Administrator issued Command AA (81 Power Remote to ROCK 97.5)" and "Administrator issued Command AA (80 Power Reset to ROCK 97.5)".
- Site List**: Shows a tree view of sites, with "ROCK 97.5" expanded to show "Voice Interface", "NEWS TALK 1080", and "TV 98".
- Commands**: Shows a grid of status indicators for various commands like "S1 Low Voltage On", "S1 Low Voltage Off", etc.
- Monitors**: Shows a grid of status indicators for various monitoring points like "S1 High Voltage", "S1 Temperature", etc.
- Logs**: Shows a grid of status indicators for various logs like "S1 Power Log", "S1 Plate Log", etc.
- Buttons**: Shows a grid of buttons for various actions like "S1 Master On", "S1 Master Off", etc.

At the bottom of the interface, there are status bars for "Site: ROCK 97.5 - LNE Transmitter", "Last update: 1/7/2003 2:15:10 PM", "User: Administrator (System)", and "1/7/2003 2:15 PM".

GUEST COMMENTARY

IBOC: No Cure for Bad Coverage

An Owner Says the U.S. Digital Radio Plan Won't Fix Reception or Signal Area Disparities

by Al Germond

I am very strongly opposed to IBOC because the concept fails to address the real upgrade/spectral issues that confront radio. While some broadcasters aim for so-called CD quality, our stations would rather have more coverage, day/night consistency and freedom from destructive interference.

The U.K. is way ahead of us with DAB because it moved TV out of the VHF spectrum; robust Eureka-147 transmission is conducted at 213 MHz, which is in the middle of Channel 13 in the United States. Eureka in the L-Band is doomed to fail because of propagation limitations. U.S. military opposition is poppycock since Industry Canada's map of the Windsor, Ontario, Eureka pod demonstrates strong coverage over Detroit, which is in Wayne County, Mich., which when last checked is in the United States!

Signal degradation

Listeners should be encouraged to report their subjective empirical observations regarding AM and FM IBOC operations, ranging from the deleterious degradation of the existing analog signal to spectral changes within the vicinity of the station's carrier wave or center frequency.

If any listener residing within a given station's primary protected signal radius (e.g., the 60 dBu/1.0 mV/m contour for FM stations) makes IBOC-on/off observations, notes a difference between the two modes and wishes to the best of his/her ability publicly record those observations for others to read and comment upon, it should be their legally-protected prerogative to do so.

Progressive broadcasters actively solicit and encourage their listeners to comment on all aspects of operation(s) including technical matters. As part of the fundamental sender-receptor function constituting the basic process of aural and visual communication, it behooves broadcasters to work on a zealously cooperative basis with their universe of receptors to be certain signal(s) are receivable while addressing such issues as dead spots, day/night variations and how the station sounds.

Only rarely is an engineer fortunate enough to own a radio station. Engineers report to higher management authorities typically ignorant of technology and they are expected to obey their commands while placing what they deem to be an ugly situation in the most positive public light while they may privately, and off the record, grimace in anguish at what higher management directs them to do.

A 50 kW Class A (I-B) such as WOR(AM), New York is the last place to benefit from whatever "fix" IBOC is supposed to provide. This history-steeped legendary heritage "blowtorch" already saturates the nation's largest market with a signal at least 99.7 percent of the other thousands and thousands of less-privileged AM operators would do virtually anything to obtain.

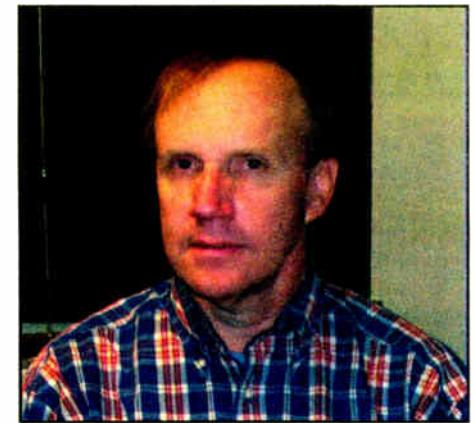
The NAB's six-month switcheroo back in 1991 regarding Eureka-147 conversion and implementation was wise in one sense, because it didn't subject broadcasters in the United States to the agonies associated with

the propagation-impaired 1400 MHz L-band, which has proved to be an unsatisfactory home for DAB in Canada and elsewhere.

initially bought into the IBOC concept because we hoped it would repatriate listeners and coverage that's lost between sunset and sunrise.

How wrong we apparently were, though we're still hoping.

Organizations such as the NAB have apparently misrepresented the



Al Germond

ers, the Internet, MP3s and other emerging technologies.

Although growth has been slow and financial problems may linger, satellite radio has turned out to be a brilliantly executed new-generation system addressing many of terrestrial radio's woeful shortcomings.

The NAB believes IBOC and a couple of hundred thousand dollars tossed into a promotional campaign will redeem terrestrial radio in the eyes of the public.

Guess again.

The author is chairman of the Premier Marketing Group, which owns seven radio stations in the Columbia-Jefferson City, Mo., market. He is a DXer and has been involved in broadcasting since 1966.

This commentary originally was posted to the New York Radio Internet message board and is reprinted with the author's permission. Radio World welcomes other points of view.

What we need is more coverage, reliable reception, especially in offices, and elimination of day/night AM disparities.

DAB in this country will require that the FCC appropriate spectrum in the VHF range below 300 MHz — preferably close to the existing FM band — for an all-digital new-generation system. Over a 10-year cycle, existing broadcasters will be permitted to build simulcasting digital facilities with the pre-arranged option of additional DAB slots upon agreement to provide theretofore-unavailable program formats.

Terrestrial broadcasters would regain competitive advantage over the sat-casters if they agreed to broaden format offerings to include new formats or other unique concepts. Each cluster operator might have upwards of 30 different DAB channels sold competitively as packages or *a la carte*.

The ensuing deception has conned broadcasters into believing that a so-called "in-band, on-channel" digital system — which in fact it is not because digital streams are situated on the edges of the channel — would address analog radio's transmission flaws.

Repatriate listeners

Radio broadcasters have been derelict over the years because they obstinately refuse to periodically review the technical/engineering status of their AM and FM systems. Ever since the 1940 "Sanders" U.S. Supreme Court case that removed the FCC from reviewing the economic effects of competition, "politics" has pushed each band to its limits pushing 'em in: allocations squeezed to the limits, "rimshots," 100-watt low-power FMs, "move-ins," "pirates," "daytimers" allowed to operate at night ... and everybody, and I do mean everybody, wants to broadcast.

On top of that, interference from computers, power lines, etc., etc., threatens to mask our signals into irrelevance. Internet streaming was supposed to help, but witness the recent debacle where there was supposed to be legislative relief — but wasn't.

As a broadcaster-owner-builder-operator and investor, what's in it for us if we decide to implement IBOC at our seven stations?

Improved audio is a given. Big deal! What we need is more coverage, reliable reception especially in offices, and elimination of day/night AM disparities.

Has IBOC been tested — or is it being tested — at night where it's needed most, on a typical Class C AM station such as WFAS(AM), White Plains on 1230 kHz? We have several facilities like WFAS and

"advantages" of IBOC, and we are left with a flawed scheme that may do nothing to restore lost "white" areas to thousands of disadvantaged smaller AM and FM stations.

If IBOC turns out to be deleterious to broadcasting, this will become a grassroots issue that should become a concern to both the House and Senate Commerce Committees.

Some aspects of radio broadcasting don't seem to be in particularly good odor these days with the general public. Aside from the well-hashed aspects of consolidation, job losses, voice-tracking, format homogenization, shock jocks and vanished formats, terrestrial radio is challenged by sat-cast-



Millenium Consoles - The NEXT big thing

by
Mark Stennett,
V. P. Engineer
NEXT Media Group

Radio Systems has the right board for the job at hand, with comprehensive logic and audio choices. Installation is a snap, and maintenance costs will be minimal because Radio Systems uses extensive VCA technology & electronic switching.

I have overseen more than 50 Millenium Console installations - Radio Systems has a great product and a 'can do' attitude.

radio
SYSTEMS

601 Heron Drive, Logan Township, New Jersey 08085
(856) 467-8000 voice (856) 467-3044 fax www.radiosystems.com

See us at NAB2003 Booth #N2320

Kinstar

► Continued from page 1

fall at the Kinstar test site near Bristol, Va., were evaluated by Ron Rackley of duTreil, Lundin and Rackley Consulting Engineers. Rackley examined data collected from a standard 146-foot-tall quarter-wave monopole antenna, which was constructed, tested and then dismantled. Two configurations of the Kinstar were then built and tested in November under a special experimental license from the FCC with 250 watts on 1680 kHz near Bristol, Va. Consulting engineer Don Crane collected data for Kintronic over several weeks.

Radiation efficiencies

"It is clear from the measurement data ... that the two configurations of the Star-H antenna that were tested provide effective levels approaching that of a conventional quarter-wave antenna," Rackley wrote in his analysis.

"Each was found to have radiation efficiency well above the minimum values required by the Federal Communications Commission's rules for Class B, C and D AM radio stations, which are 282 mV/m, 241 mV/m, and 282 mV/m at one kilometer, respectively."

The Kinstar test antenna was 45 feet high and 105 feet in diameter over a full 120-radial ground screen and braced with wooden poles. The two configurations differed only with regard to the feedpoint arrangement.

According to Rackley's engineering statement, "The trial A measurements were made with the Kinstar antenna's elements fed through coaxial transmission lines of a length that was selected to provide the desired impedance transformation between their individual feedpoints and the common input point.

"The trial B measurements were made with the individual feedpoints connected together through a common conductor, without coaxial cables between the common input point and the individual elements," Rackley wrote.

The trial A antenna outperformed the other Kinstar configuration, according to Rackley. It measured 304 mV/m, compared to 300 mV/m at one kilometer for trial B. The standard quarter-wave monopole measured 306 mV/m calculated at one kilometer.

Tom King, president of Kintronic Labs, said the Kinstar's field strength measurements were better than the company's computer models had indicated.

"Our computer predictions for the parallel transmission line fed antenna — trial A — were looking to be 93 percent, but were actually 98 percent as efficient as the quarter-wave monopole," King said.

Kintronic plans to market both configurations to U.S. broadcasters, depending on the application, King said.

"There are some situations where because of voltage limitations on transmission lines that we may want to go the common version as opposed to the transmission line fed version. Cost is also a factor.

"You're looking at a simpler match requirement with the transmission line approach, but when you get up in power you look at the tradeoff between transmission line costs and an antenna tuning unit," King said.

Vertical pattern validation

He said the Kinstar antenna's height will be scaleable with frequency.

"The test antenna was 45 feet tall at 1680 kHz. The height requirements will go up as you move to the middle of the AM band ... somewhere around 66 feet. In the low end of the band, you're looking at 130- to 140-foot supports," King said.

Kintronic to Seek FCC Certification

For Kintronic labs to market the Kinstar low-profile AM antenna in the United States effectively, it likely will need the FCC's approval.

In the past, proponents of new AM antenna system designs, including folded uni-pole, water-tower, Valcom, crossed-field, anti-skywave and umbrella antennas, have supplied the FCC with comprehensive reports, said Ed De La Hunt, associate chief of the FCC's audio services division.

"Some have been accepted and others have not. Some continue to be tested," he said.

De La Hunt said he was familiar with reports being filed on the Kinstar. However, Kintronic had not supplied the FCC with Rackley's formal report on the Kinstar antenna for evaluation as of mid-March.

Tom King, president of Kintronic Labs, said the company intended to file the necessary formal document to the FCC. "We'll move quickly to get that to them," he said.

De La Hunt said, "If Kintronic is interested in pursuing this antenna for use in AM service, they need to file a detailed request, stating how the antenna system works, what was observed during experimentation, how it will fit within existing FCC regulations of AM antenna systems, including daytime and nighttime interference."

De La Hunt said lacking those, a station could request to use the antenna via application. However, the device likely

would only be authorized for non-directional AM use with multiple conditions placed on the station authorization.

"We would need full non-directional proofs of performance to establish the antenna minimum efficiency and non-directional characteristics and possibly current distribution requirements," he said.

From the Kinstar preliminary report, the efficiencies appear acceptable at this point. The most difficult issues new AM antenna systems face are those of efficiency, vertical plane radiation prediction, derivation of the f (theta) formula to determine vertical plane departure characteristics, immunity to re-radiation problems and whether they can be effectively studied using existing allocation standards, De La Hunt said.

"Clearly, we need to find out more about what the antenna will do in the vertical plane or skywave performance. The nighttime propagation will tell us if protection is afforded adjacent stations," De La Hunt said.

"Until we get to the point where it can be assured that minimum efficiencies are being met on a consistent basis, it will remain a station-by-station situation for approval."

"As often is the case, while antennas can be modeled with reasonable accuracy, the difficulties arise when you take it into the real world."

— Randy J. Stine

Star-H Experimental Antenna

1680 kHz 0.25 kW ND

Unattenuated Field Strength at 1.0 Kilometer

Antenna	Overall Average	Measured 0.25 kW	Calculated 1.0 kW
Reference	-	153 mV/m	306 mV/m*
Trial A	0.994	152 mV/m	304 mV/m
Trial B	0.978	150 mV/m	300 mV/m

* Agrees with Fig. 8 of Section 73.190 of the FCC Rules

Source: Du Treil, Lundin & Rackley Inc.

The next step for developers is making current distribution measurements at the Kinstar test site in Virginia to validate the vertical pattern. Test results to determine if the antenna can pass the digital signal for stations using HD Radio were incomplete as of mid-March, King said.

Kintronic is designing a four-element directional array for Multicultural Radio Broadcasting station WKW(AM) in Warrenton, Va., King said.

"They are very interested in the implementation of the array with our antenna. We have already verified on computer that we can produce the pattern with the Kinstar. We are looking at final drive points on the antenna and then we'll be designing the feeder system for it," King said.

Tom Casey, operations manager for WKW, said a short antenna is an option for a new tower project.

"We are kind of in a no-growth area. They don't like cell towers or towers of any kind. Getting the zoning approval for these kind of things has become very unpredictable," Casey said.

WKW broadcasts a classic country format and hopes to improve its 10 kW signal to cover neighboring Arlington, Va., and Rockville, Md.

with ground system materials and wooden utility poles for supports," he said.

Rackley, hired by Kintronic to examine the field measurement data, said he was satisfied with the effectiveness of the antenna.

"I was not surprised that the mechanism used for reducing ground loss in an electrically short antenna ... multiple top-loaded wires ... produces good efficiency," Rackley said.

Rackley said Kintronic has succeeded where others attempting to develop short AM antennas have failed simply by getting the system built and turning it on to prove that the field strength was there.

The Kinstar doesn't attempt to violate well-understood principles of electromagnetism, as the crossed-field antenna and some of its kin would have to in order to work, Rackley said.

Rackley said the Kinstar will be a viable choice for broadcasters confronted with height restrictions when building new broadcast towers. The one drawback he sees is that the amount of land needed to construct the antenna would be approximately the same as a conventional quarter-wave monopole.

"I believe interest in it may be somewhat limited because of that. In my consulting practice I find that more people are

The Kinstar will be a viable choice for broadcasters confronted with height restrictions when building new broadcast towers, Rackley said.

According to Kintronic's Web site, "Any implementation of this antenna will require an FCC mandated six-radial proof of performance together with vertical current distribution measurements."

"(The FCC) tells us that anytime we implement the Kinstar we'll have to go through that process to verify the horizontal and vertical pattern. We have already demonstrated that it meets the FCC's minimum radiating efficiencies," King said.

King said the goal is to get to the point where the Kinstar can be used anywhere in the country without going through current distribution and full proof measurements.

"It will be important for stations to avoid the additional expense, but right now it's so new the FCC requires it," King said.

King estimated the cost for the antenna for a station in the high end of the AM band at \$10,000. "That's up to 10 kW

interested in land requirement and using as little property as possible. The new antenna won't satisfy them," Rackley said.

He said the FCC also will be interested in other issues, especially vertical radiation patterns.

"That is what they use to calculate nighttime skywave interference levels. So that is something that will have to be dealt with separately. Not all of the work has been completed yet," Rackley said.

Star-H Director of Research and Development Mike Jacobs is presenting a paper on the results of the Kinstar testing program at NAB2003. The presentation is part of the "Radio Transmission Forum" on April 8, from 9 a.m. to 12 p.m. in the Las Vegas Convention Center.

King said Kintronic will have a scale model of the Kinstar in its booth inside the North Hall.

"We'll have brochures, a video and a lot of information based on vertical and horizontal characteristics and audio bandwidth," King said.

Arbitron, Elephants Debated

In the March 12 issue, Radio World printed a sampling of the several thousand comments the FCC has received on media ownership rules, which chairman Michael Powell hopes to act on by late spring.

Here is a further sampling. Topics include whether the radio market definition should be changed, consolidation's impact on women and minority station ownership, and the FCC's "flagging" of certain transactions for further antitrust scrutiny.

"(T)he markets the FCC seeks to influence are not static, and the trend is clearly in the direction of further fractionalization of the radio broadcasting audience, and, ultimately, the advertising base on which the radio broadcasting industry relies. Radio broadcasters compete for audience and revenues with print media, television, cable television, DBS and, increasingly, the Internet, and now multi-channel satellite distributors growing by hundreds of thousands of new subscribers every year. . . .

"Congress could not have more clearly signified its intention to adopt the definition of radio markets used by the FCC since 1992. . . . In fact, when the FCC amended Section 73.3555 in response to Congress' mandate, it did not suggest that a revised definition of radio markets was even open for discussion and did not even solicit comments from the public on how it should implement the mandate. . . .

"The notion that that the FCC should, or even could, amend its defini-

tion of radio markets must, therefore, be discarded. In any event, the FCC has not proposed any new definition of radio markets that would lead to predictable results or fail to produce anomalous or arbitrary outcomes. . . . The FCC proposed, as alternatives to the present rule, 1) reliance on Arbitron radio 'metro' market definitions, or 2) adopting a more restrictive contour overlap standard in which it would count only stations whose principal city contours overlapped the 'overlap area' of the stations proposed to be commonly owned. Either proposal, if adopted, would lead to unpredictable, inconsistent and irrational

results.

"In 1992, in fact, the FCC rejected the use of Arbitron definitions to define markets for the purposes of the multiple ownership rules, agreeing with commenters that Arbitron markets change regularly, the number of radio stations fluctuates, and Arbitron tends to undercount stations in the market. These shortcomings have not changed...

"The proposed more restrictive contour-overlap definition is no improvement. By defining the market according to the overlap area between the stations proposed to be combined, every single transaction would result in a different market definition, with dif-

ferent ramifications for the local ownership rules and no rational relationship to the economic market in which the stations compete."

MBC Grand Broadcasting
Grand Junction, Colo.

"The commission has repeatedly recognized the dearth of women and minority broadcast station owners and has, over the years, adopted or proposed various policies to increase ownership opportunities for these groups. In fact, in 1998 the commission amended its Form 323 Ownership Report to collect information on the race and gender of station owners so that it could accurately assess the current state of minority and female ownership and determine the need for

See OWNERSHIP, page 8 ►

NEWSWATCH

Satellite Firms, SoundExchange Reach Pact

XM Satellite Radio and Sirius reached a performance royalty agreement with SoundExchange, which collects and distributes royalties to record owners, artists AFTRA and AFM on behalf of background musicians and vocalists from digital audio transmissions.

The agreement covers through Dec. 31, 2006. Terms of the agreement are confidential.

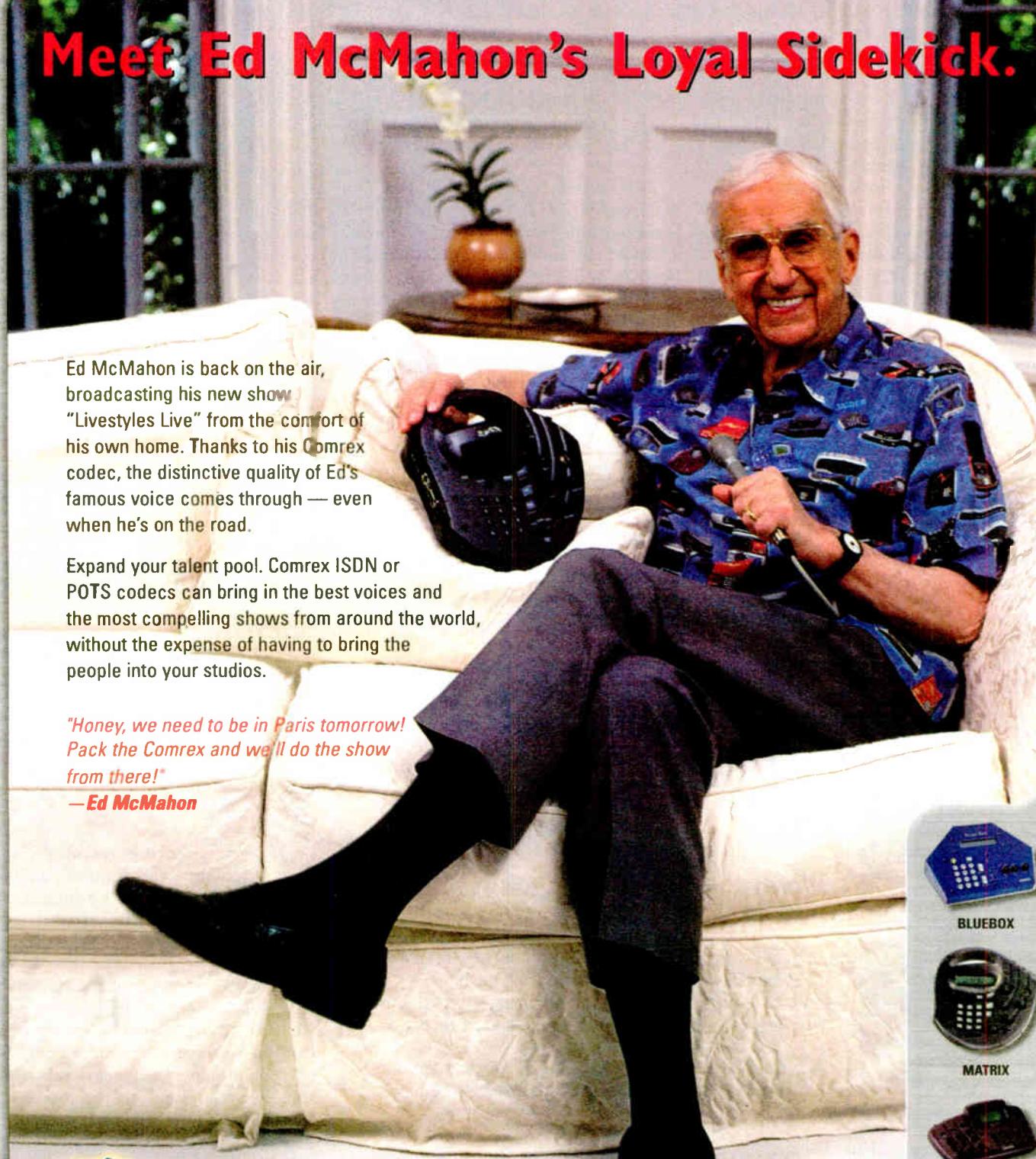
SoundExchange represents numerous record companies, labels and recording artists.

FCC Dismisses Many LPFM Apps

WASHINGTON The FCC did some early spring cleaning on LPFM applications. It dismissed nearly 500 station applications in March because they did not comply with the congressionally mandated third-adjacent channel protection rules, which dictate certain channel separations between LPFMs and existing full-power stations.

The protection rule wasn't in place when the first two batches of LPFM license applications were filed. Subsequently, Congress passed legislation in December 2000 mandating third-adjacent channel protection standards for LPFM facilities, including those specified in then-pending applications. The applications dismissed are those that did not file timely corrective amendments, the commission said.

Meet Ed McMahon's Loyal Sidekick.



Ed McMahon is back on the air, broadcasting his new show "Livestyles Live" from the comfort of his own home. Thanks to his Comrex codec, the distinctive quality of Ed's famous voice comes through — even when he's on the road.

Expand your talent pool. Comrex ISDN or POTS codecs can bring in the best voices and the most compelling shows from around the world, without the expense of having to bring the people into your studios.

"Honey, we need to be in Paris tomorrow! Pack the Comrex and we'll do the show from there!"

—Ed McMahon

Rely on Comrex for your next broadcast. And we'll give you the shirt off our back.

Mail us the warranty card from the purchase of your next BlueBox, Matrix, Vector or Nexus. We'll send you a handsome Comrex shirt like the one Ed is wearing (retail value \$65) FREE. Plus, we'll extend your warranty to two years. How's that for reliability?

For a dealer call
800-237-1776

COMREX 19 Pine Road, Devens, MA 01432 USA
Tel: 978-784-1776 • Fax: 978-784-1717 • Email: info@comrex.com • www.comrex.com

See us at NAB2003 Booth #N2526

World Radio History

Ownership

► Continued from page 7

additional measures. But, while the commission has collected this data, it has not yet compiled the results in any meaningful manner for release to the public.

"The data that is available depicts low numbers of female and minority owned broadcast stations. The most recent study of minority ownership by the National Telecommunications and Information Administration shows that even though minorities comprise approximately 29 percent of the U.S. population, they own less than 4 percent of all broadcast stations. Of the 10,577 commercial AM and FM radio stations licensed in 2000, only 4 percent were minority owned. ..."

"Studies have repeatedly shown that the greatest impediment to minority and female ownership has been obtaining access to capital. ..."

"The difficulties that minority and women-owned businesses have historically had in obtaining capital have been exacerbated by rising station prices, largely caused by industry consolidation. While radio stations used to sell for between seven to 12 times projected cash flow, they now sell for between 20 to 22 times projected cash flow."

"In fact, radio station prices have

increased from the hundreds of thousand-dollar price range to the multi-million dollar price range. The Ivy Group Study found that large group owners have two advantages over their smaller counterparts: 1) they have stations to trade with each other if they need to divest in certain markets; and 2) they often use stock to buy and sell stations as well as whole groups. These advantages enable large broadcasters to benefit from more favorable tax treatment than their smaller, non-public counterparts who must engage in cash transactions.

"The Ivy Group Study also found that station consolidation has 'consolidated advertising revenues in the hands of the large broadcast group owners, significantly limiting the ability of small broadcasters to earn the money necessary to successfully compete and survive in the business.' Minorities and women tend to operate smaller stand-alone and AM stations that lack the audience reach that larger consolidated and FM stations enjoy. As a result, many advertisers are less willing to place ads with minorities and women, or, alternatively, offer less than the standard price."

*National Organization for Women
Washington*

"We started our first station with very little money in a double-wide mobile home in a cow pasture, with cows grazing a few feet from the control room window (really!). WBBN(FM) signed on the air in 1985 with 950 watts. We were later able to

upgrade it to a Class C2 station. ..."

"As a result of the Telecom Act and the consolidation that followed, Cumulus was allowed to acquire five FM stations (four of which are high-power FMs) and two AM stations in our market. Shortly thereafter, Cumulus sold all seven stations to Clear Channel.

"The result is that the three stations locally owned and operated by Blakeney Communications Inc. now must compete with the seven stations owned by Clear Channel. The advantage is that Clear Channel has a station in virtually every conceivable format that is viable in the Laurel-Hattiesburg, Miss. market.

"Blakeney, on the other hand, can only compete against Clear Channel in three formats. While we are holding our own just fine now, Clear Channel clearly has a huge advantage for the future. ..."

"Our greatest concern is that any rule changes being considered by the commission might somehow lock in our market the present ownership concentration due to the percentage of advertising revenue now received by Clear Channel and Blakeney Communications combined. ..."

"If new commission rules do lock in Clear Channel with a seven-station-to-three advantage over Blakeney Communications Inc. and prevent Blakeney from achieving parity by acquiring additional stations, then the end result could be that the Blakeney's give up, sell out and go do something else for a living, leaving the market with virtually no local ownership."

*Blakeney Communications,
WBBN(FM), WXRR(FM) and
WKZW(FM)
Laurel, Miss.*

"As many commenters, including Bonneville and Clear Channel, have observed, the commission practice known as 'flagging' has imposed very long waiting times on Form 314 or Form 315 transactions. These parties contend that flagging, and case-by-case review generally, should be replaced by bright-line regulations.

"We agree wholeheartedly. Small businesses are especially in need of certitude and expedition in their dealings with the commission; they seldom possess the capital reserves, staff and multiple income streams sufficient to weather long regulatory delays. ..."

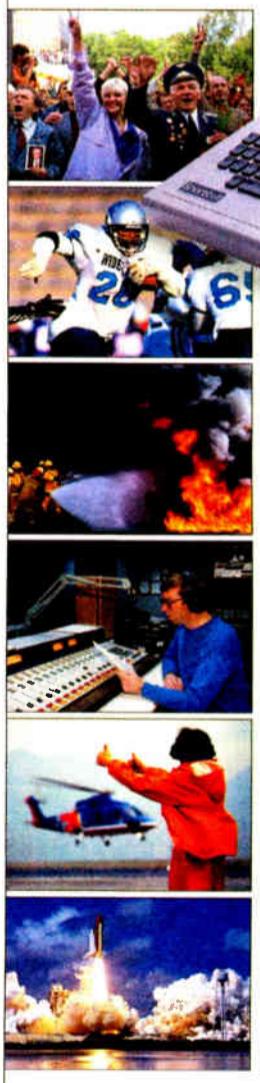
"The greatest obstacle to reaching consensus on a minority ownership plan seems to be securing the attention of the warring parties, most of whom, understandably, are preoccupied with the right and wrong of media concentration and consolidation.

"An African proverb holds that, 'When the elephants fight, it is the grass that suffers.' In this docket, elephants are waging war on a scale never before seen in a broadcast rule-making proceeding. There are thousands of comments. Several parties have each submitted hundreds of pages of analysis and research. The urban legend that the commission weighs the paper to determine who wins a rulemaking proceeding doesn't apply here because the paper would break the scale.

"The rhetoric on both sides of this great debate has become so hyperventilated that a collective catching-of-breath is called for. Although we are among those who generally favor retention of most of the existing rules, intellectual honesty and practical necessity require that we take a hard look at some of the claims made by both sides."

*Diversity and Competition Supporters
Washington*

"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

See us at NAB2003 Booth #C2024

World Radio History

Bid to Kill Maryland's Noncompetes Fails

ANNAPOLIS Maryland lawmakers have killed a bill that would have prohibited radio and television stations in the state from putting noncompete clauses in their labor contracts. Backers say they'll try again next year in their quest to convince every state legislature to ban noncompetes.

Following a campaign that resulted in the passage of a law banning noncompetes in neighboring Washington last December, the Washington-Baltimore office of American Federation of Television and Radio Artists tried to convince the Maryland legislature to follow suit.

Some radio and television stations use noncompetes to prevent on-air talent and some behind-the-scenes staffers from working for competitors after being fired or resigning. In some cases, workers must wait one year before they can take a job at another station in the same area.

Maryland's Senate Finance Committee voted 6 to 5 to reject the bill, which was introduced at the beginning of the year. A similar bill was introduced in the state House, but no further action had been taken as of mid-March. The legislature is due to adjourn in mid-April.

AFTRA hopes the legislation will be introduced again next January. According to the chapter's Executive Director Pat O'Donnell, the group again will target members of the Senate Finance Committee to lobby. "A majority of

employees have noncompete clauses in their personal services contract," she said, "and we've had quite a few employees that have had problems."

Seeking employment

O'Donnell said some broadcast employees have complained that they were prevented from seeking employment in the same city in which they were originally working.

The organization that represents Maryland broadcasters believes that the clauses do not wrongfully hurt fired or laid off employees. A noncompete clause cannot be enforced if employees are fired by a station or their contracts are not renewed, said Chip Weinman, president of the Maryland-D.C.-Delaware Broadcasters Association.

Their use, he said, is reasonable because the clause protects valid business interests of stations that invest time and funds in establishing their on-air presence.

Previous court decisions have established that noncompete clauses can be used if reasonable. Weinman believes unreasonable agreements will be handled by the courts.

"I'm content that we're not ruining people's lives, and the legislature agreed with us," he said. "The courts will protect people's rights."

— Naina Narayana Chernoff

If HD Radio doesn't sound better, what's the point?

There are lots of ideas about audio processing for HD Radio. While opinions are subjective, here's one firm fact: HD Radio supports a full 20Hz - 20kHz audio bandwidth.

So why use an audio processor that doesn't?

The new Omnia-6HDFM is a combo processor that serves both your analog and HD Radio signals. Its advanced dual-output design provides full-fidelity and precision look-ahead limiting for the digital signal – and everything Omnia is famous for on the analog FM side.

The AGC sections are shared so you get smooth transitions when HD Radio's blend function activates. But this powerful integrated processing package has two fully independent limiter sections, each optimized for the characteristics of the associated transmission channel.

Telos and Omnia are pioneers in coded audio. With our many years experience making bitrate-reduced channels sound good, we know how to deal with systems like HD Radio that involve both dynamics processing and bitrate reduction coding.

Benefit from our experience – and Omnia's great audience-grabbing sound, heard on more of the USA's 100 top-rated FM stations than all other processors combined.*



omniaaudio.com

* Arbitron Spring 2002 survey period, 12+ Mon-Sun 6A-12P.

© 2003 TLS Corporation. All rights reserved. Omnia, the Omnia logo and Telos are registered trademarks of TLS corporation.

World Radio History

Reiser

► Continued from page 1

made sure broadcasters were aware of the ramifications certain decisions and rulings would impose on the industry."

Reiser, now 73, retired from the commission in 2000 after working on the reorganization of the Mass Media Bureau. He joined the FCC in 1961 as an inspector at the Detroit field office before moving to the Washington in 1972 to supervise the national program for commercial radio operator exams.

He later was appointed to former FCC Chairman Richard Wiley's broadcast regulation task force to examine broadcast rules that were outdated because of new technology.

'Carte blanche'

"It was very rewarding time for me," Reiser said. "I had a chance to work very closely with the broadcast industry. I attended all of the NAB and SBE conventions and developed a very strong relationship with broadcasters and engineers, in particular."

The re-regulation task force had "carte blanche" to address all broadcast rules, Reiser said.

"Our group could simply rewrite or excise both technical and administrative policies by order without going through a rulemaking process. We looked at things like remote control, remote pickup, auxiliary spectrum rules ... things that had become outdated because of

new technology," he said.

In 1986, the U.S. Department of State appointed Reiser as chair for U.S. participation in the broadcast study groups of the International Telecommunication Union.

"Seven of those years were spent on developing an international standard for protection of aeronautical radio services. That involved many international meetings with the aeronautical and broadcasting industries to develop it," Reiser said.

With the radio industry's possible conversion to in-band, on-channel digital audio broadcasting at hand, Reiser said he remembers the first presentation on digital broadcasting to commission staffers in the early 1990s.

"General Instruments dropped a bomb shell on us. They said they had been working on developing a system to transmit a digital signal, rather than analog, in regards to high-definition TV," Reiser said. "We were all excited about the possibilities."

Still, Reiser thinks HD Radio developers Ibiuity Digital Corp. and broadcasters will have a hard sell to the public.

"Digital broadcasting is a great idea. But I wonder if consumers will see enough advantage or convenience in it to buy the receivers," he said. "I lived through the era of Quadraphonic FM and AM stereo, and both failed to some extent because there was no perceived consumer advantage. I also wonder about potential interference and signal degradation that may result."

His friends in broadcasting say Reiser's influence has been felt throughout the industry as a result of his sense of technical inventiveness.

"John Reiser has been as much a part of the FCC, the U.S. broadcast industries and the international broadcast communities as anyone in the latter part of the 20th century," said Bill Luther, chief of the FCC's International Radiocommunication branch of the International Bureau. "His greatest attribute was working with others to help them achieve."

On the leading edge

Al Resnick, former chief engineer at WLS(AM) in Chicago and now a consulting engineer with Carl T. Jones Corp., said Reiser has always been on the leading technical edge of broadcasting.

"He was instrumental in protecting the operations of U.S. broadcasters" while at the FCC, Resnick said. "John's enthusiasm and genuine caring for people has helped many who worked with him to be their best. I'm lucky to say I'm one those people."

Resier's early childhood was spent in Cadillac, Mich., where he built his first radio, with the help of the owner a local radio repair shop, so he could listen to symphony concert broadcasts. As a freshman in high school he helped form a radio broadcast club.

He spends time in retirement digitally recording and mastering symphonic concerts and recitals in the Washington area. "I've always had this love of audio



John Reiser

recording," Reiser said.

He said was surprised by the NAB recognition but grateful for the honor.

"I hope this award will represent the hundreds of broadcast engineers I've met over the years at both big and small stations. The skill sets of today's engineers are increasing geometrically. They are true professionals," Reiser said.

The father of five grown children, he lives with his wife Patricia in Mount Vernon, Va., along the Potomac River, not far from the first president's famous estate.

— by Randy J. Stine

Need to DUMP? ... get an ARSE!

ARSE! Delay (a|s dI lei) n. Profanity Delay

The most sophisticated Profanity Delay system on the market, with features so advanced it's like being able to 'edit' your live program.

between 2 and 30 seconds of stereo broadcast-quality delay ■ simple to use, even for presenter self-operation ■ builds delay inaudibly using algorithms optimised for speech or music ■ or can build delay by playing your filler audio for you automatically ■ countdowns to cue points on build/edit/drop delay

At only \$970* no wonder it has our competition swearing like a truck driving sailor...

www.profanitydelay.com

MDOUK tel +44 121 256 0200, email: sales@profanitydelay.com
* Limited time introductory pricing only.

Fire

► Continued from page 3

"I know the state police had some work-around capabilities to bypass the mountain temporarily, so they were in pretty good shape."

WHOM's Tim Moore said everyone affected by the fire seemed to have adopted an understanding attitude. "We're just getting enormous hits on the Web site, and e-mails and calls and letters," he said.

"Most of the population of New Hampshire and Maine that were listening to the radio station before are able to receive it now. It may not be as crystal-clear, but they're working to get it, they're telling us so, which is heartening."

The outage had a negligible effect on advertising revenue for WHOM, according to Moore. He said some advertisers were concerned but, as of late February, the station was running a regular schedule and running make-goods when requested.

"A lot of the ad base for the radio station has been covered by the (temporary) signal that we have," Moore said ad revenue is split about equally between clients in New Hampshire and Maine.

Big footprint

Moore praised the FCC for not pressuring WHOM to restore full service by a specific date.

"They haven't made any special breaks for us, given the fact that we are very much a unique situation; but I think they've been understanding in knowing that the circumstances we face are extraordinarily difficult to overcome in the short term just because of the weather up there."

However, many listeners in upstate New York, Vermont and Canada who tune to 94.9 for their daily dose of light rock will be out of luck until WHOM returns to full power, which Moore expects to happen over the summer.

The station bills itself as the largest in North America because it operates under the terms of a license granted in 1958, before the FCC standardized the current system of determining effective coverage based on mileage to the primary contour of 1 mV/m.

WHOM is licensed for 50,000 watts, but, Moore said, "Based on today's standards, 6,200 feet in the air, and an eight-bay antenna, and running a 20-kilowatt transmitter into it, it blows away most computer models. I've heard everything from ... 700,000 watts to a million watts in power the way it's calculated today."

He could not estimate how many square miles the signal covers, but said it is routinely heard in Quebec and upstate New York.

Moore predicted the FCC would honor the existing WHOM license and allow it to rebuild at its old power level.

"Just (as) if a house burns down that was built there in the 1900s right on the water, as long as you rebuild on the footprint, I think that same spirit applies," he said.

One thing that will change, however, is the construction of the transmitter buildings on the peak, which dated from the 1940s.

The coordinator of emergency management for the state of New Hampshire, Lee Kimball, expects the replacement structures will be safer. "When the buildings were constructed, if we had had all (today's) codes and what have you in place, they probably would have been built differently."

Moore says completely restoring the facilities on Mount Washington will be a major task.

"Obviously we are anxious to get back up on the air there, but everybody from the state police to the FBI to the Border Patrol, the Secret Service and a lot of telephone company microwave, everybody had dishes and communication links up there. It's very much a priority for everybody to get back up," he said.

New Lower Price!
SX-1 now available for
\$5995* MSRP (USD)

TASCAM SX-1:

The professional, all-in-one, everything you need, ultimate audio production solution for broadcast



It's all led up to this.

The **SX-1** is the direct result of TASCAM's 30-year lineage of developing the finest tools for professional audio production. In your radio station's production room, the **SX-1** represents a complete solution for creating promo spots, recording and editing live in-studio performances, producing polished commercial music and more.

With the **SX-1**, it's easy to mic an announcer, add a music bed and sound effects, edit the content, and burn it to a CD. Its DAW-style waveform editing is a vast improvement on traditional razor blade content creation methods. And best of all, the **SX-1** is truly a complete solution for serious audio production...but remains easy to use and affordable enough even for stations in smaller markets.

"In summary, the TASCAM SX-1 is a magnificent piece of engineering, with a mixing surface that feels comfortable and serious, and with audio quality you would expect from the folks who have made everything from portable cassette multitracks on up to full-bore studio gear."

- Alan R. Peterson, Radio World, March 2003



digital mixing | hard disk recording | MIDI sequencing
effects processing | digital and analog interfacing
mixdown | cd burning | seamless integration

www.tascam.com/sx1

See us at NAB2003 Booth # N2134

TASCAM
a whole world of recording

* FP-MSX black flat-panel monitor available as optional accessory

War Boosts World-Band Sales

by James Careless

World strife can be good for business, at least for those who sell world-band radios.

Whenever danger looms, people turn to radio — which is why shortwave radio sales boomed during the 1991 Gulf War and climbed again in the days leading up to the U.S. assault on Iraq in March.

"Yes, we have experienced a boost in world-band radio sales in the past few months," said Chris Justice, chief engineer at C. Crane Company, a radio designer and vendor in Fortuna, Calif.

"Sales have been relatively steady since 9/11," said Keith Carcasole, co-owner of The Shortwave Store Web site.

Delayed spike

"We have noticed that sales fall flat whenever President Bush makes any sort of public announcement, (while) the days following the announcement usually bring more sales," Carcasole said. "We can only assume that people take time out of their busy schedules to listen to what the president has to say. Once they get back to their regular schedule, it may take a day or so to get around to ordering a radio."

That world-band sales climbed in



Alma Carcasole of Durham Radio in Whitby, Ontario, demonstrates windup radios/flashlights including the Grundig FR200, center.

recent weeks comes as no surprise to Fred Osterman, president of Universal Radio in Reynoldsburg, Ohio. The same thing happened during the 1991 Gulf War, in fact, the product's sales cycle "always has been" tied to world events.

The same can be said for world-band station directories such as the annual "Passport to World Band Radio," published by International Broadcasting Services.

"Passport sales have been moderately higher thus far in 2003 than they were in comparable periods in recent years," said editor-in-chief Larry Magne. "We don't have any data on this for 2003, but based on past experience the growth is almost exclusively those among the public interested in world affairs, or with loved ones in uniform."

"The market of radio enthusiasts is relatively static and doesn't follow changes in world affairs."

putting many local TV and some radio stations off the air when they were needed most.

In contrast, world-band news sources such as the BBC World Service kept running throughout 9/11, a fact widely noted afterwards. Today, "We think that most people are buying shortwave radios because they are worried about a power outage which may take down the local media," Carcasole said; "leaving people without shortwave with no outlet for news."

This leads to the third reason people buy world-band radios: survivability. If terrorists knock out power, battery-powered radios will keep working. Some receivers are self-powered, generating their own electricity through solar power panels, built-in windup generators, or both.

This explains why, when it comes to sales, "Self-powered radios are doing well right now," Justice said. "Maybe more people realize that it's important to have a radio that doesn't depend on external power sources."

Popular models

What's moving off the shelves?

"It's the usual suspects," said Universal Radio's Osterman. He listed the Grundig Yacht Boy 400 digital portable (\$149.95), the new Grundig S350 analog portable (\$99.95), and the self-powered Grundig FR200 analog portable (\$39.95), all of which Universal is selling "by the boatload," Osterman said in March.

"High- and low-end portables seem to be selling best for us right now," said Shortwave Store's Carcasole. "Our two top-selling models are the Sangean ATS-909 (\$239.95) and the Grundig FR200 (\$39.95), which are at opposite ends of the spectrum."

The ATS-909 is a high-end, sensitive digital portable, while the FR200 is a windup "survival radio" with a flashlight

Self-powered radios are doing well right now.

— Chris Justice

your voice is your life.
spend it wisely.

www.neumannusa.com/103RW



NeumannUSA the TLM 103

Telephone: 860.434.5220 • FAX: 860.434.3148
Canada: Tel: 514-426-3013; Fax: 514-426-3953
Mexico: Tel: (525) 639-0956; Fax: (525) 639-9482

It makes sense that people with family or friends in the military want to keep a close ear on world events; but why are other Americans buying world-band radios?

In times of crisis, it's because they want to get their news straight from the scene, Justice said.

"These days, especially when the Internet is down or unavailable, radio remains the most direct source of information around the world. It just seems just about anyone, from all walks of life, wants to get their information direct from the source."

Americans are also buying world-band radios as a backup to traditional AM/FM radios, TVs and Web-browsing computers. Sept. 11, 2001, showed just how vulnerable other media can be during an attack.

On that fateful day, popular Web sites like CNN.com were inaccessible due to demand. Meanwhile, the collapse of the World Trade Center brought down New York City's highest transmission tower,

built in. When it comes to popular features, "having the ability to be self-powered or good reception seem to be the things that people look for the most," he said.

Retailers know that the buying public's heightened awareness will die down, but they expect continued interest.

"I have a feeling that sales will continue to be slightly above average for many months following any sort of world stability," Carcasole said. Americans remained concerned about numerous world hot-spots including North Korea.

Passport editor Larry Magne sees future world-band sales as remaining "good, especially if the Bush Doctrine results in more rogue nations being attacked. A 'new Cold War' should not only result in more interest in listening to foreign public broadcasters, but also give international broadcasters a new sense of identity to replace that they had during the Cold War — and the budgets and transmissions to go with it."



More reliable Xport doesn't rely on the off-the-shelf modems found in other POTS codecs. Instead, we developed a custom DSP modem optimized for live audio.

Easier and lower cost Xport's ISDN option lets you use it as a universal field codec.

Better sounding Xport's aacPlus is the finest low-bitrate codec on Earth – and Xport is the only POTS codec to have it. You'll be stunned at how good an analog line can sound.

Now, your POTS and ISDN remotes are more reliable, better sounding, easier, and cost less.

Today, Zephyr Xport and Xstream are *The Best Way to Hear from Anywhere*.

More reliable Zephyr Xstream's pure-digital ISDN connection on the studio side eliminates a lot of the analog line problems that can make a modem unstable. An Xport call is converted to digital by the nearest Telco central office, and continues through the network to your studio in digital form. Working as a tightly integrated system, Xport and Xstream extract maximum performance and reliability from real-world Telco lines.

Easier and lower cost Your studio Zephyr Xstream is now universal, linking with both POTS and ISDN codecs in the field. You need only one box and one line for everything, so you save money, your operators have only one interface to learn, and you conserve console inputs and outputs.

Telos
AUDIO | NETWORKS



telos-systems.com

Telos, the Telos logo, Zephyr, Zephyr Xstream, Zephyr Xport, The Best Way To Hear From Anywhere are all registered trademarks of TLS Corporation. © 2003, TLS Corporation. All rights reserved. aacPlus (TM) Coding Technologies

World Radio History

BBC Confirms Digital Commitment

by Lawrie Hallett

The BBC is undergoing a major expansion of its radio services, which will help the pubcaster in an environment of planned changes in legislative structures and experiments in community radio.

The corporation launched five national radio services and continued a major investment in local radio services, replacing and expanding studio facilities, in some cases relocating to more high-profile, easily accessible town- and city-center locations.

New national services

The BBC is one of the oldest radio broadcasters in the world, and the development of new and existing services coincided with the 80th anniversary of the first regular BBC radio broadcasts from station 2LO in London, which launched on the evening of Nov. 14, 1922.

The new national services are Radio 1 Xtra, Radio 5 Live Sports Xtra, Radio 6 Music, Radio 7, BBC Asian Network and BBC World Service.

Launched on Aug. 16 of last year, Radio 1 Xtra combines contemporary black music with its own specialized news service. Radio 5 Live Sports Xtra supplements the main Radio 5 network, and is designed to allow fuller coverage of sporting events and to avoid having to decide which game to cover when two

are played simultaneously.

Radio 6 Music went on the air in March of 2002 as the BBC's first new national music service in more than 30 years. The service carries classic and contemporary rock and pop music, along with archived sessions and interviews.

Radio 7 launched in December as a speech-based network, carrying comedy and drama, both classic and new productions. A regular complaint in recent years has been a lack of child-oriented programming on the BBC. The corporation hopes that providing 4 hours each day of such material on this network will help.

Kingdom around the clock for the first time since it launched in 1932. In recent years, it had only been carried overnight on Radio 4 after the regular Radio 4 programming ended.

The BBC is adding local radio services to DAB multiplexes around the country. By the end of 2002, more than a dozen local stations were supplementing their FM (and in some cases AM) coverage with DAB.

BBC Radio Scotland, BBC Radio Wales and BBC Radio Ulster, as well as regional language services BBC Radio Cymru for Wales and BBC Radio nan



ence to the term DAB. Instead, under the heading "What Is Digital Radio," the corporation emphasizes factors such as ease of tuning and ancillary services, such as text, data and even still pictures, once suitable receivers begin to emerge.

It is only once technical issues and the purchasing of new receivers are covered that a more detailed explanation of Eureka-147 DAB is provided.

Considerable future

Of course, it is not just the BBC that has realized the benefits of delivering radio services via alternative means.

As well as developing a number of commercial DAB multiplexes and Internet streams, many commercial networks are available via Sky satellite television, and some, including Kiss and Jazz FM, are making use of the Freeview platform, too.

Analog AM and FM broadcasting still has a considerable future in the United Kingdom as the government has not yet announced plans to phase it out, but broadcasters here, both commercial and public, have firmly committed themselves to a digital future.

That said, the BBC has not forgotten its history; in November it donated the original 2LO transmitter to the Science Museum for restoration and public display in London.

Lawrie Hallett is a free-lance writer and broadcast radio consultant who also works for the Community Media Association. Contact him via e-mail at: lawrie@terella.com.

NEWS WATCH

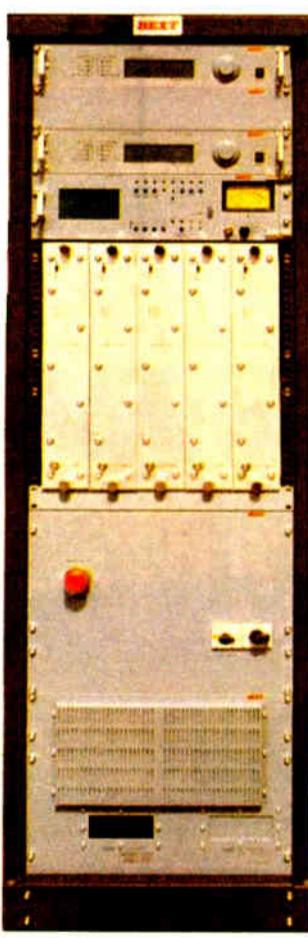
Ampex Voice Remembered

OAKLAND, Calif. Friends remembered Bob Morrison after his death in March.

"Bob had a long and colorful history in the broadcast and recording fields, starting in the 1940s while he was still in his teens," according to friend Jim Wood.

Morrison died at age 77 of cancer. He was familiar to many as the "voice" of Ampex alignment tapes. Morrison's early career took him from a film and audio studio in San Francisco to Voice of America headquarters in New York, and ultimately back to the Bay Area with Berkeley station KRE. He founded Standard Tape Laboratories and recently was involved in the manufacture of replica "ring-and-spring" microphones while researching the technical history of disc recording, Wood said. He is survived by his wife Pat.

GM's who love their engineers buy Bext



Easy to set up, great to listen to, modern in their construction and design, Bext transmitters hold up under changing conditions—in the industry and in the field. From multiple kilowatt transmitters to low powered exciters, STL's to translators to antennas, Bext is something engineers and managers can agree on.

For instance, how can you beat a full-featured one-kilowatt FM transmitter in three rack spaces, weighing fifty pounds, on sale for a limited time at \$8500?



BEXT
RF innovations for the broadcast world since 1985

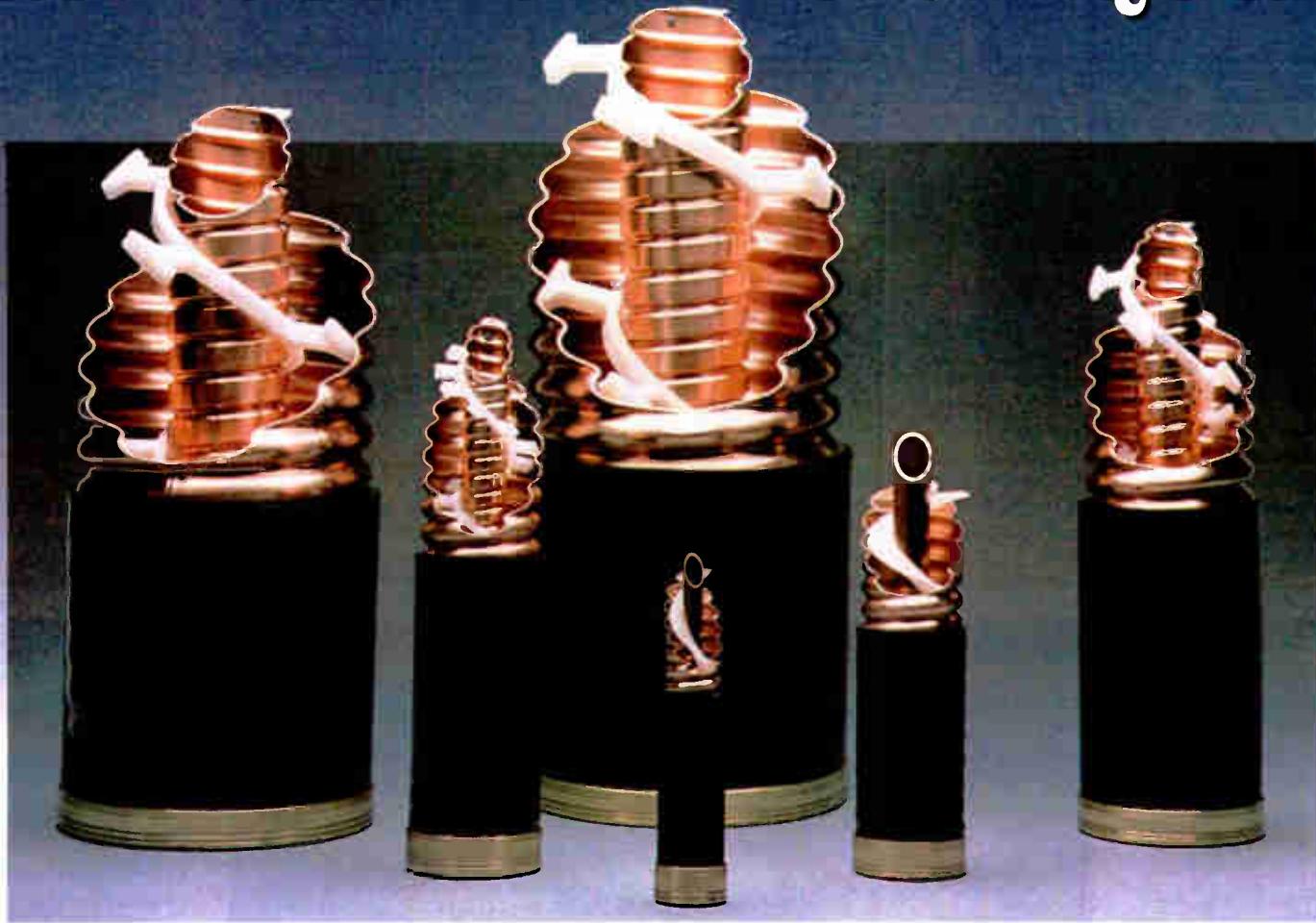
www.bext.com
888-239-8462 toll free

Hot swappable 5 and 10 kW FMs

See us at NAB2003 Booth #N2532

World Radio History

The Flexible Coaxial Cable that Doesn't Bend on Quality.



Introducing FLEXLine™ from Dielectric — our new, flexible air dielectric coaxial cable now available in sizes for every broadcast application from low power FM through high power DTV.

And because it's from Dielectric, FLEXLine™ meets the same rigid standards of excellence that you've come to expect from

the world's leading supplier of broadcast equipment. FLEXLine™ is manufactured from the finest material available. Simply stated, it's the perfect alternative for tough design challenges such as crowded tower installations, or any application in which flexible cable has advantages over rigid transmission line.

- **Sizes 7/8", 1-5/8", 2-1/4", 3-1/8", 4-1/8", 5", 6-1/8"**
- **Features precision fitted connectors**
- **5/10 year warranty**
- **Complements complete line of VHF/FM/UHF antennas and RF Systems**




Dielectric
COMMUNICATIONS

Engineering Excellence Since 1942



1.800.341.9678 • www.dielectric.com • Raymond, Maine

NEWS MAKER

Ankele at 80: Boards, not Bored

In a remote corner of western Alaska, Dillingham Schools ordered an Autogram studio console. FedEx wouldn't ship it. UPS wouldn't take it. So Autogram arranged delivery by dogsled.

Autogram boards have been called bulletproof. Indeed, one was hit by gunfire in Nicaragua. The console needed only one plug-in module replaced.

Ernie Ankele co-founded Autogram in 1969 and remains president. He turned 80 in February. Ankele spoke with Radio World's Ken R.

RW: How did you get interested in radio?

Ankele: When I was a kid, I built one-tube and crystal sets in the early 1930s. In the Air Force between 1942 and 1946 I was in radio school and took care of two-way transmitters. The instructors were supposed to be teaching me, but sometimes I was teaching them!

In September 1947 I went to work at KFDX(AM) in Wichita Falls.

RW: They probably had those big electrical transcription disks.

Ankele: Yeah, but we also had a wire recorder. There was tape in those days, but we didn't have it.

I stayed a year, and in 1948 I went to work at WBAP(TV) in Fort Worth as an engineer. The station is now KXAS(TV). I wanted to finish up an engineering degree I started before the war, and there were no engineering schools in Fort Worth, so I went to WFAA(TV) in Dallas so I could attend Southern Methodist University.

After I got the degree, I got a job at Texas Instruments. We were designing transistor circuits, which were fairly new at the time. They were flip-flop circuits, so it took two transistors for each circuit. They built them for IBM, which had one of those giant room-sized computers.

RW: Did they use punch cards?

Ankele: It was tape! Then I went up to Ft. Atkinson, Wis., to work with a company called EMI, where we designed video equipment.

I came back down to Continental Electronics in Dallas in 1963, where we designed radio automation equipment. We had a relay-logic system that was high-tech for those days. We used carousels and we built the controllers for it.

In August 1969, my wife DeLores and I started Autogram. We started building radio automation equipment. When I left Continental, they were getting out of that business, so they told me to go for it.

RW: What kind of controllers were you building?

Ankele: We built relatively simple ones with relay logic. We installed our first system at KRRV(AM) in Sherman, Texas, and we built it in the basement of our house. You could bring in up to 18 sources, which was pretty flexible back then. You could switch in a network, too.

We had special cart machines made by Sonomag that did time-announce. We had odd minutes (recorded) on one tape, and even minutes on the other.

The program director in Sherman could really make that thing sound like a live presentation. Since there had to be an engineer there anyway to read the meters every half-hour, he would look at the thermometer and poke in the (prerecorded)

cart with the right temperature.

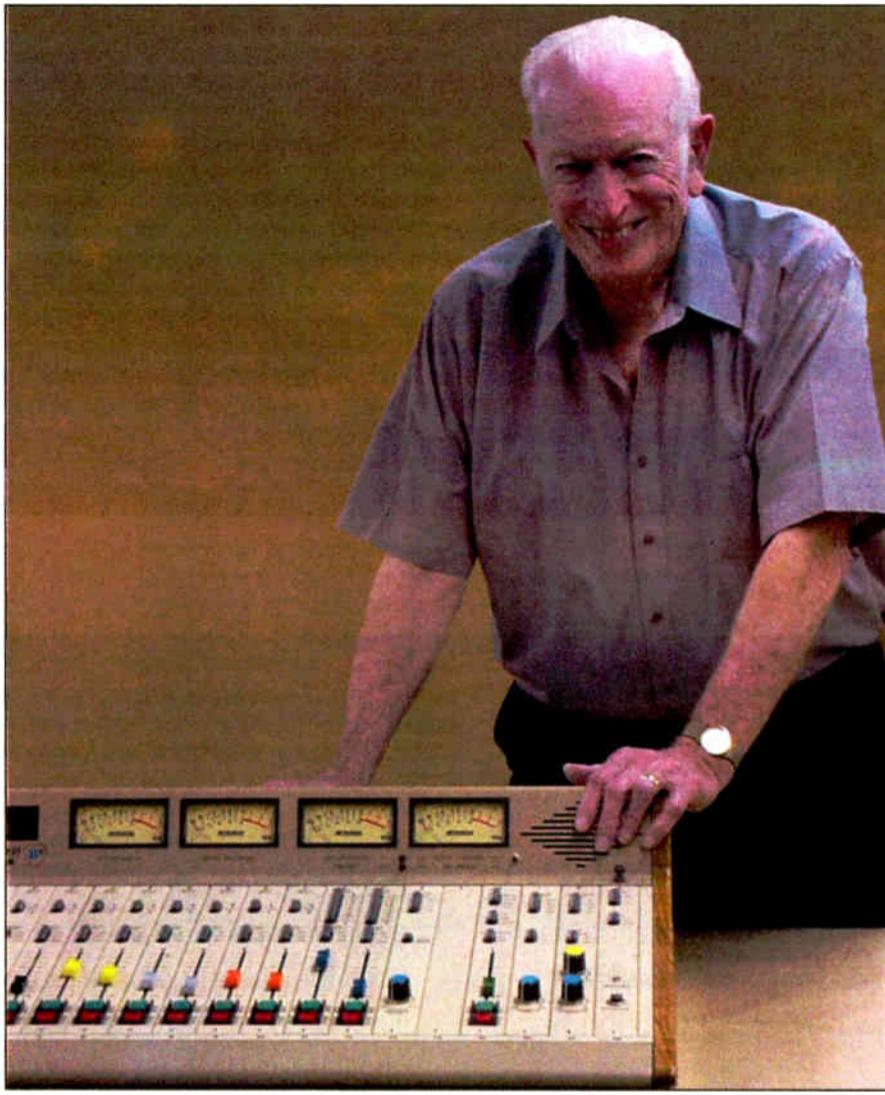
RW: So now you have experience in RF, automation and electronics; but you hadn't yet gotten into making the boards.

Ankele: It was about 1973. I knew two or three people at Collins Radio, right down the road from us. This was the time when computers were just getting started, and

going in those days. It was a really heavy, sturdy console with plug-in cans (amplifiers).

The problem we have today is we built the stupid things too good — so instead of buying new consoles, a lot of people are still buying modules for those things.

RW: So you failed to build in the planned obsolescence?



Ernie Ankele

Art Collins loved to play with this new computer. Collins asked if we could design and build an updated console for them because they didn't have any money.

We took them up on it and designed the IC-10. And we built a lot of them. The IC-10 has plug-in modules. We took it to an NAB trade show in Washington, and it was a big hit.

RW: What happened to your relationship with Collins?

Ankele: Collins gave us an order for 25 IC 6/10s. Near the end of this contract, they offered us \$3,000 for the project. Obviously we did not accept their offer.

Collins then farmed the IC 6/10 manufacturing out to a small electronics company that went broke. We continued to build the IC 6/10, this time with the Autogram name on it. Collins later released the remarkable eight and 10-pot console.

Collins then was sold to Rockwell International. Collins Broadcast Division was sold to Continental Electronics of Dallas. Continental chose not to stay in the console manufacturing business, so we survived.

RW: How many people did you have working for you at that time?

Ankele: In the heyday of the IC-10 we probably had 20 girls, and at one time we were 42 consoles behind. It was the hottest thing

Ankele: (Laughs) Yeah, we still continue to make the parts so people can service those older consoles. And some of those were built in 1975, '76.

RW: Where did the name Autogram come from?

Ankele: It's a contraction of "automated programming," because we started with the automation systems. We were still making a few of those, but it was the time when relay logic was turning into transistor logic. We chose not to stay in automation because it would have taken a lot of development; but we didn't need automation because we had the consoles.

RW: I understand you pioneered microchip automation.

Ankele: We built the Microgram, which was a highly sophisticated automated console run by a Radio Shack computer.

The biggest problem was that it had one microchip in it and it ran three programs. You had your program, audition and any other thing you wanted to use it for. Micros were brand-new, and people would say to us, "You mean, we're gonna run a whole radio station on this one chip? What if it craps out?"

So then we built the RTV-12 and RTV-20 (consoles), and that was the next series. Then we built the MiniMix 8 and MiniMix 12, our least-expensive con-

soles, which started at around \$2,300. They now cost about \$2,800.

RW: About how much business does Autogram do in a year? What about personnel?

Ankele: It's up and down, but a good month would be \$70,000-\$80,000 gross sales. We maintain about \$250,000 in parts inventory, and this is a reason for our success. We can deliver to a radio station that's off the air right away.

Neva White, who is a purchaser and manager, has been with us 30 years. She knows everything about everything. We have another who's been here about 25 years. We've had a good bunch of people come through, and it hasn't been too hard finding them because in the Dallas area we're close to a lot of high-tech companies.

RW: What lights your fire and makes you want to go to work every day after so many years in the business?

Ankele: When we have lots of orders! When orders are down, we have to watch the cash flow. When it comes back up, it's fine again. My wife DeLores is our secretary/treasurer. She keeps us all in line.

RW: Do you think the business model of using dealers is still a good one?

Ankele: We know that some big broadcast groups try to go to a supplier and buy directly, but we stick by our 20 or so dealers, who usually do a very good job for us.

The trend seems to be going towards buying direct from the manufacturer, but I don't think it's a good deal. The dealer can provide good service, and for us it's good because we don't have to worry about our money. If we sell to a station, we don't have a banking department or a way to check the guy's credit or anything else.

RW: What about your new products?

Ankele: The Pacemaker II^K is the latest one. It has a modular front panel and a card associated with it. You can change any of them at any time, and for easy service you can move one cable to another.

RW: What is the biggest mistake you ever made?

Ankele: Maybe getting into the business! (Laughs) The Microgram cost us a lot of money, about \$250,000, and it was well before its time. And with the single micro in there, there was a reluctance to buy it, so it was a bad step for us. We just bit the dust on that one and moved on. You learn by things like that...

RW: Do you think you're ever going to retire?

Ankele: Well, I'm at the age now when it's time to think about hanging it up; but we haven't had any offers to buy the company. I'd like to retire, though.

RW: What would you do?

Ankele: We have another little company called "Firepops" which makes electronic devices that create sound effects to go with gas logs. It runs on four C-cell batteries. We've sold about 900 of them!

Ankele recalls that one client on the Amazon River in Peru complained that his new console was full of bugs.

"Full of bugs?" said Ankele with surprise.

"Yes," said the one client. "When the console cools down at night, all the bugs crawl in through the back, but they always leave the next morning when we turn it on."



Radio World, April 7, 2003

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

Engineering True Confessions

by John Bisset

This story is true. Names are omitted to protect the innocent.

A medium-market chief was reviewing weekend discrepancy reports on a Monday morning. This one, from a new weekend part-time operator, stood out:

"Whenever I turn the microphone on, the speakers shut off."

Uh-oh. Can't have that!

Here's another from the "true confessions" file. A chief was awakened at home by an operator having some problem with the remote control. The chief, referring to the CRT-displayed remote control, asked, "What does the monitor say?"

The jock asked the chief to wait. Returning to the phone, he informed the chief that the monitor said "JBL."

Hey, remember when you had to pass an FCC test before being allowed on the air?

Tell us about your own "true confessions" and we'll share them with readers.

★★★

Wavetek, the digital multimeter company, has released a new 20-page catalog that describes its portable DMMs and other electrical testers, kits, specialty probes and bench-top test and measurement equipment.

Call (877) 596-2680 for a copy or e-mail your request to info@metermantest-tools.com.

★★★

We've discussed the importance of keeping the transmitter well stocked and outfitted. Here are two more items for your list.

Do you have a stocked first-aid kit,



Wavetek has a new catalog.

mounted where it is clearly visible?

Do you have a trouble light with a long extension cord and a stock of spare bulbs?

Drop by a Lowes or Home Depot to find a large selection of trouble lamps, both fluorescent and incandescent types.

★★★

In a previous *Workbench*, we described a circuit for monitoring the status and failure of tower lighting (Oct. 23, 2002). This circuit also can be interfaced with the status inputs of a transmitter site remote control unit.

Tom Lange is with WSHS(FM) and the Sheboygan Area School District in Sheboygan, Wis. In his contract engineering days he designed a similar circuit, minus the 555 failure indicator, for WKTT(FM) in Cleveland, Wis. His circuit used a toroidal current sample trans-

former driving two switching transistors in a common emitter circuit.

Tom had these circuits set at different thresholds to indicate the activation of the tower lighting (presence of obstruction lamp current) and beacon (a rise in current when the beacon lamp flashed). The collectors were fed directly to the status inputs on a microprocessor-based remote control. These status inputs were +5 volt "pull-up resistor" inputs, so a power supply was not needed to operate the transistor circuits.

At the studio, the operator could observe that the tower lighting was functioning by seeing one status LED that glowed steadily and another LED flashing on and off on the studio remote control. If the beacon failed, the flashing LED would no longer flash.

If the obstruction lighting failed and the beacon was OK, both of the LEDs would flash. If none of the status LEDs lit, none of the tower lights were on.

Physical observation of lighting must be performed on a regular basis. This method, however, provides instant lighting failure notification.

Thanks, Tom, for a different twist — two LEDs — to monitor tower lights accurately. Anything to help the operators.

★★★

UPS and external cabinets could leak, smoke and, in rare instances, cause internal fire.

The batteries must be replaced by trained technicians. Registered owners will be contacted with an aggressive remediation plan. Check the company's Web site, www.powerware.com, for updates.



Keep a first-aid kit on hand at the transmitter site.

If you haven't been contacted, call the Powerware Service Hotline at (800) 843-9433. You can register your UPS by clicking on the Safety Notice button at the company Web site.

★★★

If your transmitter and studio HVAC systems are serviced regularly, be sure to ask the technician to drop a few "Scum Buster" tablets in the condensate pan.

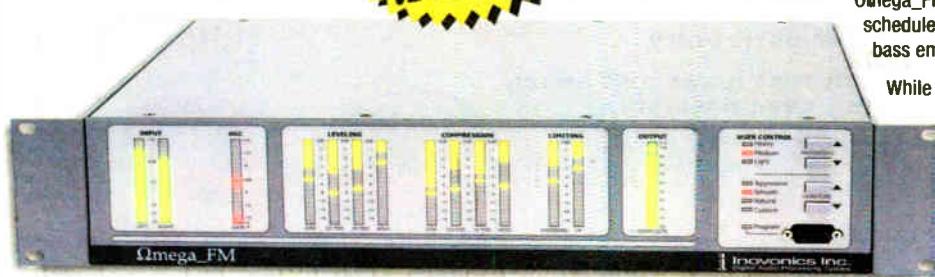
Algae can and will form in these pans. The growth eventually will block the condensate drain, causing a flood in your studio or transmitter area.

Make sure routine maintenance includes not only new filters but a forced air cleaning of the condensate drain. If

See WORKBENCH, page 18 ►

Digitally Diverse Omega_FM - \$5880

COMPREHENSIVE PROCESSING FOR FM, WITH AN INDEPENDENT AES/EBU OUTPUT THAT CAN FEED A DAB EXCITER AT THE SAME TIME.



Omega_FM is a 100%-digital, software-based design. New Rev2 software offers a built-in scheduler for dayparting, plus advanced AGC logic, a fourth section of parametric EQ, harmonic bass enhancement and composite output filtering.

While Omega_FM's composite/MPX output feeds your existing FM exciter, the fully independent AES/EBU digital output can be configured for flat, 20kHz response with programmable delay. This allows a single processing chain to impart a common 'sonic signature' to simultaneous FM and DAB transmissions. The inherent audio quality limitations of FM (15kHz cutoff, plus pre-emphasis and its attendant 'protection' limiting) will not compromise the digital broadcast.

Despite its modest price, Omega_FM challenges the versatility and performance of any processor on the market. Even if you are delighted with what you're using now, see your preferred equipment supplier for a comparison demo at your station.

Hear It

Processing doesn't get any better than this.

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

World Radio History

What We Can Learn From DTV

As U.S. radio broadcasters finally begin their digital transition, they can observe and benefit from the experience that U.S. television broadcasters have gained in their corresponding process, already in progress. Studying that other transition may help define a realistic timeline and projections for the road ahead for radio.

Yet the most striking conclusions may be how the two processes diverge. While there are numerous commonalities between the radio and TV transitions, there are at least as many important differences between them, as well.

New channels

Both radio and TV broadcasters are building new delivery channels to deliver digital content to consumer receivers. The channel that U.S. DTV provides allows both traditional ("standard definition") and new ("high definition") types of television content to flow, including the transmission of multiple programs simultaneously on a single TV channel. This implies that

Transition parameter	DTV	HD Radio
Initial release of specification	1999	2002
Sponsoring body	ATSC (open standard development org.)	Ibiquity (proprietary developer)
Delivery paths	Cable, DBS, OTA (UHF & VHF)	OTA (AM & FM), Internet
Perceived advantages	Major qualitative & quantitative growth	Minor to moderate qualitative growth (possibly some later quantitative growth)
Amount of "HD" content currently available for broadcast	>20%	100%
Typical conversion costs per station	>\$1M	<\$100k
Major threat to broadcasters	Digital content piracy	Failure of format (wasted conversion \$)
Primary obstacle to conversion by consumers	Cost, fear of obsolescence, inadequate HD content to date	Inadequate value of new service
Regulatory environment	Mandatory conversion, return of analog spectrum by 2006	Voluntary conversion, no spectrum changes

This chart compares some parameters of digital conversion for U.S. television and radio broadcasters.

the conversion process faced by U.S. television broadcasters includes both transmission and production equipment, and that stations' infrastructure will require substantial change.

The situation is quite different in radio, where the digital content that HD Radio can deliver is already available and well-established at radio stations, and no multiplicity of audio sources is provided (in the current format, at least), so little production equipment or facility infrastructure changes will be required. While TV now has to upconvert a lot of analog content for its digital channels, radio has been downconverting digital audio to its analog channels for many years.

Although that's good news for radio stations' conversion costs and timelines, it's important to note that this same (or better) digital content quality has for some time been available to consumers via packaged media and the Internet. HD Radio will simply bring radio services into essential parity with the rest of consumer audio.

This will be helpful for radio's long-term prospects, but it will not create strong unique demand for HD Radio receivers, nor drive the sales of new audio systems to faithfully reproduce newly available content. The best methods of stimulating penetration for HD

Radio receivers will simply come from bundling its reception capability into other digital audio equipment, such as car CD changers, boomboxes and home receivers.

Moreover, in order for the transition to HD Radio to have any impact at all,

The Big Picture

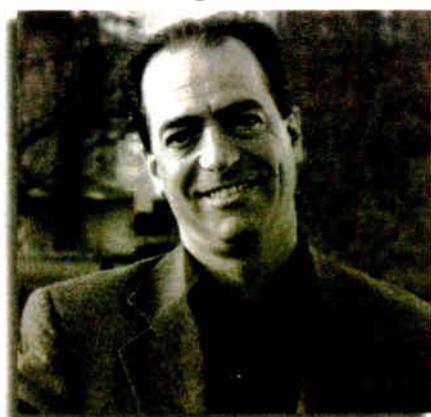


Photo: Gary Hayes, BBC

by Skip Pizzi

used by analog TV stations. HD Radio's IBOC approach leaves stations' spectrum usage as is, resulting in a far smaller regulatory burden.

Because of this dissimilarity, TV stations are faced with a mandatory conversion timeline, while radio stations can choose whether or when to convert.

Another welcome difference for radio is that it has no downstream multichannel delivery services to cope with, as DTV is currently struggling with over carriage of its new services by cable and DBS providers. For radio, it's strictly over-the-air (or on-line), with broadcasters maintaining complete control of their destiny.

Workbench

► Continued from page 17
you encounter an algae plug, before removing it press on it with your finger. You'll be amazed at how strong those fibers are.

The Scum Busters prevent the formation of algae, keeping drains clear.

★ ★ ★

Ralph Jones of Entravision Radio in Sacramento read the March 1 *Workbench* describing tasks an engineer shouldn't be asked to do.

He once posted a sign on his desk at a previous station. It read, "That's Engineer, not MULE!"

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

While TV upconverts analog content for its digital channels, radio has been downconverting digital audio to its analog channels for years.

most broadcasters will have to adjust their philosophy on audio processing. If typical practices persist on music stations' digital signals, it will obviate any discernible quality improvement provided by the new service.

It's well known that the fundamental distinction between U.S. digital TV and radio involves their regulatory profiles. DTV involves broadcasters' moving to new spectrum, and the eventual harvesting of the bandwidth previously

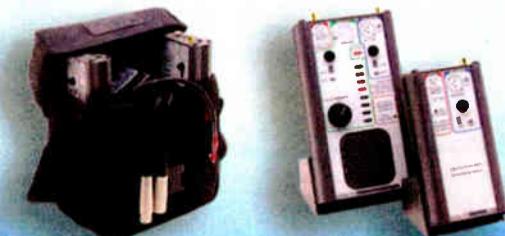
Other parameters of the two transitions are compared in the table.

One area in which the two transitions share similar goals is in their potential for generating new revenue streams for broadcasters via datacasting. While this promise may never be fulfilled to the level of current expectations, HD Radio will have the advantage of mobile delivery, which it may be able to successfully exploit. (The current state-of-the-art in U.S. DTV reception does not include

See DIGITAL TV, page 19 ►

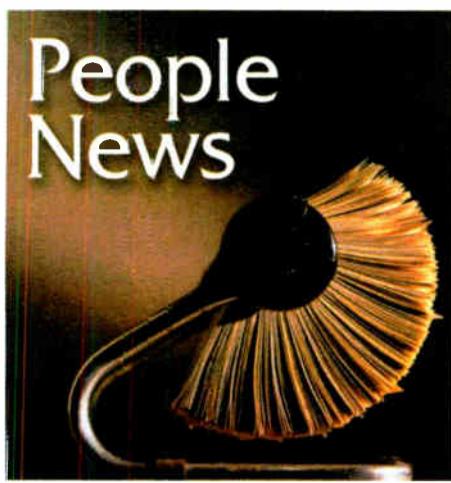
Simple level setup . . . for a switch.

- Switchable fixed Mic and Line level outputs and inputs make module or audio system gain setting simple
- Combination precision oscillator, visual meter with monitor speaker: PT-AMG2
- Precision oscillator: PT-ASG1
- Benchtop performance, 9V portability
- Rugged construction with test leads and bench stands included, carrying case optional



RDL
Radio Design Labs

SPECIALISTS IN PRACTICAL PRECISION ENGINEERING™



Victory Sports named **Mark Durenberger** the network's VP of technical operations.

Clear Channel Radio named **Lisa Dollinger** as senior VP, marketing and communications.

Howard Lance was named president and CEO of **Harris Corp.** and elected to the board. Lance was president of NCR Corp. and COO of its Retail and Finance Group. He replaces Philip Farmer.

Marieke Wijtkamp is now COO of **OMT Inc.** and has worked with Infocorp Computer Solutions and Norsat International. **Mark Ahrens-Townsend** is now a member of OMT's board.

Euphonix promoted **Theresa Grant** to marketing communications manager.

Digital TV

► Continued from page 18
mobile capabilities.)

Also shared is the need by both radio and TV broadcasters to aggressively promote the service and proactively influence consumer awareness of the new systems.

In addition, radio stations should expect some dire early interference reports, as DTV experienced. Although tests have shown that seriously problematic new interference is unlikely, stations should still be ready for it. It is hard to imagine that all the new RF energy pumped in the AM and FM bands when HD Radio is broadly adopted will not result in at least a few cases of upset listeners. As with DTV, it is likely that these can be solved on a case-by-case basis, and that the problem will soon fade away. Nevertheless, some negative press may result in the early going.

No pain, no gain

Bumpy transitions are no fun while they're happening, but like a major road construction project, once it's completed, the memory of the pain quickly subsides, and the improvement is enjoyed for a long time. Ultimately it's the product, not how it got there, that's appreciated.

This is what will eventually happen in U.S. DTV, where a troubled and expensive transition ultimately results in a successful and seemingly transparent system (also similar to the U.S. cellular telephone industry's experience). The current question is just how long it will take to get there.

Meanwhile, for U.S. digital radio the transition may be easier than DTV's, but its primary question is whether the product will even be acknowledged, let alone embraced by consumers. It is possible for a transition to be *too* smooth. If some bits fall in the digital forest and no one notices, is there any sound?

Skip Pizzi is contributing editor of *Radio World*.

FEATURES

Ralph E. Faison added CEO to his responsibilities at **Andrew**. He had been president and COO.

Jimmy Steal is now VP of programming for **Emmis Radio**, shifting positions from regional VP of programming, and will oversee local programming at all of its 21 domestic stations.

Broadcast Electronics appointed **Ellis Terry** as western region RF sales manager. **Steve Schott** is now the southwest regional RF sales manager. Terry and Schott had both been regional sales managers with Harris. **Criss Onan** has expanded responsibilities to a position of key accounts manager and will continue working with Technet Systems Group. **Lowell Smith** is taking over as customer service engineer for digital studio products.

Mark Levy joined the **Radio**

Advertising Bureau as director of educational services. **RAB** hired **Brandeis Hall** as director of Co-op/NTR Services.

ABC named **Tami Corbin** to VP of human resources. **Lorine Gladys** was appointed VP of compensation and human resources information systems.

NPR named **Rodney Huey** as VP for communications.

Waitt Radio Networks said **Judy Gilliard** is the its regional manager for the Northeast Region. Gilliard was a regional manager with **Talk America**.

Randy Bush was named VP and GM of the **Journal Broadcast Group's** Tulsa operation.

Mackie has promoted **Frank Loyko** to senior VP of sales, worldwide. **Paul Rice**, senior VP of international sales and business development, is stepping down.

Riverwalk Jazz host **David Holt**

won his second Grammy Award for "Legacy — Doc Watson and David Holt" in the Best Traditional Folk Recording category.

Independent radio producer **Robin White** won a Media Award for Broadcast Journalism from the American Institute of Biological Sciences for "Bugs on Mars," broadcast on "Living on Earth" in November 2002.

The Conclave Learning Conference added three to its board: **Gary Nolan** is FM operations manger for Infinity Broadcasting's Twin Cities cluster. **Jerry Boulding** is senior VP of entertainment programming for the Pittsburgh-based American Urban Radio Networks. **Brad Erickson** is a Minneapolis-based traffic reporter for Metro Traffic.

Tell us about your job change or new hire. Write to us at radioworld@imaspub.com.

Prophet Systems Innovations



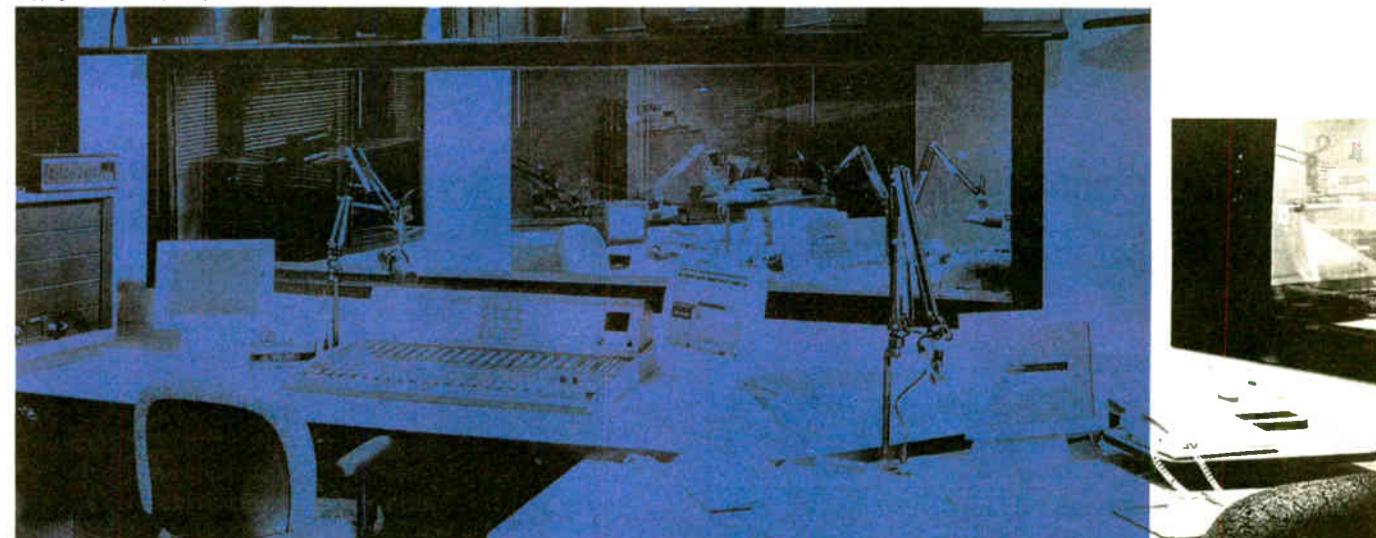
DIGITAL AUDIO SOLUTIONS AS INDIVIDUAL AS YOUR STATION

There is no station like yours. And no digital audio solution like **NexGen Digital Broadcast** from **Prophet Systems**. It doesn't matter if you're after seamless music scheduling, effortless voice tracking or trouble-free WANcasting. You'll find the features you need from **Prophet Systems**. **NexGen Digital** is customizable and scaled to fit your format and budget – whether you're responsible for a dozen stations or one. And it's developed and supported by real world broadcasters. So call to find out all the ways **Prophet Systems** can help you deliver great radio, with a system that's as unique as you are.



1-877-774-1010
www.prophetsys.com

Copyright © 2003 Prophet Systems Innovations



See us at NAB2003 Booth #N1924 & SU5369

World Radio History

ROOTS OF RADIO

Blue Book Recalls Words at War

by Read G. Burgan

"Words at War" was one of the best wartime radio programs of World War II. It is also the title of a new hardcover book that explores the role of American radio during the war. Author Howard Blue has succeeded in creating a scholarly and comprehensive, yet readable, book.

Blue provides mini-sketches of the major writers and actors who spearheaded radio's wartime programming including writers Norman Corwin, Arch Oboler, Archibald MacLeish and William Robson as well as actors like Will Geer, Orson Welles, Canada Lee and Burgess Meredith.

He provides details of their lives and political and social orientation and relates anecdotes about their personalities including their methods of writing and passions for various causes that influenced what they wrote. He describes their attempts to affect the American social conscience by including themes dealing with racial intolerance, anti-Semitism and poverty at a time when radio — or at least many of those who controlled it — wanted only to entertain.

He also provides details of what it was like to live in an era of limited supplies, massive family disruption, hoarding and all the other problems in a country at war. When America went

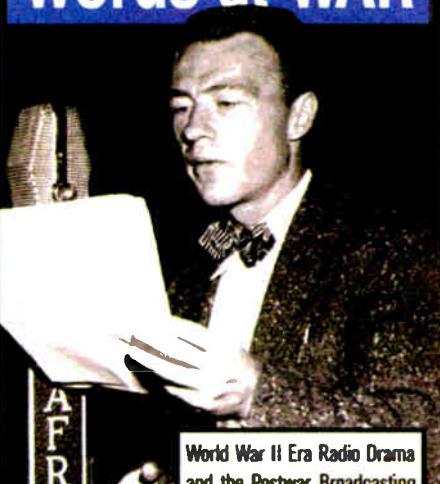
to war, our country was far from united. Many Americans saw it as Europe's war and none of our affair.

Great drama

Blue tells of radio series developed to aid in the indoctrination of the American people. He provides insights into the propaganda purposes of radio's wartime programming and examples of series and individual episodes designed to change the attitude of the public.

Any serious broadcast professional will find the list of wartime programs worth the cost of the book. Blue lists and describes some of the most outstanding dramatic programs ever aired

Words at WAR



World War II Era Radio Drama
and the Postwar Broadcasting Industry Blacklist

Howard Blue

on American radio including "We Hold These Truths," "Johnny Got His Gun," "On A Note of Triumph" and "Bill of Rights" — important programs for any serious student of radio.

But he also tells a troubling story in which yesterday's heroes become today's enemies. He relates how many of the writers and actors who produced radio's finest wartime dramas later were persecuted for the very work that had gained them such praise.

Many of radio's finest were blacklisted because of alleged Communist ties. It was a time when friends testified against friends. Some committed suicide. Others left the country. Still others struggled to support their families as their livelihood vanished.

Blue names names. In many cases, the true villains turn out to be respected members of the broadcast industry.

First-hand memories

Blue was born, raised and educated on Long Island, where he taught high school social studies for 32 years. Why did a high-school teacher decide to write a book on wartime radio drama?

"A combination of my lifelong interest in World War II and my warm memories of the tail end of the Golden Age of Radio played a role in motivating me to write the book," he said.

This is a well-written, wonderfully researched book with ample documentation. To write it, Blue visited many archives and museums, interviewed dozens of first-hand sources and listened to hundreds of hours of radio programs from the period.

Getting interviews from some of the icons of radio's golden age was challenging.

"I knew that Art Careny did not like to give interviews, but I wrote a couple of letters to him anyway," Blue said. "He did not respond. However, I was fortunate to have received his unlisted telephone number. An actress who had been very helpful to me and who was a friend of his urged me to call him and inform him that I was calling on her recommendation. That was how I was able to interview him."

Others responded as well.

"Arthur Miller, who lives in See WORDS AT WAR, page 21 ▶

Your
signal
picture
sound
message
vision
reputation

is only as good
as your CABLE

Cable, Connectors, Assemblies,
Patchbays, Panels & Accessories

GEPCO
INTERNATIONAL, INC.



1-800-966-0069 www.gepco.com

FIRST PERSON

Annual AM NRSC Measurements

by Mark Persons

Occupied bandwidth and RF harmonic measurements are required on all AM stations annually. The FCC allows a maximum of 14 months between successful measurements to stay in compliance.

This kind of measurement, otherwise known as NRSC, became a more rigorous version of the surviving part of the old annual Audio Proof of Performance that also required spurious and harmonic radiation measurements. NRSC compliance measurements became law in 1994.

The first year saw many stations making equipment changes to bring facilities into compliance. As a result, interference on the AM broadcast band has decreased noticeably.

Details for engineers

AM NRSC compliance testing kept a lot of other people, including me, busy these days. As a C-QUAM AM Stereo installer and technical consultant to 40 stations, I was well aware of the problems stations could face in getting transmitters to pass the occupied bandwidth and spurious emission tests.

A legal loophole was inserted in the FCC rules in 1990 when the FCC temporarily suspended the requirement to do performance testing if the stations involved had installed an NRSC-compliant audio lowpass filter.

AM RF harmonics are required to be suppressed at least 73 dB below carrier on a 1 KW station and 80 dB on a 5 kW or higher power station. All AM stations have been required to meet those specifications since the 1960s. Over the years, I repaired many RF harmonic problems by redesigning antenna coupling networks and installing RF traps.

For one station, I built and installed an RF trap to keep the unwanted station from getting into the transmitter. The trap lowered the level of the unwanted station until the mixing product was transmitted at a level that was low enough to make FCC specifications.

In the other case, the two stations involved were 60 kHz apart. The mixing product appeared 60 kHz on the

If a transmitter sounds good on the air, chances are it will pass the occupied bandwidth testing.

Of the 47 stations I personally measured the first year of NRSC, about 20 percent did not make specifications on the first try. About half of those had RF harmonic levels in excess of that allowed by the FCC. The other half had occupied bandwidth problems.

I found two stations with significant RF mixing products resulting from proximity to another AM station. Both of the troubled stations had Harris MW-1A transmitters, although the problem can happen with any transmitter. It is just a matter of degree.

other side of the client's carrier at about 68 dB down. It fell within the NRSC mask. If it had not, the mix would have been illegal. So, the client was lucky in that he did not need to purchase an RF filter even though the mix was 5 dB hotter than would otherwise be allowed.

I have carried a Delta Splatter Monitor since they were first introduced. It makes a great precision demodulator for tuning AM transmitters.

For occupied bandwidth measurements, I carry a spectrum analyzer. It

has an RS-232, which links to a notebook computer. The screen data is stored on floppy disk, which is carried back to the office and printed by a desktop computer along with the rest of the report.

If a transmitter sounds good on the air, chances are it will pass the occupied bandwidth testing. I ran into a few stations where the processing badly smashed the audio before the NRSC low-pass filter. The station sounded bad, but passed the test.

Clean and dirty

Tube-type transmitters are most likely to have bandwidth problems when the tubes have low emission. Almost no tuning will fix that. Remember that harmonic products of audio may easily fall outside the 10 kHz bandpass if the harmonic distortion is created in the transmitter after the NRSC filter.

I ran into several pulse duration modulated transmitters with problems. One was a Continental Power Rock where a PDM filter coil went out of tolerance allowing more than the legal amount of 70 kHz modulator switching frequency through. A Nautel AMPFET 5 had an open capacitor in one of its 70 kHz notch filters.

It seems all of the Harris MW-1 and 1A transmitters I checked used up more of the dial than their high-level plate modulated counterparts. In most cases, adjusting the RF Driver tuning made a big change in how clean the transmitter was.

Harris recommends running the RF driver at about 1.5 ampere of DC current. They also have a modification kit to clean up much of the splatter. Apparently transmitters on the high end of the AM band are most likely to occupy more bandwidth than is allowed. The kit takes at least three hours to install.

See you further down the road. I'll leave the soldering iron on for you.

Mark Persons WØMH is certified by the Society of Broadcast Engineers as a Professional Broadcast Engineer and has more than 30 years experience. His Web site is www.mwpersons.com.

BUSINESS DIGEST

Netia Names U.S. Distributor

TurnKey Media Systems is the new U.S. distributor of Netia Radio-Assist software.

The company, based in Olathe, Kansas, made the announcement in conjunction with Netia. The manufacturer is based in France and has offices in Fairfield, N.J.

TurnKey's owner and president is Catherine Slocum; the sales manager is Scott Slocum.

"The emergence of Netia as a world leader in digital audio for live and automated radio formats is already on its way to being repeated here in the United States," Scott Slocum said.

Slocum worked for Computer Concepts Corp. from 1991 until 2002; he is also a former radio owner and manager. Obie Dixon will handle projects in the southern United States for the company.

To contact the company in Kansas, call (913) 568-2254 or e-mail to netia@turnkeymediasystems.com.

Words at War

► Continued from page 20

Connecticut, only responded to my first letter ... an entire year after I wrote to him. I thought that it would be a phone interview if it happened. But he suggested that we meet in his New York City apartment, which we did. It was a fascinating experience."

In some cases, the actual interview was more difficult than arranging it.

"The interview of Allan Sloane, who was both a victim of the blacklist and an informer about other people, was one of the most interesting ones. I thought that his informing was awful; but during my two visits to him, I came to like him very much."

Blue says he chose not to ask Sloane a direct question about the blacklist.

"But he knew the topic of my book and he clearly understood that I was interested in his experience with the blacklist. My indirect approach paid off beautifully. He gave me the most detailed account of how CBS dealt with people whom the network fired because of the blacklist."

Blue's dogged determination to ferret out available sources pays off. "Words at War" is a fascinating read and will serve as a valuable resource.

The book is 407 pages and retails for \$34.95.

"Words At War" by Howard Blue is published by Scarecrow Press, Lanham, Md., and Oxford, ISBN 0-8108-4413-3. For information, visit www.scarecrowpress.com.

Read Burgan is a free-lance writer and former public radio station manager. ●



Howard Blue

Wartime radio drama had a job to do to support the war effort. Part of it had been to boost the nation's readiness to accept women in nontraditional roles. But the networks were never comfortable running ahead of the nation to promote social change. When the war ended, radio considered it had done its job. The Army, war plants, and radio sent women back home, "where they belonged..."

The termination of "Words at War" just a month after Germany's surrender, but while the country was still fighting Japan, bore similarity to the cancellation or discontinuation of other broadcasts that proposed social change, such as the "American Women" series and programs promoting tolerance, particularly toward blacks. There seemed little reason for doubt. The end of the war meant a political and social swing to conservatism in American life...

The broadcasting industry also actively contributed to the blacklisting mania. A few of its executives initially protested the witch-hunt. But, subsequently, it caved in to the threats and fully cooperated. In 1950, to reassure advertisers and the Communist hunters of the political correctness of his network's employees, CBS President Frank Stanton approved of a "loyalty oath" to be taken by all company employees.

PRODUCT EVALUATION

Boston Acoustics Takes New York

The Recepter Radio Proves to Be a Tough Performer in a Tough Town

by Frank Beacham

New York City is a tough town. The old cliche that "if you can make here, you can make anywhere" is rooted in a fundamental truth. Funny how it applies as equally to radio receivers as to people.

Manhattan is a canyon of RF horrors. Radio signals crowd into a jigsaw jungle of concrete, steel and mysterious emissions. When I re-located here over a decade ago, I had to give up world-band radio listening. Too much interference in my Upper West Side apartment. It was a challenge just to get a listenable NPR broadcast on the cheap tuners in common AM/FM receivers.

It was in the years after moving into the city that I was first exposed to a new generation of premium tabletop radio receivers designed for difficult reception areas.

Among the best were the GE Superadio III (\$65), C. Crane's CCRadio (\$160), and two models designed by the late Henry Kloss — the Tivoli Audio Model One (\$100), and the now discontinued Model 88 from Cambridge Soundworks (\$150).

Now it is a pleasure to welcome the Boston Acoustics Recepter Radio

(\$159) to the ranks of the best tabletop AM/FM radios. The Recepter has a handsome, modern compact design with simple exterior controls, a big, bright easy-to-read LCD display and a large front-facing speaker. The Recepter is available in three colors: charcoal, platinum and polar white.

AM surprise

To assess the new radio's quality, I tested a Recepter side-by-side with a GE Superadio III and a Tivoli Model One. Its FM reception performance — using the included wire antenna — equaled both.

When I attached a Terk FM Pro antenna, the Recepter soared, almost achieving flight. It received all the marginal FM stations in my area with ease. It locked precisely onto stations and didn't drift off the frequency. For FM performance, I have used no better receiver — ever!

However, the big surprise came with the Recepter's AM performance. Though Boston Acoustics doesn't highlight the radio's AM capability, it ranks with the best we've heard from this kind of product. AM reception with our Recepter equalled the excel-

lent Tivoli Model One, but, at least at my location, it clearly outperformed the GE Superadio III.

This came as a bit of a shock, as the Superadio's reputation is built on its exceptional AM reception. GE beefed up this classic model with additional RF stages and a large, built-in 200 mm ferrite loopstick AM antenna. The Superadio's performance has made it a preference of many AM and FM DXers.

placement of these small radios is critical to sound fidelity and it can change significantly depending upon location and positioning.

Where the Recepter really differentiates itself from the Model One is with the automation features. The Model One is a bare-bones, austere design dating back to Henry Kloss's pioneering days at KLH. It reflects Kloss's philosophy of extreme simplicity. He resisted adding what he considered unneeded gadgetry to a product.

In an interview in 1994 with Radio World, Kloss wrestled with what he considered the unnecessary accoutrements of radio receiver automation and was uncertain why so many people seemed to want it. To him



Photo by Bob Kavacs

The Recepter is only 4 inches high, but has a solid feel.

I compared all three radios on a range of AM stations. Each time the Recepter and Model One tied, both offering clearer reception with slightly less background noise than the Superadio. The side-by-side comparisons were made during afternoon hours with each radio's internal AM antenna. Further tests in the night hours upheld the Recepter's excellent performance.

While not stressing AM performance, Boston Acoustics most certainly touts the Recepter's ability to pull in weak FM stations and the high selectivity that allows it to clearly separate closely spaced stations. But the manufacturer, known best for its high-fidelity speaker products, most emphasizes the wide-range speaker driver that enables the surprisingly high-quality sound to come from such a small radio.

And small it is. Dimensions of only 4 x 7.5 x 6 inches and a weight of four pounds make the Recepter the smallest of the premium table top receivers that we've seen. The Tivoli Model One, the radio we'd pick as the Recepter's closest competitor, is the same weight and only an inch wider, perhaps due to a wooden case that the Recepter does not have.

Boston Acoustics said the speaker driver, designed for the radio, is combined with an actively equalized amplifier that uses proprietary bass enhancement circuitry called BassTrac for "full, satisfying bass even at low volume."

We agree that for its size, the Recepter is a very good-sounding radio. But in our listening tests, we'd give the Tivoli Model One a slight edge for sonic quality.

To our ears, the Model One's sound was a bit richer and the bass a bit deeper. However, it should be emphasized that the contest was very close. It's also important to note that

the sound was everything. A giant, silky-smooth manual tuning knob and volume control was all that a good radio needed.

The designers of the Recepter chose a different direction, one that differentiates it from Kloss's Model One. However, they wisely resisted the Japanese tendency toward complexity by adding too many buttons and controls. (Note: At this winter's CES show, Tivoli Audio announced the Henry Kloss Model Three Clock Radio. It was not immediately available for comparison but Radio World plans a review.)

The Recepter's AM/FM tuner has a 20-preset station memory. For clock radio use, it offers two independent wake-up alarms. Either alarm can be set to music, buzzer or both. Most controls are located under a lift-up door on top of the radio. Battery backup, using three AAAs, retains presets and time settings during a power outage.

An LCD display presents the station, clock, and alarm/sleep status, while a sleep function lets the Recepter play for up to an hour before turning off automatically. There is no preset button clutter. Once you have stored your favorite stations in memory using the button under the lid, the front-mounted tuning knob can be set to tune in only those stations. It's a nice trick.

The Boston Acoustics Recepter Radio is among the best modern compact AM/FM clock radios ever built. It's ideal for difficult reception areas where a premium quality tuner is needed. Its sound quality is so good you'll do a double take when noting the size of the speaker. And its feature set is ideal for those desiring a simple level of automation and a pleasant morning wake-up call.

To order a Recepter radio, call (800) 770-7686 or visit www.bostonacoustics.com.

BROADCAST TOOLS® **new** "Rack-Able"

The upgraded SS 2.1/TERM III & BNC III switcher/routers are improved with new front panel switches. They may be used as a desktop device, and are equipped with mounting holes for wall mount installation or may be installed on the new RA-1 "Rack-Able" 1RU mounting shelf.

The new "Rack-Able" SS 4.1 III switcher replaces the popular SS 3.1 while adding a forth stereo input channel and front panel control. We've kept the best of the SS 3.1 features and added a few more.

The new Silence Monitor III improves on the features of the original SSM, with front-panel control, removable screw terminals, "Plug & Play" installation, built-in program switcher, restore timing delay, aural alarm and relays for most remote functions. Now rackable!

The new SS 8.1 II switcher replaces the popular 6x1 with the addition of two more stereo input channels and GPI, while keeping the price the same! The SS 8.1 II may be desktop, wall mounted or installed on the new "Rack-Able" mounting shelf.

The new RA-1 (1-RU rack shelf) provides mounting for three tri-rack or two half-rack "Rack-Able" configured products. The RA-1 is pre-drilled for flush and recessed product mounting. The RA-1 is furnished with filler panels and mounting hardware.

Look for additional "Rack-Able" products soon.

639 Sunset Park Drive • Suite 101
Sedro-Woolley, WA 98284 USA
(360) 854-9559 • FAX: (360) 854-9479

BROADCAST
t o o l s
www.broadcasttools.com

See us at NAB2003 Booth #N2350

simplydifferent.



the new tube



30

series

Never satisfied to rest on their laurels, our engineers were inspired to improve upon the technical excellence and coveted sound of valve design. How? By making it simpler.

The new **AT3060** tube microphone offers the convenience and easy setup of a standard studio condenser by operating exclusively on 48V phantom power – so there's no dedicated power supply requiring you to reconfigure your boom arm with special cables. An all-new large-diaphragm cardioid capsule, with the warm sound of a vintage tube mic, has been specially tailored to keep proximity effect and P-pop under control. Meticulously crafted in a rugged, compact housing, the **AT3060** is set in a low-profile shock mount for easy copy reading.

Top it all off with the exceptional quality and consistency you count on from Audio-Technica, and the result is, quite simply, something special, for a lot less than you'd expect.

 **audio-technica**®

Audio-Technica U.S., Inc. | 1221 Commerce Drive, Stow, OH 44224 | 330.686.2600 | Fax: 330.686.0719 | E-mail: pro@atus.com | www.audio-technica.com

World Radio History

'Commando Solo,' Back at Work

by Tom Vernon

Thanks to events in Iraq, the flying broadcasters in EC-130E "Commando Solo" aircraft found themselves again in the news.

Go on nickel tours of enough radio stations and they all start to look the same. Consoles, digital audio workstations, CD players and audio processors are in abundance whether you're in major or small-market operations. Job skills are also fairly transferable from one station to the next.

This is not the case with the broadcast equipment and environment used by the 193rd Special Operations Wing of the Pennsylvania Air National Guard, located in Middletown, Pa.

ECS

As described in Radio World in February of last year, its workplace consists of six specially modified EC-130E Hercules "Commando Solo" aircraft designed for unique mission of broadcasting psychological operations messages for the U.S. government where ever the need arises.

The planes travel the globe to broadcast MW/FM/HF and VHF/UHF TV signals in accordance with local broadcast standards. The 193rd recently served in Afghanistan, and is deployed in the Middle East.



In the run-up to war and the early days of battle, 'Commando Solo' was back at work in the Middle East.

Electronic Communications Systems Operators (ECS) course lasts for 174 days and includes 80 academic days, 24 ground training days and 70 flight training days. Instruction takes place in the classroom, a flight simulator and on board the EC-130E aircraft.

There are four flying positions in Commando Solo. Each is unique in terms of the equipment used to

cast electronics theory and operations, some of the material that is presented is unique to the gear aboard Commando Solo aircraft.

Most notable are the horizontal trailing wire HF and vertical trailing wire MW antennas, which are deployed by a wind-driven winch. Special care must be taken in extending these devices, as the wires can trail several hundred feet from the aircraft, and are secured on the ends by large weights.

Other special topics include the operation of the frequency-agile Rockwell 10 kW MW and HF transmitters, and international broadcast standards.

While the trend in technical education is to design programs for Web-based training, CD or distance education formats, the ECS schoolhouse instructors have a different philosophy. Working primarily with 18-year old recruits, trainers must maintain the human touch. This is done through small classes of one to three students, instruction in core human values, and a graduation ceremony when recruits complete the program.

Other policies and practices that encourage student development include a mentoring program, in which new guardsmen are assigned to a former student or current operator. Weekly evaluations by the instructor provide a routine opportunity to discuss any issues. New guardsmen are encouraged to develop a team or crew concept to training situations. Station functions, such as retirement luncheons, parties and special section training programs are open to ECS students.

New planes

The ECS schoolhouse has been revised and improved upon since its inception in 1968, its organizers say. The program has been developed to its present state by guardsmen while on active duty. Soon the classes will be revised to reflect the arrival of new EC-130J aircraft, which will replace the existing fleet.

Plans are in the works to become affiliated with the Community College of the Air Force, so that students may obtain college credit for courses completed at Middletown. Also, a comprehensive training program is being developed for the guardsmen who perform regular maintenance on Commando Solo's broadcast equipment.

Tom Vernon wrote about the mission of "Commando Solo" in the Feb. 1, 2002, issue of Radio World.

The ECS 'schoolhouse' soon will be revised to reflect the arrival of new aircraft, and plans are in the works to become affiliated with the Community College of the Air Force.

MARKET PLACE

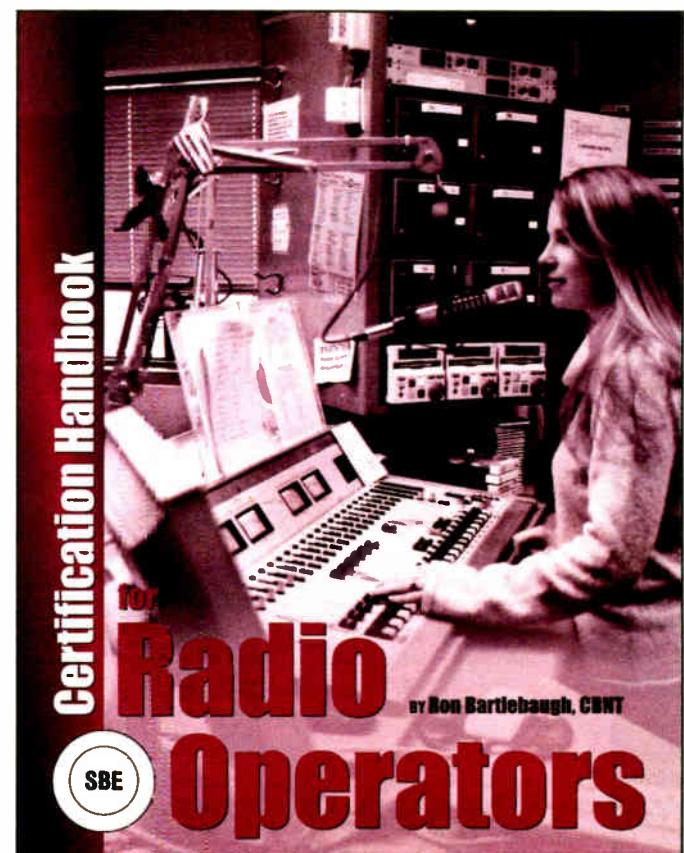
SBE Has New Handbook for Radio Operators

A new resource for training board operators is available from the SBE, which is publishing "The Certification Handbook for Radio Operators." The book explains standard practices and common procedures for anyone involved in the operation of a station.

"While it is designed for individuals just getting started in radio, the information is useful to anyone who pulls a shift behind the console," SBE stated. "The book covers FCC rules, technical layout of a typical station and the general responsibilities of a radio operator. In addition, an overview of station management structure and professional etiquette is presented."

EAS, safety, station logs and trouble procedures are included. It was written by Ron Bartlebaugh, CBNT, director of engineering at WKSU(FM) in Kent, Ohio. The price is \$42 plus shipping.

To order call (317) 846-9000 or visit www.sbe.org.



On board Commando Solo, a crew of four controls the broadcast equipment, two handling television, while the remaining two control radio broadcasts. One of these controls the radio transmitters, while the other operates the source equipment, including CD, DAT, MiniDisc and reel-to-reel recorders.

Medium-wave radio broadcasts are sent via a vertical trailing wire antenna, while a horizontal trailing wire is used for HF signals. TV signals radiate from special antennas in pods under the wings and on the tail of the EC-130E aircraft.

Because of the specialized skills involved, it would be impossible to find fully qualified recruits in the civilian radio world. The 193rd has devised its own training program to meet the need, and at a time when RF and analog topics are being de-emphasized in most college engineering curriculums, it may be unique in the material that is taught.

There are several components to the training of operators, which takes about a year. The journey begins with a 12-week course on basic airborne communications electronics systems at Keesler AFB in Biloxi, Miss. A physical exam, altitude chamber, combat and water survival training are prerequisites to the schoolhouse program at the 193rd.

The Middletown component is completed during a 270-day tour. The

achieve the mission requirements. The ECS course trains operators to cover all four stations.

The program begins with indoctrination training and an introduction to broadcasting. Each piece of equipment on the aircraft is covered, including transmitters, receivers, test equipment, matrixes, mixers, limiters and recorders. Checklist procedures, tactics, troubleshooting and antenna capabilities are also discussed.

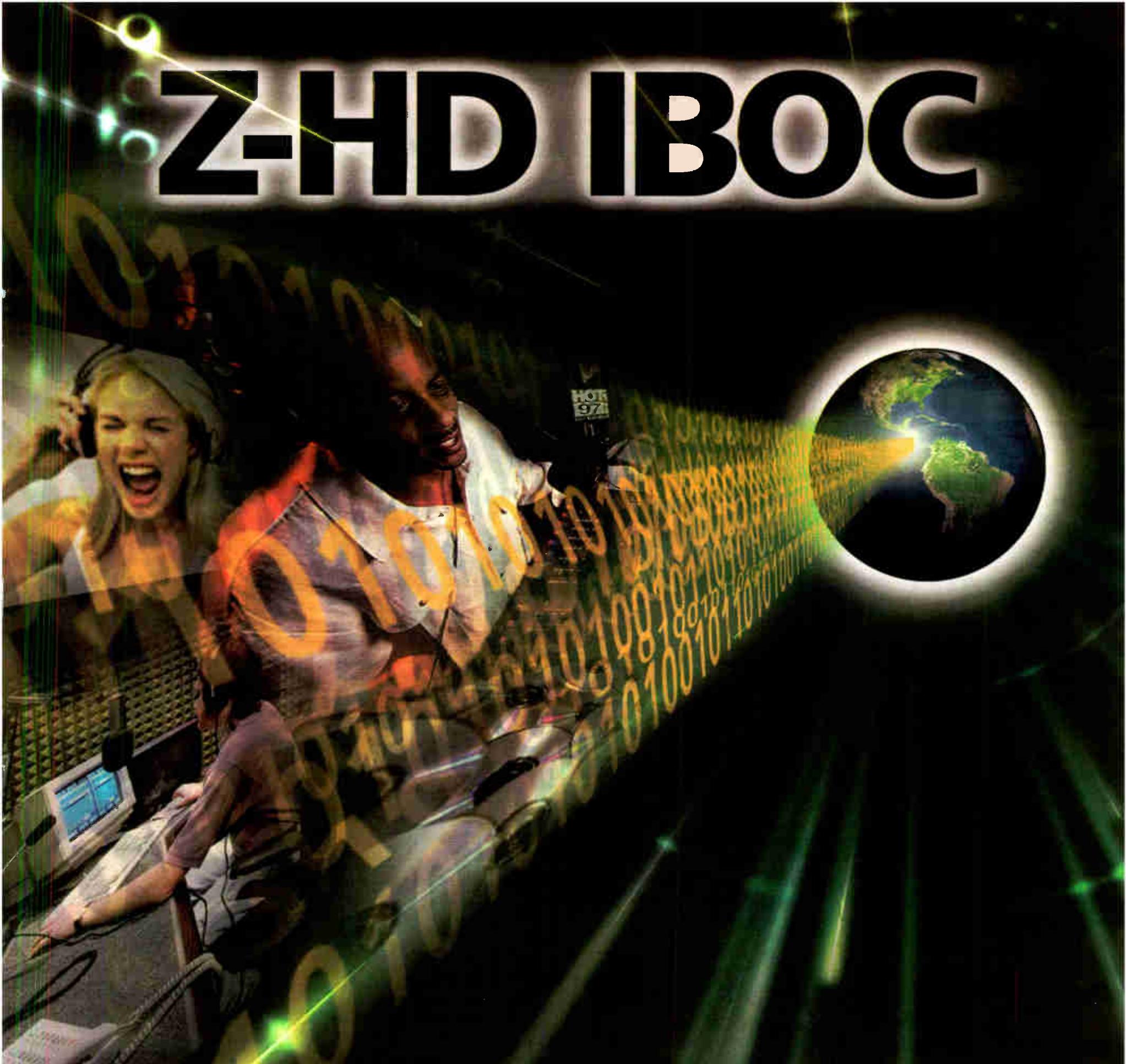
The three-stage process of instruction used in the ECS schoolhouse begins in the classroom, where lesson plan outlines and manuals are reviewed. A digital picture of the particular piece of equipment under discussion is projected as the control and indicator functions are reviewed.

Task training

The second step of instruction takes place in the partial task trainer, where the instructor demonstrates the operation of equipment that has been discussed in the classroom. The student then operates the equipment and accomplishes a specific task with the aid and supervision of the instructor. The final step of the ground training is complete operation of the system utilizing the appropriate checklist and procedures.

While much of the training that new guardsmen receive covers general broad-

Z-HD IBOC



Your safe path to FM/IBOC transmission.

extreme digital...
from HARRIS

In-Band/On-Channel, the next wave of high quality FM radio, is on its way. But there's no need for fear, because **Z-HD IBOC** transmitters from Harris give you the industry's most cost-effective, secure and reliable migration path.

Drawing from Harris' unmatched experience in digital transmission the **Z-HD** uses proprietary pre-correction circuitry that eliminates the need for costly bandpass filters and increases transmitter efficiency. **Z-HD** transmitters are available in all digital units or a hybrid version for common amplification of FM and IBOC signals.

Of course both versions have the same reliability and robustness you've come to expect from the folks who make Z CD, the world's most popular FM transmitter. Plus, you enjoy much lower maintenance costs than with tube transmitters and have the security of knowing that Harris' legendary quality and redundant architecture will keep you on the air.

To learn more about **Z-HD IBOC** transmitters and other Harris extreme digital products, visit www.broadcast.harris.com.



For more information, call us at
1.800.622.0022 or click on
www.broadcast.harris.com

See us at NAB2003 Booth # C404

WIRED FOR SOUND

The Development of Wire Gages

by Steve Lampen

Come gather 'round as Grandpa Lampen continues his story about wire and cable.

Where did the idea of wire sizes come from? Even ancient wire came in various sizes, and there are dozens of systems, many still in use. As late as the 1800s, there were no useful standards.

Gage systems

In 1856, clockmakers Joseph R. Brown and apprentice-turned-partner Lucian Sharpe had begun to manufacture precision measuring tools in Pawtucket, R.I. One that was sorely needed was an accurate measuring gage for wire. (Readers will note that I prefer the spelling *gage*, commonly accepted in reference to wire, and accepted as a variant for *gauge* by the American Heritage Dictionary.)

Sharpe suggested producing sizes of wire in a regular geometric progression. Until that time, wire-measuring tools were made by English manufacturers and were, to say the least, variable in quality and accuracy. Sharpe took 50 of his new low-cost gages to a meeting of brass manufacturers of Connecticut, centered in the Naugatuck Valley. A gage consisted of a flat circular piece of steel with precision-machined slots corresponding

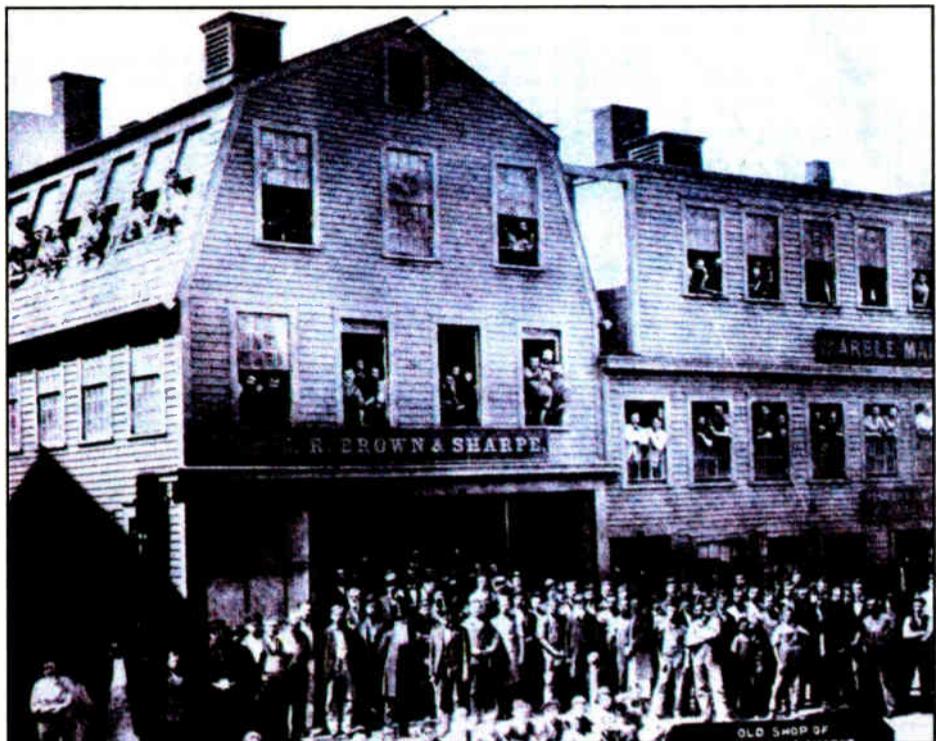


Photo courtesy www.netis.org/RIToolmakers

Brown and Sharpe, 1872

to the different sizes of wire.

It was a big hit. Brown & Sharpe wire gages remained the standard well into the 20th century. Eventually, Sharpe's progres-

sive system became adopted as the AWG, or American Wire Gage, which we use today.

If you look at a wire gage table, as shown in the table, you can see the relationship.

For example, Sharpe defined 36 AWG as 5 mil, or 5/1000ths of an inch or 0.005 inches, in diameter, and 0000 AWG, called "4-aught," as 0.460 inches. These diameters are calculated values related to the *area* of the wire, more precisely called the "circular mil area" or CMA. The progression of gage sizes is a simple mathematic progression of the circular mil area, up or down.

Gages for stranded wire are different than those for solid. Stranded wire, after all, has spaces between strands. The size of a stranded wire is larger for the same resistance as a solid wire. Otherwise, the same formulas of area and gage apply.

Wire Gage (Solid)	Diameter	Area (Circular Mils)
0000	.460	211,600
000	.4096	167,810
00	.3648	133,080
0	.3249	105,530
1	.2893	83,694
2	.2576	66,373
3	.2294	52,634
4	.2043	41,742
5	.1819	33,102
6	.1620	26,250
7	.1443	20,816
8	.1285	16,509
9	.1144	13,094
10	.1019	10,381
11	.0907	8,234
12	.0808	6,530
13	.0720	5,178
14	.0641	4,107
15	.0571	3,620
16	.0508	2,583
17	.0453	2,050
18	.0403	1,620
19	.0359	1,200
20	.0320	1,020
21	.0285	812.1
22	.0253	640.4
23	.0226	511.5
24	.0201	404.0
25	.0179	320.4
26	.0159	253.0
27	.0142	201.5
28	.0126	159.8
29	.0113	126.7
30	.0100	100.5
31	.0089	79.70
32	.0080	63.21
33	.0071	50.13
34	.0063	39.75
35	.0056	31.52
36	.0050	25.00
37	.0045	19.83
38	.0040	15.72
39	.0035	12.20
40	.0031	9.61

Brown & Sharpe wire gages remained the standard well into the 20th century.

Why did Sharpe choose to have his gage numbers get smaller as the wire got bigger? He was trying to describe the performance — i.e., the resistance — of the wire, which goes down as the wire gets bigger. So 18 AWG is lower resistance than 19 AWG, as the numbers indicate.

Those using wire could now get the size and performance they were paying for, and the consistency and repeatability no matter who made the wire.

The longest wires made to that time were the transatlantic telegraph cables mentioned in an earlier article. But Lord Kelvin, who had been instrumental in the laying of the cable, later said the telephone, rather than the telegraph, was "the most wonderful thing I have seen in America."

The world was ready for an electrical speech machine, as Alexander Bell called it. It was invented on February 14, 1876, in Boston.

Or was it?

In 1854 a Frenchman, Charles Bourseul

(1829-1912) suggested transmitting speech electrically. He said, "Speak against one diaphragm and let each vibration make or break the electric contact. The electric pulsations thereby produced will set the other diaphragm working, and (we hear) the transmitted sound."

By 1860 a German, Philip Reis, a 26-year-old science teacher, was working on a design in which a paper diaphragm moved an iron needle inside a coil, producing a change in inductance in response to sound. These telephones went into production but the quality varied widely, and some did not work at all.

On Jan. 20, 1874, German inventor Ernst W. Siemens patented a moving-coil transducer. His U.S. patent application described a "magneto-electric apparatus" that could transmit "the mechanical movement of an electrical coil from electrical currents transmitted through it." However, this eventually turned into the first moving-coil loudspeaker. Its use as a microphone was never explored.

Bell (1847-1922) was intending to build something to allow the deaf to hear. Both his father and grandfather had taught the deaf. His version moved a needle in an acid solution, varying the resistance. It worked; but the use of liquids, which move and evaporate, was equally impractical.

On Feb. 14, 1876, Bell submitted his patent for the telephone. Only four hours later, Elisha Gray, also a prolific inventor, submitted his version of the same device.

In retrospect, it is doubtful whether either of these submissions actually worked. However, when Bell's device did work, three days later, it contained some new items. Some say, to this day, that the additions, such as varying the resistance in an acid solution, were amazingly similar to some of the disclosures in Gray's patent application.

A new era begins

While Elisha may have been robbed of his rightful place in history, don't feel too sorry for him.

In 1869, he and his partner Enos Barton started a company called Gray and Barton, manufacturing and distributing telegraph and telephone equipment

in Cleveland. Three years later, they moved the company to Chicago and renamed it the Western Electric Manufacturing Company. The Bell System purchased Western Electric in 1881 and made it into the largest electrical manufacturer in the world.

Later, Western Electric was broken up. One of the resulting companies was named for Elisha Gray and Enos Barton, with the union of their names, Graybar, which you may recognize as a major distributor of electronic parts.

Ah, but we have barely begun the story of the telephone and of the twisted pair of wires that supported it. Stay tuned for the next exciting episode.

Earlier chapters in this series are available at www.rwonline.com under the Wired for Sound tab.

Steve Lampen's latest book, "The Audio-Video Cable Installers Pocket Guide" is published by McGraw-Hill. Reach him at shlampen@aol.com.

NEWS ANALYSIS

Spectrum Policy: Property or Commons?

Hundreds of People Participate in a Forum To Discuss Allocation Methodology

by Harold Hallikainen

The Manhattan Institute and the Stanford Law School Center for Internet and Society sponsored a conference on radio spectrum policy in March. It was attended by hundreds of people, including several staff members of the FCC regulators from other countries, economists and other academics.

The question at hand: By what method should radio spectrum be allocated?

The conference consisted of the presentation of papers, panel discussions and a "moot court" where proponents of each system made arguments before a panel of judges. The conference finished with a discussion of what the "rules of the road" should be should the "commons" approach be adopted.

While the discussion appeared to be centered around data communications networks, it was pointed out that "bits are bits." In any radio communications system, spectrum is wasted when data is transmitted to areas where there are no listeners.

Changing choices

Broadcasters, of course, cover large areas with their transmitted signals, often including areas where there are no listeners. It would be more spectrum-efficient to not cover these areas, leaving that portion of the spectrum available for other users.

There are, however, costs involved in directing broadcast signals to only where the listeners are (perhaps through a cellular network of low power transmitters or some other means). It is up to the entity controlling that portion of the spectrum (which would be the FCC under command and control or a spectrum owner or licensee under property) to balance the cost of spectrum against the cost of equipment to determine the most economic method of broadcasting.

Perhaps broadcast receivers of the future will resemble the cellular telephones of today.

The three typical methods of allocating radio spectrum are *command and control*; *property*; and *commons*. Until recently, the command-and-control method was the method of choice. An expert government agency — the FCC — would allocate spectrum to different uses and licensees in an effort to maximize the public interest. Some of those not satisfied with the approach call it the "beauty contest" method of allocation.

In 1951, law student Leo Herzl published a paper in the University of Chicago Law Review advocating a property or market approach to the allocation of radio spectrum. The property argument is expanded further by Nobel Prize winning economist Ronald Coase in his paper "The Federal Communications Commission" published in 1959 in the Journal of Law & Economics.

Coase's paper has become the con-

stitution of those supporting the property approach to allocation of spectrum; indeed both sides justified their positions in the moot court by reference to Coase's paper.

as more users are added. Therefore, no licensing of exclusive users is required. Instead, a common protocol is all that is required.

The question then becomes, "How does one determine and enforce the protocol, or etiquette, to be used in the spectrum commons?"

Representatives from Microsoft and

ference through proper balancing of transmit power. Preventing transmission when it would cause no interference reduces the capacity of the spectrum.

Private commons

Various other conflicts in spectrum etiquette remain unresolved. Once an etiquette was established, how would it be enforced? Commenters were afraid that an FCC rule would freeze the technology, which would then quickly become obsolete.

One solution to this problem was called the Disneyland approach, the creation of "private commons." A licensee would gain through auction the exclusive use to a chunk of spectrum and be able to enforce an etiquette on that chunk of spectrum. That licensee would then manufacture the radios to use that chunk of spectrum, determining the appropriate balance between complexity of the radio (increased cost for increased spectrum efficiency) and the amount of spectrum bought (or leased). The cost of the spectrum use would be included in the cost of the radio equipment purchased by users.

An audio/video archive of the conference is available at <http://cyberlaw.stanford.edu/spectrum/>. This site also includes many papers on the subject. The future of spectrum allocations is being determined now.

The three typical methods of allocating radio spectrum are command and control, property and commons.

In simple terms, the property approach has exclusive users of the spectrum pay for that use. Their payment for that use puts the spectrum to the "highest use," the use for which it is most valuable, and serves as a motivation to not waste the spectrum.

A paying spectrum user approaching the capacity of the spectrum to which he or she has access has a few options. The user can pay for more spectrum, pay for more spectrum-efficient equipment or divert some traffic to alternate communications methods, such as wired circuits. The user has the incentive to use the least costly solution, which, it is argued, also benefits society by preventing the needless wasting of spectrum that would otherwise be available for other users.

Smart radios

A third method of allocation of spectrum became available with the introduction of microprocessors in radios.

It was pointed out that most of the spectrum sits idle, waiting for the licensed exclusive user to need its slice of the spectrum. If this unused spectrum could be used, it is argued that there would be no spectrum scarcity.

"Smart radios" would largely eliminate spectrum scarcity by evening out use of the spectrum. A radio requiring use of the spectrum would find an unused area and use it. When its use is completed, the spectrum would be returned to the common pool for others to use.

The reduction of scarcity would lower the "cost of spectrum" to such a low level that the transaction costs — the cost of conducting an auction, keeping track of ownership, etc. — would be higher than the value of the spectrum itself, making a market or property approach inefficient. In other words, the spectrum would become "too cheap to meter."

Proponents of the commons approach point to WiFi networks as a successful implementation of a commons approach. It is argued that with smart radios that include automatic frequency selection, automatic setting of power to the minimum required, spread-spectrum techniques, directional antenna systems and multi-hop repeating (where each user becomes a repeater for adjacent users), the capacity of a "chunk" of spectrum increases

Motorola presented ideas for consideration. Based on the discussion, it appears there is little agreement.

For example, Microsoft proposed the protocol include "Listen Before Talk" — that is, a transmitter would listen on a channel before transmitting on it.

It was pointed out, however, that it is quite possible to have short-distance communications on a channel also being used for long-distance communications simultaneously without inter-

WEST COAST Doug Tharp Voice 866.673.9267 Cell 818.398.7314 Email dtharp@san.rr.com	CENTRAL Bernie O'Brien Cell 731.695.1714 Email bernieob@earthlink.net	MID-WEST Mary Schnelle Voice 1.800.245.4307 Fax 513.583.1343 Email mschnelle@maryschnelle.com	NORTH-EAST Dan Lohse Voice 908.722.6015 Fax 908.722.4359 Pager 877.792.8024 Email scmsnorth@aol.com
SOUTH-WEST Tyler Callis Cell 817.312.6338 Email tylercallis@integritycom	MID-SOUTH Bob Mayben Voice 877.391.2650 Fax 256.543.0535 Email bobmayben@usa.net	Trade-ins welcome	Corporate Sales Office - Pineville, N.C.

OPTIMOD-FM 8400 v3
MUSICAL CONSISTENCY THAT BRANDS YOUR SOUND.

SCMS, INC.
YOU-KNOW WE-KNOW RADIO!

CORPORATE SALES OFFICE - PINEVILLE, N.C.

Toll FREE 800.438.6040 Fax 704.889.4540

www.scmsinc.com

The BSW 30th Anniversary \$30, but you get all the presents!



We're giving away \$1000 each week in free merchandise for 30 weeks!



Set the wayback machine to 1973, the year Irv Law founded BSW.

Coat lapels could be measured in square yards. FM was transforming rock music from 3-minute pop hits into 10-minute extended versions with drum solos.

Talk radio meant back-announcing after a set. And crossover was something inside a speaker. What a long, strange trip it's been.

We're saying "Thank You" for your continued business by giving away **thirty** \$1000 merchandise prizes over the next 30 weeks! Order anything from April 1st though October 26th, 2003 and you're automatically entered.*

Or sign up at www.bswusa.com.

From all of us here at BSW, we're grateful to you, our customers. We look forward to serving you for *another* 30 years!



Incredibly responsible and upstanding auditors from a major accounting firm will be supervising our contest. We got them cheap from a Federal Penitentiary work-release program.

* No purchase necessary. See web site for complete rules.

**Giveaway Prize!
April 7-13**

Combination Audio Mixer/Phone Hybrid



JK Audio's RemoteMixSport combines the functions of a mixer with a built-in telephone, and is great for remotes, sports or field reporting. It also functions as a PBX/multi-line phone system adaptor, connecting audio thru the handset. It comes complete with three XLR mic inputs (one switchable to line), three 1/4" headphone outputs with onboard amp, a VU meter...even a speaker and talkback microphone.

And for the lucky BSW giveaway prize winner, we're throwing in a set of sealed-ear headphones! Enter today!

REMOTEMIXSPORT List 995⁰⁰

950⁰⁰

JK Audio

**Giveaway Prize!
April 14-20**



Pro CD-R Recorder with XLR I/O

This great Sony pro deck features 24-bit AD/DA converters; Super Bit Mapping (special noise-shaping filtering that brings 20-bit performance and warmth to the 16-bit CD format); DSP functions including 3-band EQ and limiter; balanced XLR analog and AES/EBU digital I/O; coax and optical digital outs; unbalanced analog RCA outs; built-in sample rate converter and wired/wireless remote control.

CDRW66 List 1,150⁰⁰

999⁰⁰

SONY



Self-Contained Portable 250 Watt PA

Fender's Passport P-250 is a totally self-contained portable sound system complete with a self-powered 4-channel mixer, 2 full-range speakers, 2 dynamic cardioid mics and all necessary cables - grab this and you're good to go, at only 53 lbs! Features: 250 watts/8 ohms of pure stereo power; 4-channel/8-input mixer; 2 additional stereo channels; one-touch EQ; digital reverb with remote bypass; eight 6.5" high-efficiency drivers in two cabinets; selectable main/monitor operation; audio-out jacks for performance recording; storage for mics and cables; aux send/return; amplifier send/return.

P250 List 950⁰⁰

599⁰⁰





Facility Focus

*Remote Broadcasting From
The Rock and Roll Hall of Fame and Museum*

*A Special Report on
The Alan Freed Radio Studio*

Auralex Acoustics, Inc. is proud to have provided the acoustical treatment to the **Allan Freed Radio Studio** at the **Rock AND Roll Hall of Fame Museum**.



Allan Freed Radio Studio/Rock AND Roll Hall of Fame Museum, Cleveland



Alien Multimedia Studios, Indianapolis



MTV's Making the Band, New York City



NAB Tradeshow, Las Vegas

Total Sound Control



www.auralex.com



INSIDE THE ALAN FREED RADIO STUDIO

What do several hundred radio stations, program syndication companies and networks from coast to coast and around the world have in common? They've all originated remote broadcasts from the studio at the Rock and Roll Hall of Fame and Museum in Cleveland, Ohio.

Since its opening in September of 1995, the glass-enclosed studio has hosted an array of radio performers from locations as distant as Alaska and Australia, Louisiana and London.

Wanting to take advantage of the natural link between radio and rock and roll, the organization included plans for a studio in the late 1980s original design of the facility. Perched on the fifth-floor landing, the studio was functional but had limitations.

"In the years since, we have learned what technology we needed to pull off better remote broadcasts for our visiting stations," said John Grayson, the Rock Hall's donor relations manager.

"The new studio enabled us to get firmly into the digital age."

The room is now the Alan Freed Radio Studio, commissioned March 1, 2003. It was Grayson's task to rebuild that studio.

INDUSTRY SUPPORT

Grayson turned to Broadcasters General Store and asked if the company would like to get involved.

"We jumped right in and saw it as a two-fold opportunity — a great way to help out the Rock and Roll Hall of Fame and to pay

Author David E. Reese is adjunct assistant professor in the Department of Communications at John Carroll University and director of campus radio station WJCU. He has worked in programming, sales and management at commercial radio stations; he has written numerous articles on college radio and book reviews for the Journal of Radio Studies, and co-authored broadcast texts for Focal Press, "Radio Production Worktext" and "Broadcast Announcing Worktext."



Photo by Alan R. Peterson

back the broadcast industry for its 20-plus years of loyalty to Broadcasters General Store," said Gary Tibbot, broadcast sales representative at BGS.

Vendors who work with Broadcasters General Store also were excited about becoming involved and donated equipment and manpower.

Frank Foti, president of Telos Systems, was one. "Our company grew out of broadcasting, and the Rock Hall experience is one way to give something back to radio."

While the planning took several months, the actual studio installation took about two and half days. With good footwork by the Rock Hall staff, with vendors pitching in and with the help of prewiring by Gepeco, the setup was essentially a "plug-and-play" operation.

The result, according to Tibbot, "is everything, I think, that most talent wants in a studio."

A visitor is likely to be impressed.

A small table-and-chairs setting greets you as you enter — a nice area from which to view the action in the studio. Broadcast teams

often bring listeners and contest winners.

The eye is drawn quickly to a red-on-gray Rock Hall logo on a wall and the sweeping counter of the studio.

SIGNATURE BACKDROP

The logo is part of the acoustic treatment. Dave Paxton at Auralex Acoustics Inc. came up with the idea.

"I had just finished doing one when I saw the Rock Hall logo and I off-handedly said, 'If I could cut this out, would you want to incorporate that?' Paxton said.

Auralex's ELITE acoustical treatment and wedge-cut Studiofoam are used to control the sound environment, and the logo has become a signature backdrop. According to Paxton, "We designed and installed a new acoustic treatment system inside the room. I was trying to make it feel really comfortable."

Vince Fiola at Studio Technology planned a sweeping U-shaped counter with ample space for a morning crew to spread out or a

continues on pg. 4 >

**The Alan Freed Studio***- continued from pg. 3*

single announcer to control an interview with the latest rock band.

"I went to see John and took measurements of the space," Fiola said, "tried to find out what they wanted to accomplish and came up with a design that would meet all the parameters guest-wise and operator-wise."

The counter and cabinets were manufactured at Studio Technology's East Coast facility in Pennsylvania, then delivered and assembled in Cleveland. Studio Technology continues to service the Rock Hall, building a new storage cabinet in the studio to house additional equipment.

MIXED MEDIA

Situated around a large structural column, the studio counter locates most of the playback equipment in a double pedestal module on the right. You'll also see classic chrome-plated on-air lights by CBT on the column and on one of the studio walls.

A plaque naming the studio and honoring the major equipment suppliers finishes off that column.

In the equipment module, three Denon DN-C635 CD players make compact disc playback convenient. Those who still use vinyl will find two Technics SL-1200 MKII turntables just to the left of the console.

Recording and playback equipment includes a Tascam MD-301MKII MiniDisc recorder, Tascam CD-RW2000 CD burner and dual-well Marantz PMD-510 cassette deck. Looking in from outside, one's attention is drawn to the equipment module because of the pulsing lights of a Dorrough 40-A2 loudness monitor and the changing LEDs of a Radio Systems CT2002 digital clock.

The heart of the studio is a Logitek audio console/routing system.

"Its flexibility is the thing that makes it well suited to the Rock Hall," said Cam Eicher, director of sales at Logitek. The board is situated to the left of the bottom of the U-shaped counter so that the operator can see out and be seen through the glass wall. There's a 12-channel Numix control surface consisting of two fader wedges with assignable P+G faders and a control selector wedge. The Audio Engine mainframe, rack-mounted below the counter, is a 72 x 72 router with analog and digital I/O cards.



The studio is equipped with the latest technology including codecs, CD/MP3 players, MiniDisc and profanity delay.

"You can have any of those 72 audio channels available to you very easily without having to use patch bays or outboard switchers. It's like having a router/switcher on every fader of the console," Eicher said.

"It's easy for operators to come into the Rock Hall and configure the board to make it similar to the environment they're used to working with."

AUDIO ON DEMAND

The Rock Hall has an ENCO DADpro32 system for storing and reproducing digital audio on demand. It consists of a couple of rack-mount workstations that mirror each other; in case of a hard-drive failure, audio is backed up.

The live-assist touchscreen interface operates on a Windows 2000 computer. The system ENCO provided for the Rock Hall uses a Digigram PCX822NP DSP card for I/O inter-

face and has a 180 GB hard-drive capacity. For stations broadcasting from the Rock Hall, there are plans to make available artist interviews and Rock Hall facts and anecdotes.

Don Backus, VP of sales and marketing at ENCO Systems, feels broadcasters will like using the system.

"They'll find it easy to accomplish the things they want to without a massive amount of training," Backus said.

Across the back of the U-shaped counter, you find six Shure SM7B microphones mounted on LPB Silent Boom mic arms. According to Michelle Zenner Kohler at Shure, "This particular microphone has a very warm sound, an adjustable frequency response and very reliable 'pop' protection, so it's used in a lot of radio studios."

While these dynamic, cardioid microphones have earned a reputation for

continues on pg. 6 ▶

When the Rock and Roll Hall of Fame and Museum started planning its new state-of-the-art Alan Freed Radio Studio, help came from Logitek.



Alan Freed Radio Studio Console Configuration

Logitek Audio Engine with 6 IO24A I/O cards, providing up to 72 analog inputs and 72 analog outputs

- 24 mix-minus buses
- Supervisor software for complete control of fader assignments and router functions

Numix-12 Console

- 12 fully assignable faders, easy access to 8 stereo buses

vMix "Virtual" Console software

Logitek is proud to support the Alan Freed Radio Studio

Our digital audio routing and console designs were a perfect fit for a studio that would both showcase their beautiful facility and provide the flexibility that hundreds of visiting DJ's and station personnel would want. The Logitek Numix console can easily be configured for visiting talent, providing access to equipment and guest mics in an arrangement that makes sense for each operator. The Audio Engine provides routing and control functions throughout the studio, making it the heart of this 21st century operation.

BROADCASTING FROM THE ROCK HALL

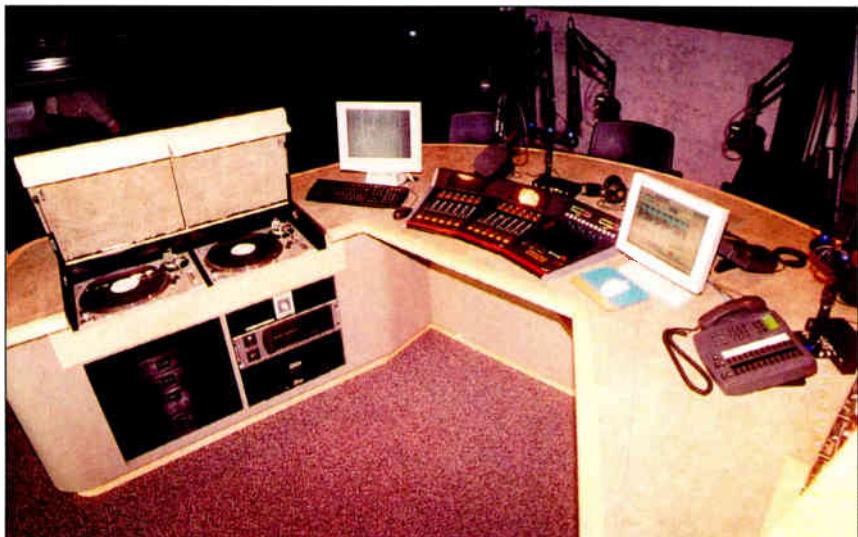
What's a broadcast like at the Rock Hall?

In mid-January, rock station KAWW(FM) sent Program Director Fred Young from Arkansas to Ohio for the station's first broadcast as part of a promotion in which a listener and a friend were flown to Cleveland for a weekend adventure.

"You really can't beat being able to broadcast live from the 'Taj Mahal' — I mean, you know, it's the Rock and Roll Hall of Fame," Young said. "I had my winners who came along on the contest, and we coordinated the broadcast with their trip."

Broadcasting here provides a number of programming opportunities. KAWW took advantage of them.

The contest winners "were actually in the studio with me. So they'd go out into the museum for a time and look at some things,


Photo by Alan R. Peterson

then come back and tell me on-air what they saw," Young said.

FINDING A SPONSOR

"We approached a possible sponsor and told them, 'We're going to do a live show from the studio at the Rock and Roll Hall of Fame, and we're going to make it your show!' They loved the idea.

The Alan Freed Studio

➤ *continued from pg. 4*

producing a great vocal sound, each is sent through a Rane VP12 voice processor to create exactly the sound desired.

Shure is the official microphone of the Rock Hall, providing wired and wireless microphones for use throughout the facility. The studio turntables use Shure M44-7 phono cartridges.

Each guest enjoys the comfort of a stool adjusted for the stand-up design of the studio counter. If you want to immortalize yourself at the Rock Hall, you can do so by sponsoring one of the stools. Your name will appear engraved on the back of the chair.

Announcer and guests monitor studio sound through AKG K240M headphones powered by a Rane HC6 or Ward-Beck POD6 headphone amp.

"We provided the K240M headphones because they're an industry staple found in the

majority of broadcast stations across the U.S., and this studio renovation was an exciting, quality project that we wanted to be a part of," said AKG Marketing Manager Sarita Stewart.

Additional monitoring comes from Tannoy System 800 speakers wall-mounted on Omnimount 30.0WB brackets. These are driven by a Hafler P3000 power amp.

Rock Hall visitors will hear the broadcast through a Hafler P1000 power amp driving JBL Control 1 speakers in the hall outside the radio studio. Talent can talk with visitors standing outside the studio; a visitor mic, a Shure MX391/0 boundary model, has been added. This also allows you to mix a little ambient Rock Hall "noise" into the remote.

If your broadcast needs to include phone calls, the studio is set up for them.

"In the original studio, we donated telephone hybrids and audio codecs, which we've done for the new one as well," said Foti of Telos Systems.

"I read the sponsor's ads live during the show, and that basically paid for the broadcast, the transportation and the accommodations. Of course, we didn't pay to use the studio because it's free."

There is no fee required to broadcast from the Alan Freed Radio Studio.

Subject to the studio's availability, multiple-day broadcasts are possible. The remote call connection (ISDN or POTS) must originate from your station, so the line charges are yours, not the Rock Hall's.

Your station may also be required to read promotional announcements during the broadcast, promoting the sponsorship partners or the Rock Hall itself.

You can understand Young's enthusiasm about the station's first broadcast at the Rock Hall. But what about a station that keeps

continues on pg. 8 ➤

"The Telos TWOx12 is part of the system there, along with the Zephyr Xstream codecs."

Telos Desktop Directors allow for icon-based call management of the three lines coming in, and the studio employs an Eventide BD500 delay to keep profanity from going over the air. Shows can leave the studio via a Telos Zephyr Xstream or a Comrex Matrix.

Broadcasters who need interface equipment at the station end during a broadcast can call on Comrex.

"We've offered to loan equipment to any station that doesn't have any," said spokeswoman Kris Bobo. "Just tell us you're doing a broadcast at the Rock Hall and you need some help with telephone interface equipment."

According to Broadcasters General Store's Tibbot, "We see this an evolving studio, too. We want to be able to keep current and up-to-date. If there's new equipment that comes along and displaces the old equipment, we want to make sure that's taken care of." ■

Need a Comrex for your Rock Hall Remote?



We can help!

Comrex and the Rock and Roll Hall of Fame & Museum want your Rock Hall experience to be as effortless and as positive as possible. Please let us know how we can help.

If you don't have a Comrex for your station end, Comrex is happy to help. Just contact us at **800-237-1776** and we'll set up a loaner! Comrex works hard to make remotes easy!

COMREX

www.comrex.com

Comrex Corporation

19 Pine Road
Devens, MA 01462 USA
Tel: 978-784-1776
Fax: 978-784-1717
info@comrex.com



Broadcasting From the Rock Hall

continued from pg. 6

coming back?

WJER in Dover-New Philadelphia, Ohio, has broadcast from Cleveland every January since the Rock Hall opened. Program Director Steve Kelly said it's special.

"You just get that feel of the ambience of rock and roll—the music we're playing. Usually the main exhibit is right outside the studio. For example, the John Lennon exhibit was there, and now it's the U2 exhibit and

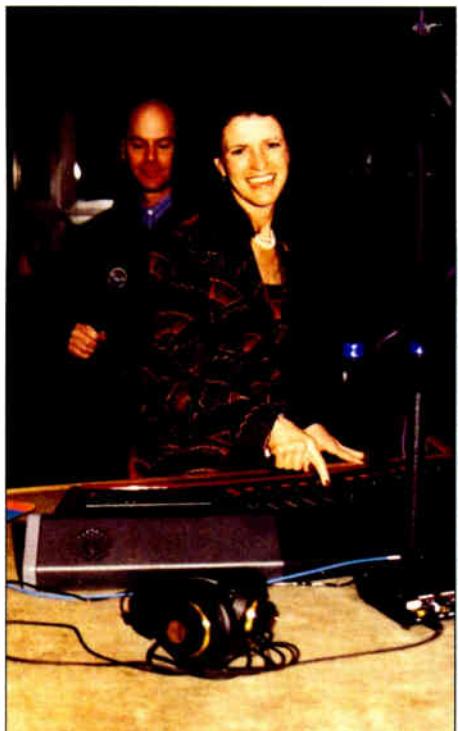


Photo by Alan R. Peterson

Judith Fisher Freed launches the new studio as John Grayson watches.

that's all right there ... it's a neat feeling," he said.

Kelly compared the old and new facilities.

"Everything was gutted," he said. "They turned the setup, so now people coming up on that level can have a better look at the studio. The equipment has been upgraded, all brand-new. It's just really a fabulous studio."

"People walking by had no real clue to what was going on. They're now going to have a two-way communication system so that visitors can talk to the people doing the broadcast and vice versa."

WJER usually broadcasts its midday show for two days at the Rock Hall and offers sponsor packages. Major sponsors get the bulk of the commercials and mentions, but

other advertisers get sprinkled in.

"It has become so successful," Kelly said. "We take some of the clients with us, and most of them tell us not to worry about selling them on this next year — 'just tell us what the date is and when we're going.' It has worked out well for us."

TO SIGN UP

To schedule a broadcast, contact Doris McVay, general manager at McVay Media. This Cleveland-based broadcast consultancy is a long-time friend of the Rock Hall. Fax a request for a broadcast date to (440) 892-8817 or send e-mail to radio@rockhall.org.

You'll need to know the date/s and time/s you want for your broadcast, or you can ask for available dates. Fridays book quickly because stations want to build their remote broadcasts around weekends.

The radio studio is available 24 hours a day, seven days a week, regardless of museum hours. While there will be more activity around your broadcast if the museum is open, you can schedule a broadcast to fit a specific time slot or event at your station.

The museum is open daily from 10 a.m. to 5:30 p.m., with extended hours on Wednesdays to 9 p.m. It is closed on Thanksgiving and Christmas days. If your broadcast does happen after-hours, a charge for technical assistance will apply, and you must schedule such a broadcast at least 30 days in advance.

ONLINE, ON THE AIR

A Rock Hall broadcast will be an exciting event for your station and listeners.

A live studio camera will transmit pictures during your broadcast via the Internet. A fish-eye shot of the studio can be seen at www.rockhall.com/radiostudio. The image is updated minute-by-minute so listeners anywhere can take part in your remote.

There's also a computer with Web access so you can surf prep sites and take e-mails in the studio.

Maybe you'll talk with a celebrity who happens to be visiting the Rock Hall during your broadcast. While there's no guarantee, many stations have enjoyed great spur-of-the-moment interviews. In the last year or so, radio studio visitors have included Barenaked Ladies, STYX, Burton Cummings



Photo by Paul J. McElwee

Terry Stewart with Freed-era WINS microphone, from Stewart's personal collection

of the Guess Who, Bad Company, Jethro Tull and Bono of U2.

You also can tap the expertise of the staff to offer listeners insight into the workings of the Rock Hall and stories about the artists, artifacts and music that make up the experience.

If you want answers to questions like "What's special about Ringo Starr's Sgt. Pepper uniform?" or "What kind of guitar did Bono first play?" or "How did the Rock Hall end up with Janis Joplin's psychedelic colored Porsche?"—key Rock Hall staffers frequently are available.

Terry Stewart is president and chief executive officer of the Rock and Roll Hall of Fame and Museum. If it's a behind-the-scenes look you need, Stewart can provide it.

What questions is he asked most often?

"Why is it in Cleveland?"

"How do people get inducted?"

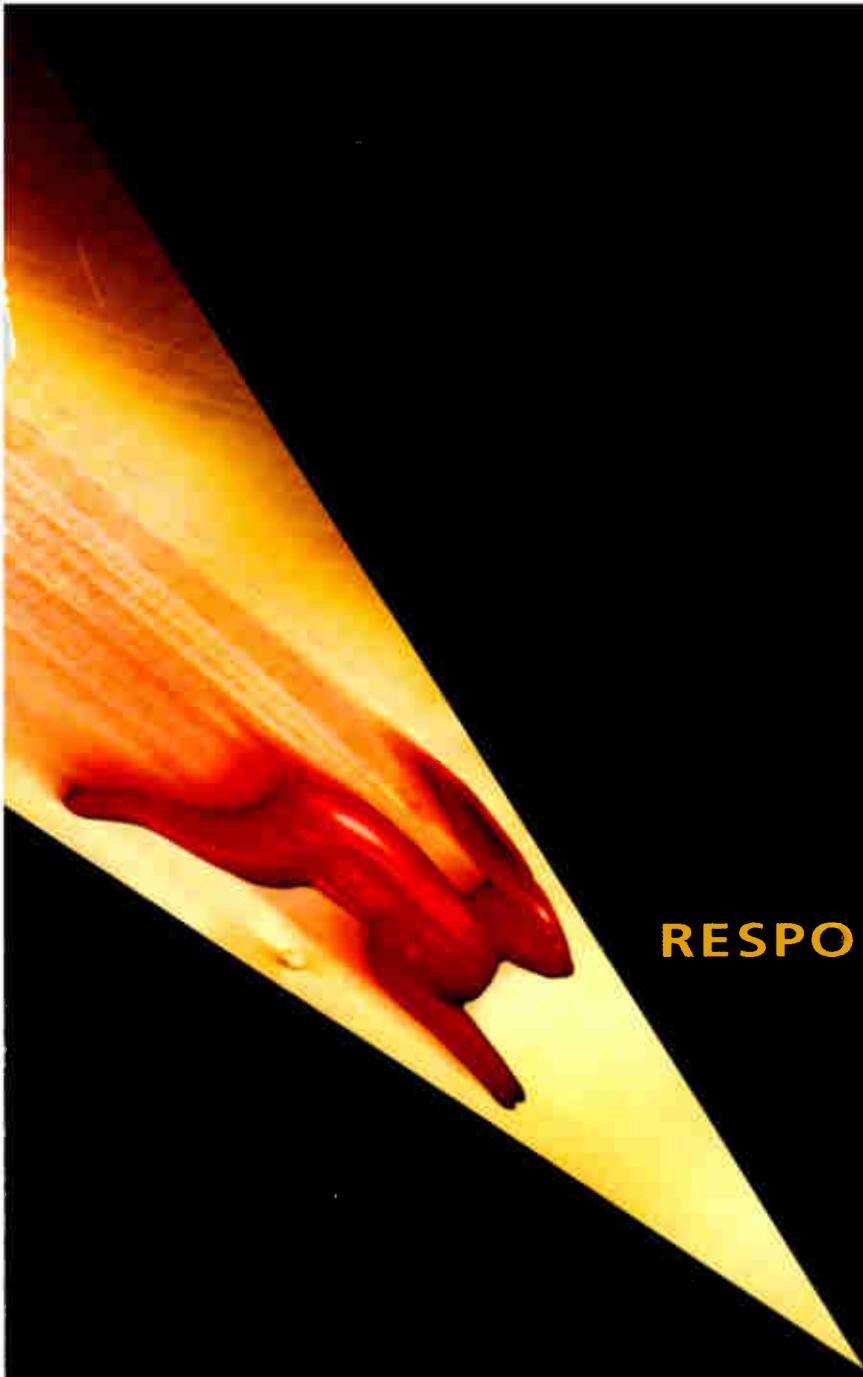
"Why are the induction ceremonies always in New York?"

Stewart has excellent answers. Ask him yourself when you're broadcasting from the Rock Hall.

James Henke is vice president of exhibitions and curatorial affairs. He joined the staff in 1994 after 18 years as an award-winning music writer and historian with Rolling Stone Magazine.

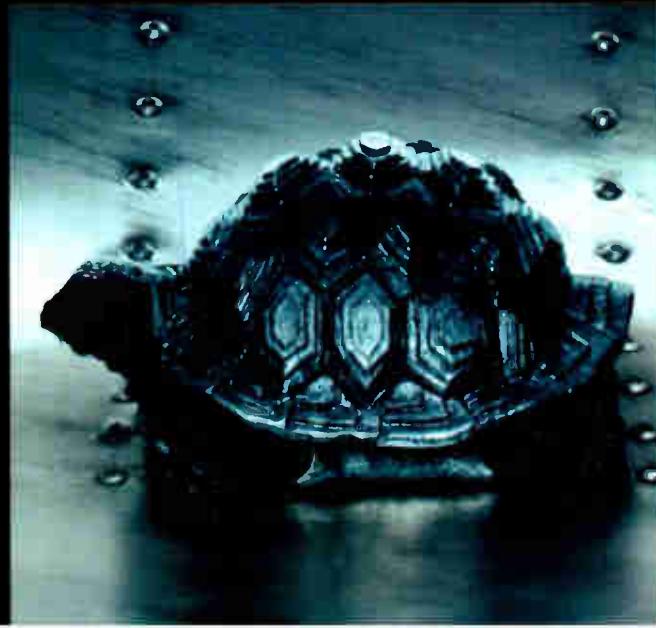
He wrote cover-story articles on many of the artists enshrined in the Rock Hall, including Bruce Springsteen, Eric Clapton and Paul McCartney. He's often asked to define rock and roll.

"I take a pretty broad definition of it. At the Hall of Fame, we try to have everything from the roots of rock and roll—blues, rhythm and blues, country—up to the present. Anything that is popular music, has a beat and some ties to rock and roll is rock and roll." ■



Fiercely Dedicated to
Audio Automation.
Our story's a simple
one. Up and running
since 1992, we've been
in the race longer than
most competitors. We
complement the stability
of our DAD Digital
Audio Delivery System
with a track record for
being fast, precise and
RESPONSIVE responsive
when it
comes to meeting your
needs. From radio net-
works to large clusters
to individual radio
stations, nobody works
harder, nobody works
smarter. The stuff that
legends are made of?
See for yourself.

STABLE





Alan Freed Timeline

- 1921** Born Dec. 15 near Johnstown, Pa.
- 1936** Salem, Ohio, High School; forms "Sultans Of Swing"
- 1942** First radio job, WKST, classical music host
- 1943** WKBN, Youngstown, Ohio, news/sportscaster
- 1945** WAKR, Akron, Ohio, favorite jazz/pop music DJ
- 1949** WXEL(TV), Cleveland, afternoon movie host
- 1951** WJW, Cleveland, first "Moondog" broadcasts
- 1952** Moondog Coronation Ball, first "rock" concert
- 1954** WINS, New York, Alan Freed's "Rock & Roll Party"
- 1956** Movies; "Rock Around the Clock," "Don't Knock the Rock" and "Rock, Rock, Rock"
- 1957** ABC-TV show, "The Big Beat"
- 1958** From WINS to WABC after Boston stage show riot
- 1959** Payola scandal; fired from radio and TV jobs
- 1960** Returns to radio at KDAY, Los Angeles
- 1962** Pleads guilty, \$300 fine; WQAM, Florida
- 1963** Moves to Palms Springs, California
- 1965** Died Jan. 20, Palm Springs
- 1986** Inducted into Rock and Roll Hall of Fame and Museum

FREED, ROCK AND ROLL, RADIO AND CLEVELAND

It's 1954 in Cleveland, 11:15 in the evening. Your AM radio is dialed to 850. WJW tunes in a blasting song called "Blues for the Red Boy" by Detroit pianist and band leader Todd Rhoades and His Orchestra.

Over the top of this big-band R&B instrumental you hear:

"Hello, everybody! How are y'all tonight? This is Alan Freed, the ol' King of the Moondoggers,' and it's time again for another of your favorite rock-and-roll sessions ... blues and rhythm records for all the gang in the Moondog kingdom, from the Midwest to the East Coast ..."

DISCOVERING ROCK AND ROLL

Alan Freed didn't invent rock and roll; "discovered" is a better term.

It was there all along, those rhythm-and-blues songs by black artists like Ivory Joe Hunter and LaVern Baker. Freed liked the big beat. When the music was pounding out over the airwaves, he was in the studio with the mic open, ringing a cowbell and thumping on a telephone book, occasionally yelling "rock and roll!"

Some historians think Freed took the term from the 1951 song "60 Minute Man" by Billy Ward and His Dominoes. They sang, "I rock 'em, roll 'em all night long," lyrics commonly understood as black slang for sex.

Others think Leo Mintz, owner of Record Rendezvous in Cleveland, gave him the term. Mintz noticed that a lot of black kids, and a few white ones, were buying "race" records at his store. He convinced Freed to host a show he would sponsor called "The Moondog Rock and Roll Party."

Rock Hall Inductee Bo Diddley thinks Freed used the term to describe one of his songs.

There is no doubt Freed popularized the term and the music. "The importance of Freed is he did champion this music," said Jim Henke, vice president of exhibitions and curatorial affairs at the Rock and Roll Hall of Fame and Museum.

"He and a couple of others, like Sam Phillips, were white guys who championed



Alan Freed. WJW. Cleveland

Photo courtesy Justin Fisher Freed

what had been primarily black music, rhythm and blues, and stuff like that. At the time, the late '50s, it wasn't a popular thing to do ... He went on the edge with his radio show here (in Cleveland) and in New York, and he did play a big role in spreading the music out to a much broader audience."

EARLY RADIO DAYS

He was born Albert James Freed on Dec. 15, 1921, in Windber, a small town near Johnstown, Pa. Before he got to high school, he had moved to Salem, Ohio. There he formed a band, the Sultans of Swing. The trombone-playing bandleader took the name from an old Harlem group.

Freed went on the air at WKST in New Castle, Pa., in 1942, earning \$17 a week playing classical music. Within a year, he was a newsman and sportscaster at WKBN in Youngstown, Ohio, and became a popular jazz/pop music DJ at WAKR in Akron by 1945.

By 1949, Akron wasn't big enough. He took a job in Cleveland hosting an afternoon movie show for WXEL(IV). But 1951 found him back on radio with his "Moondog Rock and Roll Party" on WJW.

continues on pg. 12 >

Affordable Custom Broadcast Furniture



*Now also serving
you from the
West Coast!*

**Designed, Constructed,
Delivered and
Installed by**

Studio Technology West
310B Coney Island Dr.
Sparks, NV 89431
TEL: 775-351-2042
FAX: 775-351-2082

e-mail: sales@studiatechnology.com
web: www.studiatechnology.com

STUDIO
TECHNOLOGY
STUDIO FURNITURE

TEL: 610-640-1229

FAX: 610-296-3402

32 Pennsylvania Avenue
Malvern, PA 19355



Freed, Rock n' Roll...

continued from pg. 10

There was no other DJ like Alan Freed, with his music and legions of "moondoggers" tuning in each evening. Freed played what he liked. If he really liked a song, he might give it several spins back to back, all the time pounding out the beat.

The 1952 Moondog Coronation Ball at the Cleveland Arena has been called the first rock concert, but it gained notoriety for a different reason.

The show poster billed The Dominoes, Paul Williams and His Hucklebuckers, Tiny Gimes and His Highlanders, Danny Cobb and Vanetta Dillard for \$1.75 ticket. There was little publicity except on the "Moondog" broadcasts.

The exact circumstances and audience estimates vary with the storyteller; but it seems certain that some 10,000 moondoggers were inside the arena and another 10,000 wanted in, with or without tickets, when the doors closed. A near-riot broke out and doors broke down as kids streamed into the arena.

Freed and others tried to gain some semblance of order, but the show had to be stopped after less than 30 minutes. Freed would deliver an on-air apology and conduct many more stage shows, although a concert would get out of hand in Boston in 1958 and help contribute to his forced resignation from WINS.

THE BIG TIME

In 1954, New York's WINS had become home for the King of the Moondoggers.

It wasn't Cleveland. A New York City street performer, Louis Harden, claimed he'd been using the title "Mr. Moon Dog" for more than 20 years and sued Freed over his use of it. Freed gave up the name, and his new radio show became "Alan Freed's Rock & Roll Party," with greater emphasis on the music.

But Freed's national reputation would grow, along with the popularity of rock and roll, through radio, stage shows and teen movies. In 1956, he had roles in three movies: "Rock Around the Clock," "Don't Knock the Rock" and "Rock, Rock, Rock." Later he would star or be portrayed in movies such as "Mr. Rock and Roll" and "American Hot Wax."

By 1957, ABC-TV wanted him on television, and "Alan Freed's Big Beat" program went on the air. But on an early program,

black teen performer Frankie Lyman was shown dancing with a white girl. Hardly noticed by the Freed crew, this was unacceptable to southern ABC affiliates and led to cancellation.

Shortly Freed would have a much bigger problem.

PAYOLA OR FEE?

In the late 1950s, the House Subcommittee on Legislative Oversight began looking into certain practices within the radio business, specifically the relationship between record labels/promoters and radio disc jockeys.

The most prominent of them, Freed would be caught up in the investigation. He had received payments and gifts from record manufacturers and distributors like Cosnat Distributing Corp., Roulette Records and Superior Record Sales. The small, independent record companies promoting rhythm-and-blues artists often used such enticement. It was common practice; like many DJs, Freed felt it was more a consultation fee than a "pay-for-play" payment.

However, as the practice grew, it wasn't uncommon for a "record of the week" or similar promotion of a song to be available for a set price, usually several hundred dollars.

By 1958, Freed's radio show had moved to WABC. In light of the investigations, ABC asked performers to sign an affidavit stating, among other things, that they had not accepted payments for radio play. Although many DJs signed the form, Freed felt he could not without perjuring himself.

Eventually Freed would be forced off the air from his radio and TV shows and subpoenaed to appear before a grand jury. After a couple of years of legal maneuvering, he pleaded guilty to two counts of commercial bribery. A \$500 fine later was reduced to \$300. Freed paid it in 1963.

Many historians say Alan Freed served as the scapegoat for the payola scandal because he was not willing to stretch the truth and, of course, because he was the "king of the rock and roll airwaves."

Between 1960 and 1963, Freed would have a short stay at KDAY in Los Angeles, return to New York, promote a few live "Twist" shows during that dance craze and host another show on WQAM in Florida for a couple of months.

But he failed to get his career on track after



Courtesy BMI Archives

At WAKR in Akron, late 1940s

the payola scandal. Alcohol abuse and other ailments caught up and his health began to fail. In 1963, he moved to Palm Springs, Calif., where he died on Jan. 20, 1965.

In 1986, Freed was among the first inductees into the Rock and Roll Hall of Fame, in the "non-performer/early influence" category.

In a subsequent article in Scene magazine, Freed's brother David said, "I'm convinced that Cleveland would not have even been considered (for the Hall of Fame and Museum) had not Alan Freed been from Cleveland. There were many other reasons, but it has to be the base."

Freed memorabilia has remained on exhibit here. Now the radio studio is named for the pioneer.

"Sometimes he's thought of strictly because of his conviction with the payola situation," said Terry Stewart, Rock Hall president and CEO. "But when you look at what he did to bring the music to America, coining the phrase 'rock and roll' — he was a pivotal person in the history of popular culture."

"I'm not saying it would not have happened without Alan; but it wouldn't have happened as it did, and when it did, without Alan."

In 2002, Freed's remains were brought here from the Ferncliff Memorial Mausoleum in New York following the wishes and consent of his family. The brass urn containing the ashes of the "King of the Moondoggers" and the original marble plaque from Ferncliff now reside at the Rock Hall. The plaque states simply, "FREED-ALAN 1921-1965." ■

less ohms.
more aahs.

K 141 / K 171 / K 240 / K 271



A Harman International Company

STUDIO HEADPHONES

Many of Alan Freed's on-air successors use AKG headphones, and they are featured at the state-of-the-art radio studio built in his honor at the Rock and Roll Hall of Fame and Museum. For over 30 years, more studio professionals have relied on AKG headphones than any other brand.

AKG's new Studio Headphone models are improved versions of its Classic M series headphones. The new Studio Headphones feature wide frequency response and better, louder sound than ever before.

Visit an AKG dealer today or check us out at www.AKGUSA.com.

AKG Acoustics, U.S. 7914 Airport Center Drive, Nashville, Tennessee 37217
Ph. 615-620-3800 Fx. 615-620-3875 AKGUSA.com akgusa@harman.com



INSIDE THE FREED STUDIO

MODEL	QTY.	MODEL	QTY.
AKG Acoustics K240M Headphones	6	Omnimount 30.0WB Speaker Mounts	
Atlas Sound Mic Stand	6	Radio Systems CT2002 Clock	2
Auralex Acoustic Treatment		Radio Systems Pushbutton Panels	
Broadcasters General Store Project Coordinator		Rane HC6 Headphone Amplifier	2
Carillon AC-1E Digital Audio Computer	1	Rane VP12 Voice Processor	6
CBT On Air Light	3	RDL STPH1 Phono Preamp	2
Comrex Matrix POTS Codec	1	SBS MatchIt Interface	2
Denon DN-C635 CD/MP3 Player	3	Shure Beta 87A Microphone	6
Dorrough 40-A2 Loudness Meter	2	Shure M44-7 Phono Cartridge	2
ENCO Systems DADpro32 Digital Audio Storage, Editing & Playout System	1	Shure PSM700 In-Ear Monitor	2
Eventide BD500-010 Profanity Delay	1	Shure SM7B Microphone	6
Gepco Prewire Cable Assemblies, Mic Cable		Shure U2/Beta87A Wireless Mic	1
Hafler Power Amps P3000/P1000	2	SKB Gig Rack	1
Henry Engineering Patchbox	1	Stardot Netcam	1
Henry Engineering Superelay	1	Studio Technology Custom Furniture	
JBL Control 1 Speaker Pair	1	Studios by Design Installation Labor	
Liebert uninterruptible power supply	2	Tannoy System 800 Speaker Pair	1
Logitek Numix-12 Control Surface	1	TASCAM CD-RW2000 CD Recorder	1
Logitek Audio Engine w/Supervisor, vMix Software	1	TASCAM MD-301MKII MiniDisc Recorder	1
LPB Silent Boom W/Riser	6	Technics SL1200MKII Turntable	2
Mackie 1604 VLZpro Mixer	1	Telos Systems Desktop Director	2
Marantz PMD510 Cassette Recorder	1	Telos Systems TWOx12 Phone System	1
Middle Atlantic Drawers and Panels		Telos Systems Zephyr Xstream Codec	2
Neutrik USA, Various Connectors		Ward-Beck Systems POD6B Headphone Amp	5
		Whirlwind Mic Cable	

AD SPONSOR CONTACT INFORMATION

AKG Acoustics 914 Airpark Center Drive Nashville, TN 37217 PH: 615-620-3800 FAX: 615-620-3875 www.akg.com	Broadcasters General Store 2480 S. E. 52 nd Street Ocala, FL 34480 PH: 352-622-7700 FAX: 352-629-7000 www.broadcastdealer.com	ENCO Systems Inc. 29444 Northwestern Highway Southfield, MI 48034 PH: 800-ENCO-SYS FAX: 248-827-4441 www.enco.com	Logitek Electronic Systems Inc. 5622 Edgemore Drive Houston, TX 77081 PH: 800-231-5870 FAX: 713-664-4479 www.logitekaudio.com
--	---	---	---

Auralex Acoustics Inc.
8851 Hague Rd.
Indianapolis, IN 46256
PH: 317-842-2600
FAX: 317-842-2760
www.auralex.com

Comrex Corp.
19 Pine Road
Devens, MA 01432
PH: 800-237-1776
FAX: 978-784-1717
www.comrex.com

Gepco International
1770 Birchwood Ave.
Des Plaines, IL 60018
PH: 847-795-9555
FX: 847-795-8770
www.gepco.com

Studio Technology
32 Pennsylvania Avenue
Malvern, PA 19355
PH: 610-640-1229
FAX: 610-296-3402
www.studiotechnology.com

This is a supplement to Radio World newspaper, a Corporate Sponsor of the Rock and Roll Hall of Fame and Museum.

President/CEO: Stevan Dana
Vice President of Contract Publishing: ... Carmel King
Associate Publisher & Sales Mgr: John Casey
Sales: Dale Tucker, Simone Fewell

Author: David Reese
Editor: Paul J. McLane
Production/Creative: Lourdes Lilly
Event Photographer: Alan R. Peterson

 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 2003 by IMAS Publishing (USA), Inc. All rights reserved.
—Printed in the USA—

Your

signal

picture

sound

message

vision

reputation

is only as good
as your CABLE

Cable, Connectors, Assemblies,
Patchbays, Panels & Accessories

 **GEPCO**
INTERNATIONAL, INC.

World Radio History



1-800-966-0069 www.gepco.com

Your Number One
Source For Broadcast
Equipment!



**Broadcasters
General Store**

Florida Home Office

1-352-622-7700

www.bgs.cc

SERVING THE BROADCAST INDUSTRY FOR 24 YEARS

BGS, corporate sponsor of the new
Alan Freed Radio Studio at the Rock
and Roll Hall of Fame + Museum,
would like to say

Thank You!



Broadcasters General Store
would like to take this
opportunity to say thank
you to all of the manufacturers
who donated equipment,
engineer - Alan Colwell, Radio
World and the many volunteers who
gave their time to construct the Alan
Freed Radio Studio at the Rock and Roll
Hall of Fame + Museum in Cleveland, Ohio.
Also, in the memory of Scott A. Beeler, whose
encouragement lead us to this great effort.

 **Broadcasters
General Store**

Cindy Edwards
828-698-2893
cindy@bgs.cc

Cecile Gibson
937-783-2995
cecile@bgs.cc

Gary Tibbot
765-935-6707
gary@bgs.cc

Florida Home Office

1-352-622-7700

www.bgs.cc

000 Giveaway! It's our birthday

Giveaway Prize!
April 21-27



Incredible Studio Recording Package

With this cool combo from Behringer, you're on the way to great-sounding recordings. The UB2442FX is a 24-input, 4-bus mixer with premium mic preamps and a 24-bit multi-effects processor which includes 99 great-sounding presets; the B2031 is a set of powered studio monitors with separate high/low amps, 8.75" woofers, and XLR and 1/4" inputs; and the B-1 is a cardioid condenser mic with 20 Hz-20 kHz frequency response, a switchable high-pass filter and -10 dB pad.

And if that weren't enough, the lucky winner's prize package includes cables, mic boom, pop filter and the works!

UB2442FX List 439⁹⁹ **349⁹⁹**
B2031 List 499⁰⁰ **399⁹⁹**
B-1 List 129⁹⁹ **99⁹⁹**



Giveaway Prize!
April 28-May 4

Large-Diaphragm Condenser Mic

Neumann's TLM103 is ideal for professional applications requiring superb sound quality. By utilizing a transformerless circuit, this cardioid mic offers low self-noise and an SPL level capacity of 138 dB, and also has high rejection of feedback in live settings. It offers a smooth 20 Hz-20 kHz response and impedance is 50 ohms.

The prize winner also gets the EA1 spider shockmount to complete the package!

TLM103 List 1,299⁰⁰ **975⁰⁰**
EA1 List 305⁰⁰ **185⁰⁰**



Incredible Value Headphone 5-Pack

Five Sennheiser HD202 headphones for \$89.00! We're not kidding. These durable, sealed-ear headphones provide solid bass response, good insulation from outside noise and have a convenient cord take-up. A BSW exclusive!

HD202PKG **89⁰⁰** 

Six I/O Audio Card

Digigram's VX442 audio card features four balanced analog inputs/outputs with 96 kHz/24-bit converters and digital stereo I/O in AES/EBU or S/PDIF format. It's a versatile performer, with sample rates from 8 to 96 kHz; 8, 16 or 25-bit PCM resolution; very low latency for quality direct monitoring and a dedicated control interface allowing routing and mixing between hardware and virtual inputs/outputs. Order today.

VX442 List 789⁰⁰ **588⁰⁰**

Broadcast Supply Worldwide.
Your Best Source for Professional Audio Products.



BSW Exclusive!
FREE Phone Module
with Purchase
of the New Audioarts
R55 Console
(a \$614 value)!

Modular 12-Channel Console Packed with Performance

A truly no-nonsense unit with plenty of usability, the Audioarts R55 modular console has 12 channels and 4 busses and offers a monitor module with control room, studio, headphone and talkback functions and an output module with program, audition, pre and post mono fader outputs, plus independent meter selection. Flip up the hinged meterbridge and everything you need to access is right there: DB-25 I/O connections, calibration trimpots and console logic dipswitches. Its countertop design fits almost anywhere, with dimensions of 26" W x 25-1/2" D x 8" H (2-1/2" in front), and it has rugged steel frame

construction. **Features:** built-in cue speaker/amp and headphone jack/amp to save on outboard gear; built-in event timer; external meter input; mic logic included on line modules for use with line-level mic inputs; stereo program and audition busses plus two mono output busses.

With the purchase of your new R55, we're even throwing in a FREE phone module valued at \$614.00! This is an exclusive BSW offer!

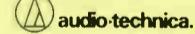
R55 List 5,695⁰⁰ **4,799⁰⁰**

 AUDIOARTS' ENGINEERING



BSW Exclusive Microphone 5-Pack

The Audio-Technica ST95MKII is a quality sounding dynamic mic that is perfect for PA and studio recording. **Features:** On/Off switch; XLR output; low impedance; cardioid pick-up pattern. Includes stand adaptor.

ST95MKIIPKG **99⁰⁰** 

Don't Forget Stands and Cables

These durable mic stands for less than \$18 each in the 5-pack are an incredible bargain exclusively from BSW.

Also save on quality, low-loss 25 ft. mic cables also in a money saving 5-pack!

MS200PKG **89⁰⁰** M25PKG **49⁰⁰**



BSW offers package pricing • Let us save you money on your next quote

800•426•8434 or online @ www.bswusa.com

DSP

"Now YOU have the power"

The BW DSP X is a new generation of digital audio signal processor that can be used for FM, AM, TV, DAB and internet broadcasting.

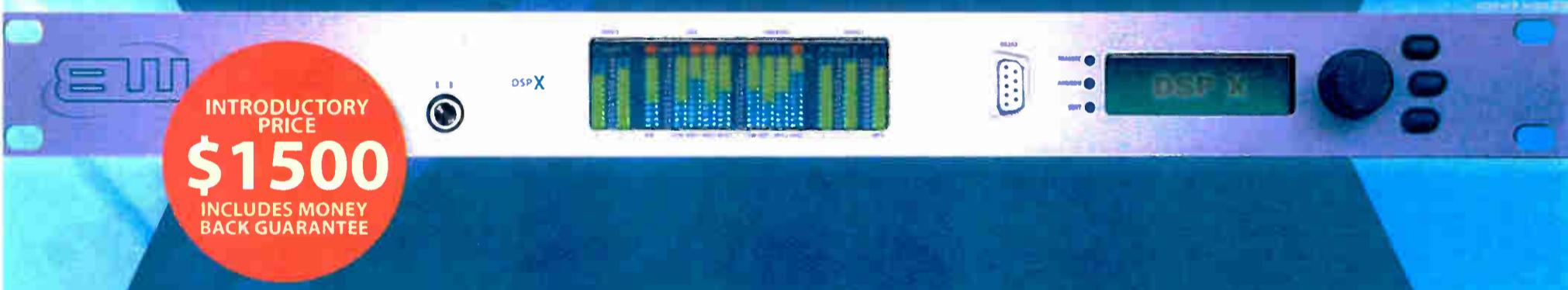
Designed in 2002 from the ground up, the DSP X uses the latest multiband DSP technology to bring the user a truly versatile and professional processor.

At less than a quarter of the size, weight and price of its rivals, the DSP X is a clear winner.

The revolutionary DSP X is the first broadcast processor to allow users to write their own DSP assembly code plug-ins.

The parallel architecture of the DSP X alleviates some of the problems that plague other DSP processors especially system latency (audio delay).

The easy to use front panel control system and LED metering display, afford the user with unprecedented ease of use and setup.



- 18 24-bit DSP's providing over 1 GIGAmips of processing power
- Digital and analogue inputs
- User creatable DSP plug-ins
- Intelligent, adaptive bass and brightness plug-ins
- User definable crossovers/bands
- Wide and multi band AGC'S with intelligent gating
- Multi band look ahead limiting

- Supersonic sample rate stereo encoder with anti aliased composite clipper
- Back panel and rackroom (front-panel) rs232 control
- Ethernet/internet webserver for remote monitoring and control
- Full range of user presets with a/b switching
- Software upgradeable

read the DSP X FAQ at
www.dsp-x.com

Free 3 month trial at
your radio station
contact sales

15 York Road, Wimbledon, SW19 8TP, UK
Tel: +44 208 540 9992 Fax: +44 208 540 9994
WWW.BROADCASTWAREHOUSE.COM

License Renewal Is Tricky Biz

by Barry D. Umansky

Can you remember whether you paid all your bills on time in 1999? Or whether you signed and returned all those report cards your kid brought home from school during the 2000-2001 academic year?

You have some similar "thinking-cap" tasks ahead as you get ready for FCC license renewal. And making up the answers, without knowing the truth, potentially can result in "misrepresenting" yourself to the commission, which may create a bad license renewal experience for you and your station.

Expect many license renewal challenges to be based on alleged EEO deficiencies.

When your station files its application for renewal of FCC license, you will have to certify your compliance — over the entire eight-year license term — with a number of FCC requirements.

In fact, preparing for license renewal truly is an eight-year job for radio stations, during which you must keep your track record clean. That's because the perils can be significant for broadcasters who have been lax in adhering to their FCC duties over the license term. And the risks can be severe for those who try to conceal regulatory lapses on the renewal form.

As in the past, the FCC has set license renewal deadlines by geographic groups. The first group has a renewal deadline of June 2, 2003 (June 1, the usual deadline, falls on a Sunday this year). This deadline applies to radio broadcasters licensed to the District of Columbia or cities in Maryland, Virginia or West Virginia.

As seen in the box accompanying this article, the FCC's deadlines for other broadcasters' filing of license renewal applications will run throughout a three-year period, as various radio stations' eight-year licenses approach expiration. For many readers of this column, this is the first time you have had the responsibility for license renewal. And even for broadcast veterans, it's been a long time since you last had to take on this responsibility at the FCC. So, now is the time to

See RENEWAL, page 36 ►

Smoothjazz.com Reverses Model

by Craig Johnston

Web Watcher has heard for years that Internet radio offers freedom for station music programmers to be more true to their craft — out from under the two-ton thumbs of group programmers, independent promoters and format consultants.

But other than building audiences that pale by comparison to those of traditional stations, what, as Web Watcher's father sometimes asks, "have they done for the good of the order?"

One Internet-only station, smoothjazz.com has reversed the familiar model of a broadcast signal streamed over the Internet.

Smoothjazz.com's Internet-only programming will be broadcast by noncommercial WKTS(FM) in Kingston, Tenn., and its repeater in Knoxville.

"There was a station that dropped the smooth jazz format and went to hip hop, so Knoxville had been without smooth jazz for a couple of years," WKTS General Manager John Jordan told us. In looking to fill that void, Jordan listened to several smooth jazz format providers, then listened to smoothjazz.com's Internet stream.



Sandy Shore

are doing with other formats, which is broadening the mix a little bit, and ... keeping the commercial accessibility in there. We're not renegades, we just think the music needs to be a little deeper."

Shore was quick to share credit for smoothjazz.com's success with Webcast Director Scott O'Brien. "Scott has the job of massaging the music every day to make sure the music flow is going to be really stellar. And then he and I work together to put in new music."

Though audio programming that originated on the Web has made its way to terrestrial broadcast stations in the past, the WKTS/smoothjazz.com project appears to be the first such experiment for music programming.

"It helped to get our name out," said Jordan, "but I think it's helping Sandy more than us, because she'd like to do this for more stations. I think she has the best playlist and the best mix that I know of in smooth jazz."



Diane Williams



Those who watched as Arbitron licensed ratings technology from former competitor MeasureCast probably are not surprised that, without a competitor providing ratings for free, Arbitron has decided it can charge for the service. But Rose also said the timing of the move to a subscription service is based on a change he's seeing in Internet broadcasting businesses.

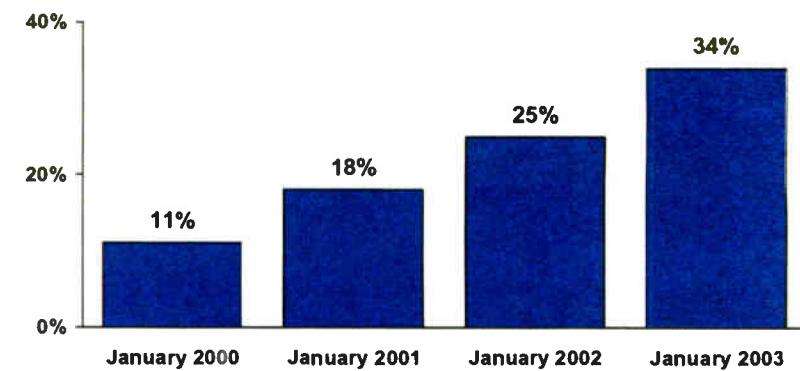
"What I'm beginning to see, in discussions with customers, are people really getting serious about selling advertising," he said. "Not just about the intent to do so, but organizing in ways that will affect good results."

Rose said people are starting to understand that Internet radio is, in fact, radio.

In the beginning, "Internet broad-

One in Three Americans Have Listened to Radio Stations Online

% of Americans Who Have Listened to a Radio Station Over the Internet



ARBITRON

Base: Total Population 12+

edison media research
© 2003 Arbitron Inc. & Edison Media Research

Free rarely lasts forever.

Arbitron has announced it would begin charging for its Internet ratings service. Along with moving to a subscription model, the company enhanced the service to sales training support in addition to credible third-party ratings.

"Frankly, we're a business like others, and we can't continue to do what we've been doing indefinitely," Arbitron's Vice President of Webcast Services Bill Rose told Web Watcher. "We need to start to at least make a little bit of revenue to cover some of the larger costs we've incurred over time."

Shore told Web Watcher she feels the Net allows programmers "to do what we believe is what radio is good for, to take the music to the people, rather than the homogenized sound that seems to be on the airways these days."

"What we're doing with smoothjazz.com is what I think people

casters called themselves streamers, they called themselves Webcasters, and they talked about all the bells and whistles that the advertiser can get: synchronized banner ad, click-through rates," he said.

"I think that they kind of got lost, with a lot of the technical terms and the bells and whistles, from the very basic value that Internet broadcast advertising provides. And that is straight commercials, that ultimately what they're really doing is selling commercials."

Rose said viewing Internet radio this See WEB WATCH, page 34 ►

STATION SNAPSHOT

AM 770 Serves S.E. Montana

by Sharon Rae Pettigrew

Tune into KATL(AM) radio and you're more likely to hear \$700 heifers hawked on the air than traffic on the 8s.

"She's nice and gentle and well-broke. Mary has a 4-H colt for sale, Bruce has a four-year-old mare ..."

In a town where the year's biggest draw is the annual springtime Jaycees Buckinghorse Sale sits a radio station that's been a regional fixture for decades.



The old KATL HQ on Hanes Avenue is still standing.

KATL(AM) 770 serves Miles City, Mont., and surrounding counties with an AC format, news, information and a nod toward local sports. The station is an ABC Information affiliate and airs the Westwood One Bright AC package.

"Cattle" Radio, as it is known about town, began its run serving the community on 1340 AM as a 1,000-watt class-D station Sept. 9, 1941. Now it's a 10,000-wattter on the air 24 hours a day.

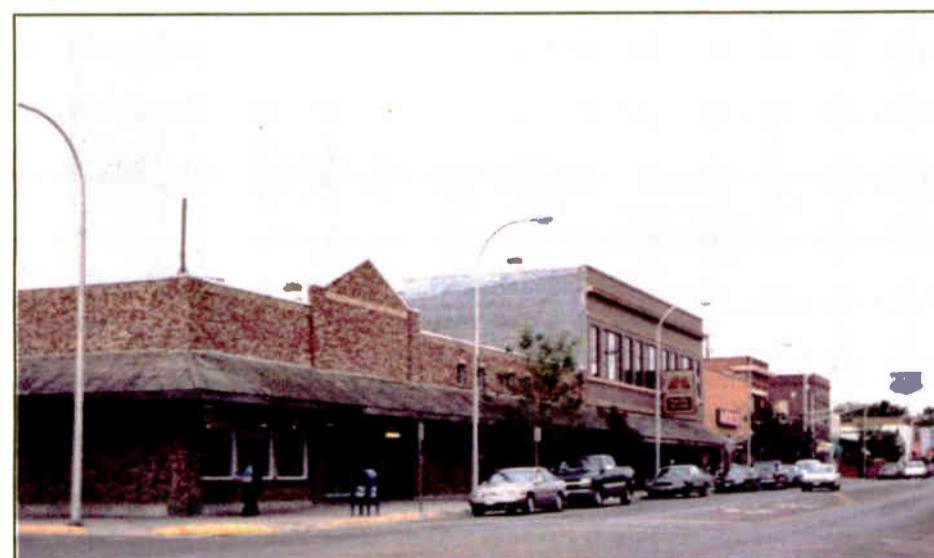
Miles City, the Custer County seat, is the largest city in Eastern Montana, with 8,487 people, according to the area chamber of commerce. The county population is around 12,000.

The Miles City Saddlery sponsors "The 12:30 Report," a part of the noon market roundup from the Northern Ag Network.

Ain't no flies

But KATL radio is anything but backcountry. While this may be a small-town station, it's no rinky-dink operation.

"Everything is on hard drive," said Don Richard, KATL's general manager, program director and chief engineer. He's been a part of KATL's legacy for some 22 years.



The new KATL is part of the Miles City Star newspaper offices on Main Street downtown.

"All the production rooms are digital. We use Sonic Foundry to edit audio."

KATL production booths include Arrakis DigiLink 3s and a pair of 12-pot Mackie mix boards. An old, hardy Harris Medalist 8 board sits in the studio. Reporters use Marantz CD/cassette combos in the field along with Sony cassette players. Jocks use a cell phone on remotes; Darby Nicholas the sports guy uses an old Marti remote RPU for American Legion ball games.

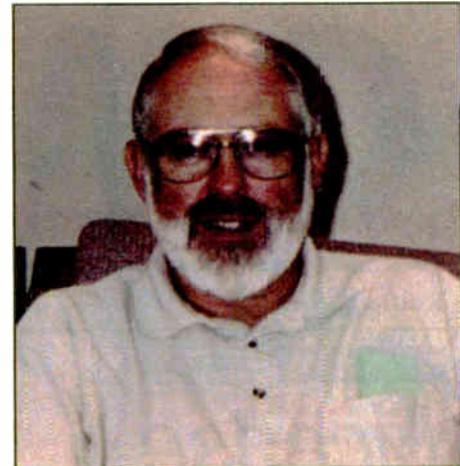
While it's not an Arbitron-rated market, the station, owned by the Schnitzler Corp., has invested in research through a regional survey company.

And how's business?

"We have a good spot load," said Al Homme, KATL's general sales manager for 30-plus years. "We're not hurting for advertisers. The volume is high enough to justify a rate increase."

While there are two other radio stations in town, KKRY(FM) with a country format and KMTA(AM), a classic rocker, plus another pair of signals — one country, one oldies, out of Forsyth,

See KATL , page 37 ►



Jack of All Trades: Station PD, GM and CE Don Richard runs the show.

Photo by Sharon Rae Pettigrew

CHAINCAST/STREAMAUDIO IS TOPS IN FEBRUARY

ChainCast/StreamAudio was the top network in Arbitron's MeasureCast Ratings in February with 5.2 million hours of total time spent listening. MusicMatch was the second network, Clear Channel Worldwide was third.

MusicMatch ArtistMatch was ranked as the top Internet radio station with 1.2 million hours; radioioEclectic was second, Virgin Radio third.

Top 10 Internet Broadcast Networks (February 2003)

Rank	Company	TTSL	CUME
1	ChainCast/StreamAudio	5,237,580	483,100
2	MUSICMATCH	5,189,443	1,218,661
3	Clear Channel Worldwide	5,009,959	480,424
4	Warp Radio	2,359,369	426,607
5	Moontaxi	2,338,877	226,123
6	StreamGuys	2,151,230	410,394
7	Live365.com	1,802,143	302,689
8	SurferNETWORK	1,664,344	93,452
9	Virgin Radio	1,421,629	199,427
10	Radio Free Virgin	1,377,646	106,102

Arbitron's MeasureCast Top 20

Rank	Station	Format	Owner/Network	URL	TTSL (ATH) (in hours)	Cume Persons
1	MUSICMATCH ArtistMatch (Internet-only)	Misc.	MUSICMATCH	www.musicmatch.com	1,229,273	438,432
2	radioioEclectic (Internet-only)	Adult Alt.	RADIOIO/io MediaPartners, inc./LimeLight Networks	www.radioio.com	1,221,180	195,559
3	Virgin Radio/1215 AM & 105.8 FM (London, UK)	Hot AC	Virgin Radio New Media	www.virginradio.co.uk	977,718	156,470
4	WQXR(FM)/96.3 (New York)	Classical	New York Times	www.wqxr.com	926,525	96,725
5	KPLU(FM)/88.5 (Tacoma)	Jazz	Pacific Lutheran University	www.kplu.org	670,185	85,183
6	JazzFM/102.2 FM & 100.4 FM (London)	Jazz	Guardian Media Group	www.jazzfm.com	668,809	77,478
7	MUSICMATCH Top Hits (Internet-only)	CHR/Top 40	MUSICMATCH	www.musicmatch.com	623,407	285,527
8	Beethoven.com (Internet-only)	Classical	Beethoven.com	www.beethoven.com	593,425	72,224
9	KING(FM)/98.1 (Seattle)	Classical	Classic Radio Inc. Real Broadcast Networks	www.king.org	424,343	45,694
10	MUSICMATCH Artist On Demand (Internet-only)	Misc.	MUSICMATCH	www.musicmatch.com	413,812	134,766
11	KNAC.COM (Internet-only)	Pure Rock	KNAC.COM	www.knac.com	371,527	59,187
12	K-LOVE Radio (Sacramento)	Contemp. Christian	Educational Media Foundation	www.klove.com	334,020	80,515
13	KFI(AM)/640 (Los Angeles)	Talk Radio	Clear Channel Worldwide	www.kfi640.com	323,053	53,388
14	3WK Undergroundradio (Internet-only)	Alt. Rock	3WK	www.3wk.com	304,677	74,858
15	WLS(AM)/890 (Chicago)	News/Talk	ABC Radio Networks	www.wlsam.com	297,152	62,142
16	Virgin Radio Classic Rock (Internet-only)	Classic Rock	Virgin Radio New Media	www.virginradio.co.uk	294,971	43,610
17	WLWT(FM)/106.7 (New York)	Soft AC	Clear Channel Worldwide	www.1067litefm.com	274,358	26,972
18	BlueGrass Country (Internet-only)	Country	American University/Warp Radio	www.bluegrasscountry.org	267,705	56,214
19	MUSICMATCH Soft Hits (Internet-only)	Soft Hits	MUSICMATCH	www.musicmatch.com	264,050	47,485
20	CountryBear-IN (Internet-only)	Country	Standard Broadcasting Corp./Warp Radio	www.warpradio.com/leindex.asp	254,162	135,762

Notes:

1. TTSL (Total Time Spent Listening), sometimes referred to as Aggregate Tuning Hours (ATH), is the total number of hours tuned to a given station or network in the reported time period.

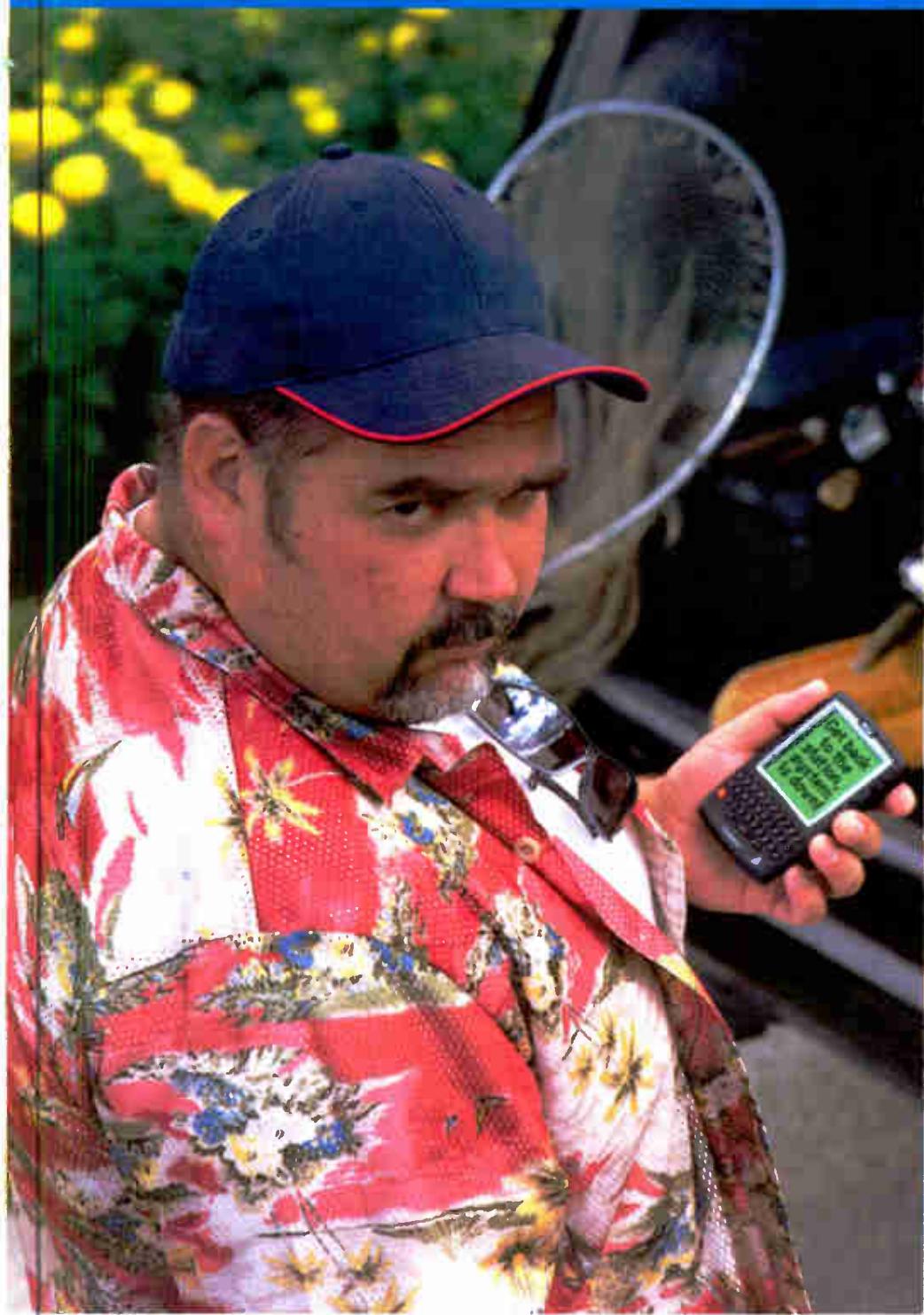
2. Cume Persons is an estimate of the total number of unique listeners who had one or more listening sessions lasting five minutes or longer during the reported time period. This estimate is derived using an algorithm that takes into account unique media player GUIDs, unique IP addresses and other variables during the reported time period.

3. In November 2002, Arbitron acquired a license to MeasureCast's streaming measurement technology and related assets. Some channels that had previously been reported by Arbitron before the acquisition may not appear in the current Arbitron's MeasureCast Ratings. Arbitron is working on reporting some of these properties.

 ARBITRON

Vacation? What Vacation!

You need iMediaTouch.



Is your digital audio delivery system spoiling your free time?

Since 1984, over 500 radio stations around the world have trusted iMediaTouch broadcast automation software. With a host of award winning features designed to save both time and resources without breaking the bank, the iMediaTouch digital audio delivery system is easy to use and dependable time after time.

iMediaTouch broadcast automation software.
Big market dependability. Small market affordability.



To find out more call us
Toll Free 888 665 0501 or visit www.omtnet



See us at NAB 2003 - Las Vegas, NV - Booth #2937 radio history

omt
technologies

Web Watch

► Continued from page 31

way should help the sales effort. "When we say Internet radio is radio, what we mean is they should position this just like it's radio. It's commercials; advertisers get that, they buy billions of them every year."

Arbitron is offering its subscribers two features to help them sell those commercials to traditional advertisers. The first is to offer the ratings in a format familiar to traditional radio buyers.

"The closest model that we've found to Internet radio in traditional radio is network radio, national radio," said Diane Williams, Arbitron lead account manager. So Arbitron's Internet Broadcast Service mirrors a traditional broadcast network service, with publication of traditional metrics such as Average Quarter Hour audience, or AQH, and unique users (cume). The aim is to allow advertisers to integrate Internet broadcast advertising seamlessly into their existing media planning process by offering it in a familiar format.

To accomplish this new way of selling Internet radio, Arbitron saw the need for two types of training.

"One for people who have no broadcast background whatsoever — these are usually people who are more into technology, and they've never sold an ad before, never sold an audio ad before," said Williams. "So we really want to train them in how people work in radio and how a radio ad is sold."

"Also, for people who have a background in traditional radio, (we'll be) showing them how to use those skills with Net radio. If they're used to selling local spots, we can show them how national works. If they're used to selling national, we'll show them how to take those skills and use them for the Net."

The subscription charge will be on a sliding scale based on the amount of Internet listening a station has. "We've discovered that a flat pricing model would end up benefiting the biggest of the players, and the smallest players

**Search and Buy
Electronic Components online at**

www.mouser.com

MOUSER ELECTRONICS
HOME PRODUCTS SUPPLIERS CATALOG PLACE ORDER VIEW ORDER PROJECT MANAGER MY MOUSER HELP

(800) 346-6873

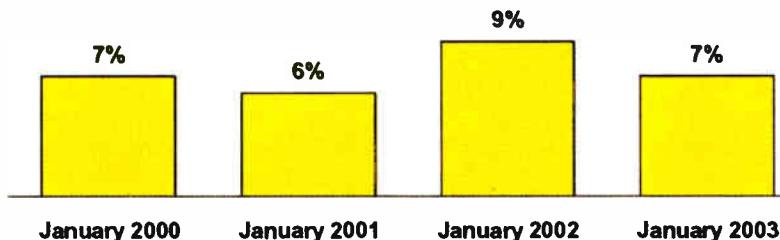
Semiconductors
Optoelectronics
Interconnects
Passives
Electromechanical
Power
Test, Tools & Supplies

Same-Day Shipping • Technical Support
Friendly Service • 39 Years of Experience

(800) 346-6873

Monthly Usage of Internet Video Has Not Grown in Three Years

% of Americans Who Have Watched Internet Video in Past Month



Base: Total Population 12+
© 2003 Arbitron Inc. Edison Media Research

would never be able to play," said Rose. Only those Internet radio stations subscribing to the service will be measured.

★ ★ ★

Arbitron and Edison Media Research have delivered their latest semi-annual Internet study, Internet 10.

After listening to the results via conference call, Web Watcher came to the same conclusion he has over the past several years: If Internet listening is continuing to grow, there's got to be a business there.

Some highlights of the study:

- Internet access, at work and at home, has doubled in the past four years. (Web Watcher's steel-trap math-mind calculates that since 63 percent now have access, it can't double again.)

- Flying in the face of the concept of a "digital divide," 65 percent of Hispanics and 74 percent of African-Americans now have some form of Internet access. Whites still top the list with 76 percent having some form of Internet access, and the divide increased markedly when the

study measured those with Internet access at home.

- Residential broadband has more than doubled in the past two years, totaling 18 percent of homes. And a healthy number say they'll be getting broadband access next year.

- One in three Americans have listened to a radio station over the Internet, and 17 percent say they've listened to Internet audio in the past month, tripling over the last three years. (Interestingly, monthly usage of Internet video has not grown over that same period.)

- Of those who would pay for Internet audio content, the prevailing reason was to get content they could not get elsewhere.

- Still, don't call the tower demolition people yet: TV (at 44 percent) and terrestrial radio (at 35 percent) continue to dominate the amount of time Americans spend with their personal media over newspapers (8 percent) and the Internet (13 percent).

Because the Arbitron/Edison Internet studies are issued semi-annually, the 10 editions cover just five years. But they have been five years of explosive growth.

"I've been doing this since 1999," said Rose. "It's like dog years. I feel 73 years old in the business."

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

WLTW Unseats KIIS In Billing Rankings

The top-billing U.S. radio station in 2002 was ...

WLTW(FM) in New York, unseating KIIS(FM), which fell to second after two years at the top, according to rankings from BIAfn. Both stations are owned by Clear Channel.

All of the top 10 stations are in New York or L.A. Clear Channel and Infinity each held four of the top 10 spots; Emmis and Radio One had one each.

WLTW had estimated revenue of \$65.1 million for the year; KIIS brought in \$60.5 million. Number 3 was Infinity's KROQ(FM) in Los Angeles at \$53.9 million. Number 4 was Infinity's WINS(AM), the highest ranker on the AM band.

The rest of the top 10 were

A Few Suggestions

As they have in previous Internet studies, Arbitron and Edison offer Internet radio a list of recommendations based on the data in their latest study, Internet 10:

- ✓ The online audio audience is growing rapidly and Net broadcasters should get serious about ad sales. Net broadcasters should consider selling in networks and promote the industry to the ad community.

- ✓ Companies pursuing subscription models should emphasize their content as their primary value. Consumers have greater interest in subscribing to unique and compelling content vs. fewer commercials or better audio quality.

- ✓ Try a mix of subscription and advertising. Subscription and advertising models do not need to be mutually exclusive. While there is huge demand for "subscription-worthy" programming, few Internet broadcasters are likely to succeed on subscription revenue alone.

- ✓ Don't build business plans based on large numbers of dissatisfied radio listeners. Most Americans give radio high marks for playing the kinds of music they like and for providing a variety of programming.

- ✓ Many Americans are willing to pay for unique and compelling audio programming, regardless of whether it is delivered over the Net or via satellite. Many Americans are willing to pay for unique and compelling audio programming, regardless of whether it is delivered over the Net or via satellite.

- ✓ Net broadcasting needs hit programming to spur even greater audience growth.

- ✓ Manufacturers and distributors of digital devices should advertise on Net broadcasts. Consumers of Net broadcasting are more likely to be aware of, show interest in, and own new digital devices.

- ✓ Technology and new media companies should develop marketing plans for minority consumers. The "digital divide" is narrowing. Build brand loyalty while these consumers are making their computer, Net and broadband purchasing decisions.

WFAN(AM), Infinity; KPWR(FM), Emmis; KOST(FM), Clear Channel; WXRK(FM), Infinity; KYSR(FM), Clear Channel; and KKBT(FM), Radio One.

KKBT(FM) joined the ranks of the top billers this year, at \$44 million. Clear Channel's WHTZ(FM) fell out of the top 10.

BIA Predicts 5.9% Increase for Radio

U.S. radio enjoyed a 7.2-percent increase in ad revenues in Arbitron markets in 2002, according to BIAfn, which predicted a 5.9-percent increase in 2003.

"Radio rebounded remarkably in 2002 and is poised to show strong growth in 2003, as well," stated Mark Fratrik, vice president of BIAfn and author of a study expected to be released in this month.

Canadian Attitudes to NAB Mixed

by James Careless

What will Canadian radio broadcasters be shopping for this week at NAB2003?

Several of the biggest organizations are taking a low-key approach to the show. One, however, plans to take a close look at in-band, on-channel DAB.

Corus Entertainment, which owns 52 radio stations and is the largest Canadian radio broadcaster based on revenues and audience, is not planning to attend. Rogers Media, which owns 43 stations and bills itself as the "most-listened-to broadcasting company" in Canada, intends to have "virtually no radio presence at all."

"Our emphasis right now is on exploring HDTV for our television stations," said Steve Edwards, Rogers vice president of corporate engineering and technology. "We had planned to get our radio engineers down to NAB for a meeting. However, given the current economic situation, we decided to postpone this meeting until next year."

From an engineering standpoint, IBOC is irrelevant to us.

— Steve Edwards,
Rogers Media

Over at Standard Radio, the "largest privately owned broadcast company in Canada" with 16 stations, President/CEO Gary Slaight is sending a few engineers. "It is a matter of having our engineers keep up with the technology," he said. "However, we tend to send more people to the NAB Radio Show in the fall."

At CHUM Radio, which owns 29 stations, the thinking is different.

"We are looking for transmitters, digital audio workstations, consoles, distributors, amplifiers, the whole gamut," said CHUM Radio Director of Engineering David Haydu. "We will also be bringing down engineers from a number of CHUM stations to meet in Las Vegas during the show, and we will divide up the show floor among us."

The Eureka-147 digital audio broadcasting system Canada has adopted and is implementing on the L-band is incompatible with the IBOC system being pushed in the United States.

AM and FM broadcasters are simulcasting signals via Eureka-147 DAB in Toronto; Montreal; Vancouver, British Columbia; and Windsor, Ontario. In addition, the four CBC stations in Ottawa have commenced test broadcasts, and seven more digital broadcasters were preparing to go on air in Halifax, Nova Scotia, at press time.

While some Eureka-147 equipment is expected to be on offer at NAB, much more of the focus is on the U.S.-backed IBOC digital AM/FM standard.

"From an engineering standpoint, IBOC is irrelevant to us," said Edwards. "Meanwhile, we've just completed a series of major AM/FM transmission rebuilds, so we're not in the market for

this equipment either."

CHUM, however, is taking a different approach, at least for its four-station group in Windsor, Ontario.

With a regional population of 300,000, Windsor is hard-pressed to compete with its neighbor Detroit, which has a regional population of 4.74 million, making it the 10th largest market in the United States.

This lopsided match-up explains why the Canadian Radio-television and Telecommunications Commission gave CHUM Radio permission to own and operate all four Windsor radio stations in 1993. At the time, owning more than one AM/FM combination in one market was illegal in Canada.

The CRTC gave CHUM a break on this rule — and subsequently reduced how much Canadian-produced content the Windsor stations must play — simply because the commission saw no other way for the stations to compete against Detroit radio.

Apparently, this tactic worked. Today, the four CHUM stations in Windsor — CKLW(AM), CKWW(AM), CIDR(FM) and CIMX(FM) — count on Detroit for a good portion of their audiences.

Given this, the embracing of IBOC by Detroit stations — for instance, WDMK(FM) has just added an HD Radio service — is of great concern to CHUM Radio. So Haydu is heading to NAB with IBOC transmitters high on his buying list.

"We do generate a lot of money from our Windsor stations, so we have to keep an eye on IBOC," he said. "When we replace our Windsor transmitters, I want to be sure to choose units that are capable of IBOC and analog."

"I like NAB because I can actually try the equipment out on the show floor," Haydu said. "As well, everyone is in one place: I do not have to travel the country to check out transmitters from Harris, Broadcast Electronics and Nautel."

Given that the four CHUM stations in Windsor are already broadcasting in Eureka-147 DAB, adding IBOC would give them the unique status of using both digital radio standards.

If nothing else, Windsor/Detroit could become a destination for engineers looking to compare IBOC and Eureka-147 DAB in actual broadcast conditions.

Production Ready.

ASI5111

- > 4 Stereo PCM Play Streams
- > 2 Stereo PCM record streams
- > Balanced stereo analog I/O
- > AES/EBU or S/PDIF digital I/O
- > Low noise mic input with 48V phantom supply
- > Compressor/Limiter and Parametric Equalizer

YOU DEMAND SERIOUS AUDIO PRODUCTION. So

take a look at AudioScience's new ASI5111 audio adapter. This PCI card provides stereo analog and digital inputs and outputs, 2 record streams and 4 play streams, plus a mic preamp with phantom power.

MRX Multi-Rate Mixing™ is included, so you can record, play and mix multiple audio streams to a 1Hz precision. And our SoundGuard™ transient voltage suppression protects against lightning and other high voltage surges. Windows 98, NT, 2000 and XP drivers are included—even Linux! And we even throw in the XLR breakout cables.

For features you demand at a breakthrough price, get the ASI5111. Call +1-302-324-5333 or check us out on the web at www.audioscience.com.

SOUND GUARD
MULTI-RATE MIXING

BUILT FOR BROADCAST

AUDIO SCIENCE
Sound Engineering
Sonic Excellence

Renewal

► Continued from page 31
brace for license renewal.

Sure, as compared to decades ago, the renewal form is shorter and simpler, and there are fewer areas of regulatory inquiry for applicants. (When your author worked at the FCC, the renewal application form and the paperwork that had to accompany it could stack up to more than a foot high. Now the form is only a few pages in length and has a much-reduced number of documents that much accompany its filing.)

But there still are plenty of ways to screw up your filing — which must be done electronically over the FCC's Web site (electronic filing will be an option until early fall when it becomes mandatory), a new facet of the process that poses its own complications.

Timing of the Application and the "Renewal Announcements" — Radio broadcasters file their renewal applications four months before their current licenses are due to expire. Thus, stations filing for renewal on June 2, 2003, have licenses set to expire on the first day of October, 2003.

The "well ahead of license expiration" timing of the application filing is to allow for FCC review of the renewal application and for assessment of potential "petitions-to-denay" the application and/or informal objections filed against the renewal application.

Obviously, if the commission's staff is enmeshed in a review of your application and/or documents filed against it, you don't go off the air if the FCC hasn't finished its assessment by the expiration of the license. You still have authority to broadcast. But, as I'll explain, your duty is to make sure that your station never falls into this regulatory limbo. And there are many components of that task.

In order to alert the public to its oppor-

tunity to challenge your renewal application — yes, in this and other areas the FCC is relying on the public to assist the commission in ensuring that the public interest will be served by, in this case, the grant of your license renewal application — you are required to broadcast a series of announcements, on your station, about your filing of the renewal application and the public's ability to participate in the FCC process.

On the first and 16th days of the two months *prior* to when you file your renewal application, you air your "pre-filing" announcements — one each of those four days. On the day your application is due at the FCC, as well as on the 16th day of that month and the first/16th days of the next two months, you air your "post-filing" announcements — six in all. The FCC has prescribed a standard text for each announcement, which tells the public that they can view your renewal application at your station (during regular business hours) and file comments and petitions against your station by the first day of the last month of your license term. And you don't want that to happen.

Running the Gauntlet — Why would someone file against your application?

Well, frankly, there now is less incentive for a person or organization to do so. Years ago, someone could file a "competing application," urging the FCC to deny your renewal application and to award the license to them. But the U.S. Congress eliminated the "comparative renewal" process and ended the nearly impossible task of the commission comparing the track records of you, the incumbent licensee, and the mere paper promises of a challenger.

However, if there is anyone out there who has a grudge against you or your station, they can file a petition-to-denay your renewal application or just an "informal objection" to your renewal application.

Each such filing, of course, at minimum will slow down the FCC process of reviewing and granting your applica-

tion, and may even result in the FCC designating your application for a special "hearing," where you would be forced to answer the allegations of the complainant/petitioner. You definitely do not want to be tossed into a hearing or otherwise be embroiled in further FCC inquiry into what you said in your renewal application.

Who would do such a dastardly thing? Well, it could be a former employee (who knows for a fact that, for example, your certification on the renewal form that your public inspection always was up-to-date over the license term is not true), a disgruntled employee (who may have similar knowledge of your regulatory failings over the license term), a competitor or even a loser in a station-conducted contest who felt he or she should have won.

Yes — and this is the case for many of you — people are out there who might want to jeopardize your license renewal.

The Renewal Areas of Focus

Traditionally the FCC — and petitioners — have focused on a limited number of issues involving a renewal application. Here are some examples; but be aware that a wide variety of matters may be considered as the commission reviews your renewal form.

EEO: Now that the FCC has imposed a revised set of equal employment opportunity rules (see our article in the Dec. 4, 2002 issue for details), EEO again has taken renewal center stage. That is, expect the majority of license renewal challenges to be based on alleged EEO deficiencies.

RF Radiation: The FCC may be looking to see if you have given an adequate and truthful response to the question about your protection of the public and station workers from exposure to electromagnetic energy above the levels specified in the FCC's guidelines.

Yes, we all know that tower climbers are not rational people; but you have to protect them, and anyone else who might otherwise gain authorized or unauthorized access to your tower site, from excessive RFR exposure.

So here too it is important to ensure that your certification is not a lie. For example, during the time that a worker was changing a tower light, did you power down or go off the air if that would be required to comply with the RFR guidelines? If not, but you indicated full compliance on the renewal form, the tower climber or someone else who knows about that incident could be the one to blow the whistle on you.

Public File and Other Potential Area of Misrepresentation: As you'll see, it's possible to fill out the license renewal form in only a couple of minutes. And you will feel a clear incentive to paint a picture of complete regulatory compliance on the form, such as answering "yes" to the question asking whether all your public inspection file materials were placed into the file on time.

But it is a cardinal sin for you to fudge the facts. Someone can point to that falsehood in a renewal challenge. And if a challenger notes areas on the license renewal form where you have fibbed a little, or a lot, expect "misrepresentation" to be the key element of the FCC's assessment of your license renewal application and your fitness to remain an FCC licensee.

Sure, license revocation is a rarity.

Radio License Renewal Application Filing Deadlines

STATE	FILING DATE
Alabama	12/01/03
Alaska	10/03/05
Arizona	06/02/05
Arkansas	02/02/04
California	08/01/05
Colorado	12/01/04
Connecticut	12/01/05
Dist. of Columbia	06/02/03
Delaware	04/01/06
Florida	10/01/03
Georgia	12/01/03
Hawaii	10/03/05
Idaho	06/01/05
Illinois	08/01/04
Indiana	04/01/04
Iowa	10/01/04
Kansas	02/01/05
Kentucky	04/01/04
Louisiana	02/02/04
Maine	12/01/05
Maryland	06/02/03
Massachusetts	12/01/05
Michigan	06/01/04
Minnesota	12/01/04
Mississippi	02/02/04
Missouri	10/01/04
Montana	12/01/04
Nebraska	02/01/05
Nevada	06/01/05
New Hampshire	12/01/05
New Jersey	02/01/06
New Mexico	06/01/05
New York	02/01/06
North Carolina	08/01/03
North Dakota	12/01/04
Ohio	06/01/04
Oklahoma	02/01/05
Oregon	10/01/05
Pennsylvania	04/03/06
Rhode Island	12/01/05
South Carolina	08/01/03
South Dakota	12/01/04
Tennessee	04/01/04
Texas	04/01/05
Utah	06/01/05
Vermont	12/01/05
Virginia	06/02/03
Washington	10/03/05
West Virgin	06/02/03
Wisconsin	08/01/04
Wyoming	06/01/05
American Samoa	10/03/05
Guam	10/03/05
Puerto Rico	10/01/03
U.S.V.I.	10/01/03

But lightning can strike; you don't want to be the one hit.

Yes, license renewal is trickier than it looks. Now is the time to talk with your communications lawyer, especially if you know that your eight-year renewal track record is less than perfect. Keeping your FCC license is the highest responsibility of a broadcaster. So be responsible.

Barry D. Umansky, the former deputy general counsel of the National Association of Broadcasters, is with the communications practice group at the law firm of Thompson Hine LLP in Washington. Reach him at (202) 263-4128 or via e-mail to barry.umansky@thompsonhine.com.

STATION/STUDIO SERVICES

APRIL HOME IMPROVEMENT MONTH • EASTER • H.S. GRADUATION • MOTHER'S DAY • MEMORIAL DAY • MORE!

**WE PROVIDE
THE MESSAGES.**

**YOU PRESENT THEM
TO CLIENTS....**



GRACE BROADCAST SALES
Toll-free 1-888-472-2388
Sound Ideas for Building Business®

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 1-703-998-7600,
ext. 154.

SPACE AVAILABLE

Call Simone For Details
1-703-998-7600 ext. 154

KATL

► Continued from page 32

Mont. — you can guess who KATL battles for a share of clients' ad pie money.

"The newspaper is our biggest competitor," said Homme. "But other radio stations are definitely a factor."



Secretarial Programmer Evelyn Dann shows off the not-so-fat Miles City phone book.

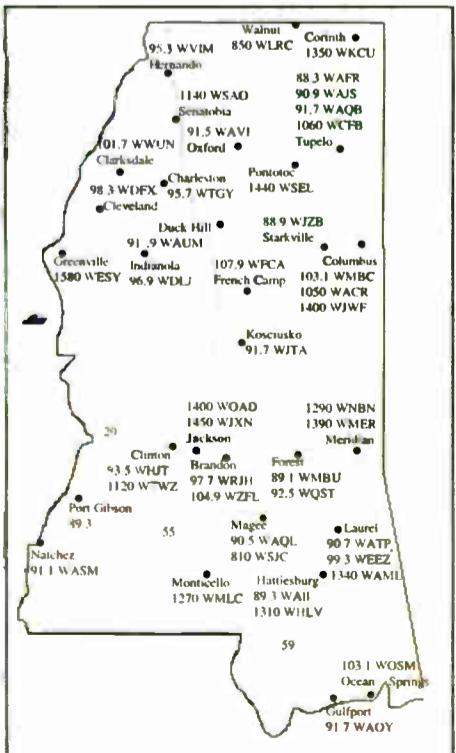
STATION SERVICES

Radio Atlas Pinpoints Christian Stations

Fans of Christian radio looking for a station to listen to while on the highway can look to "The Christian Radio Atlas," assembled by Gordon Govier, to find music to pass the time.

Produced by Madison, Wis.-based, Scribe Media, the 58-page book contains 50 maps and information on 1,624 stations. Florida, Texas, North Carolina, California and Georgia are the top states for numbers of Christian stations.

For more information call (800) 373-9692 or visit www.radioscribe.com.



Sample Atlas Page: Mississippi has many Christian radio stations.

GM JOURNAL

PD Richard says his goal is to keep his station sounding local.

"It's an interesting job every day," he said. "New challenges come up. There's no one thing I always try to do — I don't want the station to sound canned."

Richard said he challenges his jocks to "think outside of the box and create a show in one hour with all the breaks they have available to them. They work to think about what's down the road instead of what's happening right now in front of them."

When asked to classify the size of his market, Richard laughed.

"We're a teeny market," he said. "We're not a small market, we're too teeny. If I added all the squirrels and cows together in Custer County I wouldn't have a small market."



KATL AE Terry Virag also serves as the station's sign-on guy (and you gotta respect a jock who wears a sports coat).

Low Prices. Smart People.

SPRING SPECIALS!

25th Anniversary

K110M headphones
ONLY \$19.95!

CDR830 CD burner
JUST \$514.80!

C414BULS
Price too low to print - CALL!

RAMSA
MP1200 mixer
\$292.53!
LAST CHANCE!

MACKIE
MDR24/96 B-Stocks
ONLY \$1195.00!

Digi 001
only \$804.77!
IN STOCK NOW!

FULL COMPASS

800-356-5844

www.fullcompass.com

COMPASS Xpress

Not a 9.5 shopper?
Call 800-476-9886
8am-10pm M-F CST
10am-4pm Sat.

Country Radio Faces the Music

by Bob Millard

Country radio continues to struggle, after several years of audience losses. But at least the bleeding seems to have stopped, observed Country Radio Broadcasters Executive Director Ed Salomon after the organization's 34th annual Country Radio Seminar.

"Everything's pretty much flat, but everybody's optimistic," Salomon said. "Some stations are doing considerably better than they were a year ago but not all stations."

And perhaps they should be. According to Nielsen's SoundScan, recorded country product sales grew by more than 12 percent last year.

Still, divining trends and concerns in

country radio these days isn't as simple as it was even five years ago. Three different formats are recognized: new country, classic country and mainstream.

In the majority for wattage, audience and dollars are the doyens of mainstream — also a continually debated programming term. Mainstream issues were taken up in seminars and forums organized by the Nashville-headquartered CRB, meeting in two significant conclaves here in four recent months.

Putting a positive face on country's continuing slump, an Arbitron study released at the 34th Annual Country Radio Seminar held at the Nashville Convention Center Feb. 19-21, declared that nationally, country radio has shed "only one share point in

the past four years." Positive thinking aside, that single point was from 9.5 to an 8.5: almost 11 percent of country radio's 12-plus listening audience.

At CSR 34, said CRB President Charlie Cook, vice president of programming Westwood Radio Networks, "The biggest issue was how to expand the demographic.

Offering

"How do we succeed at doing what country radio did a few years ago, which was to bring more 18-24-year-olds into the format? I think we need to do it by exposing the non-country listener to a country act. You like Faith Hill on a pop station? Great, come hear what else country music

has to offer."

The Arbitron study that debuted also raised the fact of increased Hispanic populations draining country listeners by a percentage-of-market factor. This phenomenon isn't limited to Texas and other states bordering Mexico; it is significant and growing in Denver, Chicago and Nashville as well.

CRS events also focused on education of broadcasters; the CRB Fall Forum, "Radio Faces The Music Industry" aired issues between those who make the music, and those who control its exposure.

The exchange ran mostly one-way between broadcasters and Music Row at the Renaissance Hotel in Nashville, as key country radio programmers appeared at the Country Radio Broadcasters' second annual fall forum. Major labels, music publishers, and promotion reps — people with other access — declined to take on major media conglomerates publicly in the face of a weak national economy, which has not noticeably improved to date.

"I was surprised that so few (record industry) people asked really tough questions," said Salomon. "I think the record people were surprised that the radio people were so candid; and the radio people were surprised the questioning, in general, wasn't tougher. It sounded like everybody was trying to pull together in tough times."

Tough times have long been coming, and to many trade observers it seems like more

See CRB, page 39 ▶

When the Rock and Roll Hall of Fame and Museum started planning its new state-of-the-art Alan Freed Radio Studio, help came from Logitek.



Alan Freed Radio Studio Console Configuration

Logitek Audio Engine with 6 IO24A I/O cards, providing up to 72 analog inputs and 72 analog outputs

- 24 mix-minus buses
- Supervisor software for complete control of fader assignments and router functions

Numix-12 Console

- 12 fully assignable faders, easy access to 8 stereo buses

vMix "Virtual" Console software

Logitek is proud to support the Alan Freed Radio Studio

Our digital audio routing and console designs were a perfect fit for a studio that would both showcase their beautiful facility and provide the flexibility that hundreds of visiting DJ's and station personnel would want. The Logitek Numix console can easily be configured for visiting talent, providing access to equipment and guest mics in an arrangement that makes sense for each operator. The Audio Engine provides routing and control functions throughout the studio, making it the heart of this 21st century operation.

Logitek Electronic Systems, Inc.

5622 Edgemore • Houston, TX 77081 USA

713.664.4470

1.800.231.5870

www.logitekaudio.com

© 2003 Logitek Electronic Systems, Inc.

Radio Sawa Features Interactive Program

"Sawa Chat" is the latest offering from the U.S. government's Radio Sawa.

The new hourly interactive program allows listeners in the Middle East the opportunity to offer opinions on social issues. The feature is part of Radio Sawa's new "Open Mind" public service campaign — "Read, Listen, Then Decide" — promoting independent thinking and free discussion.

"It's part of the 'You listen to us, we listen to you' promise we made when we created Radio Sawa," stated Norman J. Pattiz of the Broadcasting Board of Governors, which oversees the Arabic-language station.

Separately, research shows Radio Sawa's news credibility on an upswing. Edison Media Research conducted the study as part of an effort to track audience attitude toward news, music and station popularity.

Arbitron Reorganizes U.S. Media Services

In an effort to "strengthen its customer service capabilities and augment the quality and sophistication of its radio research practices," Arbitron has announced the reorganization of its U.S. Media Services division.

The company expects the move to consolidate client services and customer communication groups and to enhance the focus of radio methods research.

The effort will be synchronized by Brad Feldhaus, director of Strategic Initiatives, Radio Stations Services, who was named to the new position of vice president of radio product management and client services, and Dr. Ed Cohen, vice president of domestic radio research. Both report to Arbitron President of U.S. Media Services Owen Charlebois.

Cohen also will take the lead for the Media Ratings Council liaison team for Arbitron's core domestic radio ratings business.

CRB

► Continued from page 38

than a cyclical downswing. While country artists' recordings accounted for nearly 19 percent of all record sales in 1993, they have declined steadily since, and plunged by 23 percent in 2000 alone, according to the Recording Industry Association of America. Country product sales in dollars are off only 23 percent, 2001 vs. 1993's high point, because the sales pie has grown, but down by more than one-third as a portion of all sales in that same period.

Struggling markets

Country radio audiences have shrunk over six years by 75 percent in formerly solid markets such as Birmingham, Ala., and San Antonio, according to Arbitron ratings. Big markets have been hurt, too. New York's WYN(FM) struggled before dropping the country music format in May of 2002 in favor of a Spanish/Latin music format.

If Nashvillians were laid back at CRB's autumn gathering, radio industry panelists spoke plainly in response to pointed questions from forum panel moderator Charlie Cook.

Cook opened the questions quoting Todd Spencer in the most stinging indictment of consolidation's impact yet published by a knowledgeable player. In an October editorial for Salon online magazine, Spencer, former editor of the now-defunct radio trade publication Gavin magazine, estimated 10,000 radio-related jobs had been lost since the Telecommunications Act of 1996 became law, saying:



(From Left) Jaye Albright, Mike Moore, Paul Williams, Kevin O'Neal, Eric Logan, Charlie Cook, Dave Kelly and Alan Sledge

"Consolidation of the radio business into the hands of very few powerful corporate owners has devastated the quality of commercial radio. Every year radio programming is produced with smaller and smaller budgets by fewer and fewer people with more and more smoke and mirrors: cookie cutter music formats; overuse of syndication; tighter, more repetitive playlists filled with inferior songs; one programming staff, programming a cluster of radio stations (in a single market); and commercial breaks that never seem to end."

Cook asked panelists if one-jock or no-jock stations could properly serve local interests. Responding to Cook's questioning, panelists defended voice tracking from distant locations. Panelists concurred that having a single DJ servicing six radio stations, for example, saved corporations as much as \$150,000 per year.

"Absolutely," said Alan Sledge of Clear

Channel Radio. "The interconnectivity of the company allows for such efficiencies. When you're running a business, that's what you have to look for. But voice tracking is not specific to country radio; it's in every format in every major market in America now."

some of his own programming decisions of late. "That means playing the best music we can, and Nashville's a great source of that. But that Kelly Clarkson thing — 23 million people watched that. We happen to call WUSN 'America's Country Station' but I think that the pow-

place they can, no matter what it is," said Mike Moore, WSIX(FM) (Nashville) PD. "Anything they can do to sell records, I think they should do. Again, that's where some of our worlds don't meet, where we have maybe a different agenda."

Exacerbating the agenda gap between Nashville and powerful broadcast media consolidators, some broadcasters have demanded direct financial contributions from labels. While none dared call it payola, panelists tacitly agreed that labels have been pressed to write checks for things previously considered normal station operations costs.

"Well, it's not fair; it's not appropriate, and if anyone out there has an issue with one of our stations about that, I need to know about it," said Clear Channel's Sledge. Eric Logan, however, defended what he called cooperative marketing efforts to develop new acts.

"I don't think anybody's going to object where it's a marketing plan and you guys are the transmission service of this marketing plan," said Cook. "But this is not a bill from a station for \$2,500 for T-shirts and then the T-shirts are never printed."

Consultant Jaye Albright addressed this issue bluntly.

"There's no question that if you want 20-25 adds on the R&R panel, you can buy 'em," said Albright. "I don't think any of us think that is a good thing ... but this is our economy; it's not just radio. AOL-Time Warner is worth more in pieces than it is in the aggregate. Is consolidation going to work or not? Well, we've got to make it work."

Bob Millard has covered the broadcast and entertainment industries for major trade and consumer press for more than 25 years.



Scott Borchetta, Senior Executive of Promotions and Artist Development, DreamWorks Records and Becky Brenner, CRB Director and PD of KMPS/KYCW, Seattle

Eric Logan of Infinity Broadcasting, who bases his chain programming activities at WUSN(FM) in Chicago, said that a change toward more local market focus is going to be necessary for the big consolidators. He suggested that there was a point of diminishing returns to staff reductions and using stations in multiple markets essentially as

er of brands has gotten lost over time."

As terrestrial broadcasters, panelists saw satellite music services as a potential audience drain, though not a very big one. They are not pressuring labels withhold or limit music service to Sirius or XM.

"I think labels have to get exposure any-

AEQ

Swing \$2,295

Portable ISDN Audio Codec:

- Compact, light weight and easy to operate with a worldwide ready ISDN connection.
- Works anywhere and is compatible with all codecs on the market.
- It has a built-in digital phone hybrid for POTS connection and it works simultaneously with the ISDN connection.

Now with MP3 !!!

Eagle \$2,795

ISDN Audio Codec

- Stereo and Mono.
- Digital and Analog I/O.
- Capable of establishing an On Air conversation with two callers.

TH-02 EX \$1,075

Digital Telephone Hybrid known worldwide for its high performance.

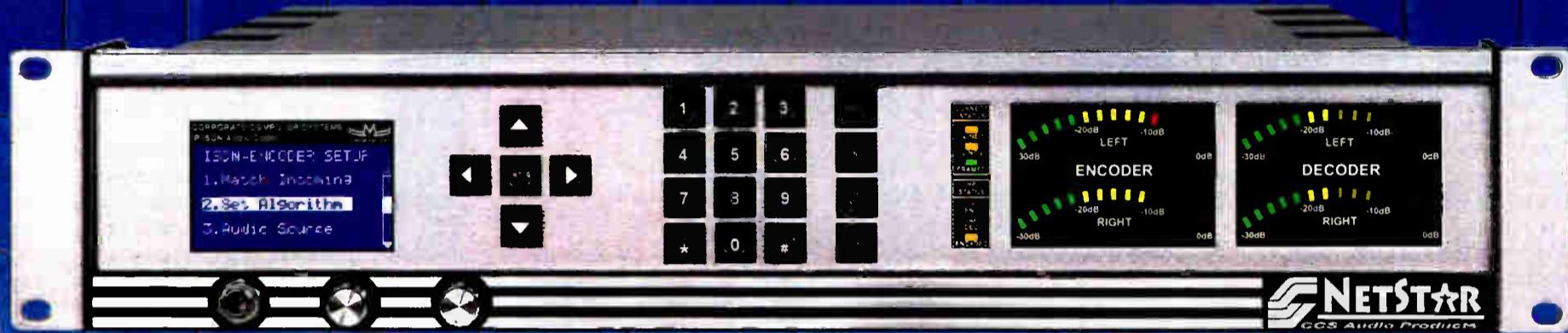
AEQ:
Phone: 954 - 581 7999 Fax.: 954 - 581 7733
sales@aeqbroadcast.com www.aeqbroadcast.com

Visit us at NAB booth N-3146

April 7-10, 2003

INTRODUCING

NETSTAR™



A new codec with Advanced Audio Coding for use over the Internet, ISDN or DSL

The newest codec from CCS/MUSICAM USA does it all! While maintaining compatibility with existing codecs, NetStar opens a new realm of connection capabilities. NetStar can send and receive full fidelity, real-time stereo audio not only via ISDN and dedicated data lines, but also via IP.

NetStar contains not only standard coding algorithms like G.711, G.722, MPEG 1 & 2 Layer 2 and MPEG 1 & 2 Layer 3, but also the latest MPEG 2 Advanced Audio Coding (AAC) and MPEG 4 AAC-Low Delay.

NetStar can even connect bi-directionally via IP with *uncompressed linear audio and near-zero delay!*

NetStar automatically recognizes the calling codec, and even comes with its own built-in web server for easy remote control from any web browser. And, because living within your budget is essential, NetStar is not only our most capable codec ever, it's also our most affordable.

Contact us, or your authorized CCS/MUSICAM USA dealer for details



MUSICAM USA
670 North Beers Street, Bldg #4
Holmdel, NJ 07733 USA
732-739-5600
732-739-1818 fax
sales@musicamusa.com
www.musicamusa.com

MUSICAM USA is the d/b/a of Corporate Computer Systems, Inc



Buyer's Guide

Radio World

Mics, Speakers & Amps

April 7, 2003

USER REPORT

Great River, Great Sound

by Scott Liebers
Audio Engineer,
Operations Department
Minnesota Public Radio

ST. PAUL, Minn. Recently, Minnesota Public Radio vintage Neve radio consoles were replaced due to age. While the replacement consoles gave us flexibility with more channels and useful busses including mix-minus, the sound quality of the mic preamps were not on par with

Also, the Great River preamps are a lot quieter than the original Neves and give us more flexibility in sound through their control features.

The MP2-NV has a dual-tapped input transformer that allows me to select 300-ohm or 1,200-ohm input impedances. Different mics react differently to the impedance change. This has allowed me to sculpt a fuller sound out of an announcer's voice and reduce sibilance in others without using EQ.



those of our previous custom Neve consoles.

We solved the problem by purchasing two Great River MP2-NV mic preamps to bypass those in the console. We now have sound quality that is at the level we desire and, in fact, is better than our old Neves.

Another great feature is the loading switch that straps a 600-ohm terminator across the output transformer or allows you to leave it unterminated. While terminated, the curve is flat. When unterminated, the transformer rings high harmonics and gives you a nice high-end tilt from 15-50 kHz.

This sounds like a nice air band on an EQ.

I have used the MP2-NV unterminated on location recordings for a string section to deliver a nice bright, airy top end.

Other front-panel features include phase invert, phantom power switch and rotary gain in 5 dB steps with a fine trim rotary fader control that appears right before the output amp in the circuit. Metering via LEDs show input gain and output gain, providing a

great picture of what's happening with your gain structure.

The MP2-NV is being used in our production/on-air studios for national programs and occasional local on-air. Another set of Great River preamps are being used for location recording, consisting of one MP2-NV and a four-channel MP original. The Great River preamps were selected by members of MPR's operations staff in blind listening tests with competitive models. Selection was determined by a majority vote.

I rate the Great River mic preamps highly in terms of sound quality and versatility. They are built with the best of components and are top-quality. The Great River Mic preamps have given us back our solid, rich sound plus important bonuses.

For more information, including pricing, contact the company's distributor, Transamerica Audio Group, in Nevada at (702) 365-5155 or visit www.transaudiogroup.com.

TECH UPDATES

Drawmer Models Amp on Fairchild 670

Drawmer's 1969 Mercenary Edition Tube Mic Pre/Compressor two-channel mic preamp with integrated tube compressors has a new topology for lower noise and clarity. The amp comes with Burr-Brown op-amps.

Mercenary Audio reworked the compressor to provide attack and release times modeled on the Fairchild 670. Three coupling positions allow dual mono and stereo operation, including a mode where a high pass filter rolls off at 100 Hz to minimize pumping. The amp is \$2,950.

For more information, contact the company's distributor, Transamerica Audio Group, in Nevada at (702) 365-5155 or visit www.transaudiogroup.com.

GML Has Two-Channel Configuration

The GML 8302 transformerless microphone preamplifier from George Massenburg Labs offers musical performance in two-channel configuration. Using a minimalist discrete, direct-coupled circuit topology with no transformers, FETs or ICs in the signal path, the company says the 8302 is a low-noise, high-headroom, wide-bandwidth reference standard preamp.

For more information, including pricing, contact the company's distributor, Transamerica Audio Group, in Nevada at (702) 365-5155 or visit www.transaudiogroup.com.

In This Issue

This month Buyer's Guide focuses on microphones, speakers and amps.

Every so often, someone asks, "Why bother even reporting about mics? Doesn't every radio station use one of the same two or three models they've been buying for 25 years?"

While it's true that many stations continue to choose these proven performers, quite a few affordable condenser models and others have sprung up in recent years to compete in the radio microphone arena.

And for each group of stations using one of the ol' reliables, somewhere a public station might be experimenting with tube mics, or a production studio trying digital mics, or an engineer outfitting a room to air live music performances.

Have you experimented with a new or unusual mic lately? Tell us about it at radioworld@imaspub.com.



Internal Sorbothane
Shock mount system
Internal windscreens
Cardioid Pattern
Minimum proximity effect
Removable base for inverted boom mount
600 ohm balanced out
40 Hz - 18kHz



THE ANSWER TO YOUR EQUIPMENT BUDGET CUTS

While Increasing Your Audio Performance!

It was our goal to bring new and exciting microphone products to the broadcast industry. Their performance would have to at least equal the RE 20. Not only does the new technology of the HEIL PROLINE dynamic element equal but outperforms many industry staples. Hundreds of dollars less than any other pro microphone, with results that are stunning.

TRULY YOUR ANSWER TO AN INCREASED BOTTOM LINE

There's a new sheriff in town - the new Heil PROLINE...Classic PRO and GOLDLINE PRO.

Rick Volpatti, production mgr. 101.1 'The Breeze'
"The Heil GOLDLINE PRO delivers the richness of the RE 20 bottom end, complimented by a brilliant and shiny top end. A combination I have never heard before in any dynamic mic."

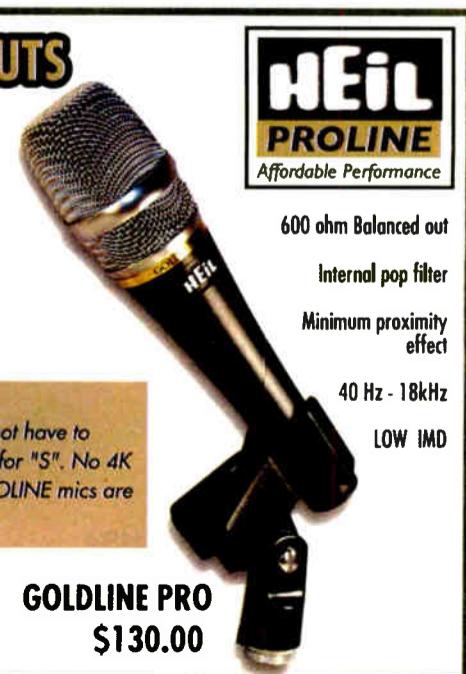
Joe Dolinsky, Minnetonka, Mn.

"The sound is smooth and balanced. I do not have to tame the 2.5K peak in the RE 27. No 'F's for 'S'. No 4K bilateral lips to EQ or de-ess. The Heil PROLINE mics are an exceptional value."

CLASSIC PRO
\$269.00

618-257-3000

www.heilsound.com/proline.htm

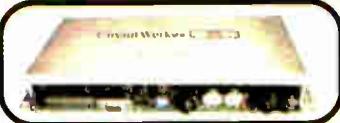


GOLDLINE PRO
\$130.00

Products & Services

SHOWCASE

Control Solutions by CircuitWerkes



The SEN-6 Subaudible Tone Encoder

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



Control your world with CircuitWerkes DTMF Tone decoders and controls

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



The SUB-03 Subaudible Tone decoder

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

More Features, Better Price



Perfect for Studio & Automation Control

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

CircuitWerkes • (352) 335-6555 / Fax 380-0230 <http://www.circuitwerkes.com> 2805 NW 6th Street, Gainesville, FL 32609

SIX MILLION

THUNDERSTORMS HIT
PLANET EARTH EVERY YEAR!

IT TAKES ONLY ONE TO
PUT YOU OFF THE AIR!



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 20 years.



Write or call for a free brochure and design
P.O. Box 2548, Farmington, NM 87499-2548

Toll Free: 888-325-5336 • Fax: 505-326-2337 • www.cortanacorporation.com

Ready for lightning?



TS-1 Transient Voltage Surge Suppressor

Telephone lines give lightning a direct path to your broadcast equipment. Protect your investment with the TS-1 surge suppressor. Built for broadcast.

BURK
TECHNOLOGY
800-255-8090 / sales@burk.com / www.burk.com

Buy simplicity,
reliability and service

Now available
with optional DTMF
control via a phone line.



EAS

Price \$1750.00

GORMAN-REDLICH MFG. CO.
257 W. Union St. Athens, Ohio 45701

Phone 740-593-3150
FAX 740-592-3898



- 5 two-way RS-232 inputs/outputs for computer, remote signboard & character generator
- 6 audio inputs on standard models. All audio inputs & outputs are transformer isolated from encoder-decoder board
- Automatic interruption of program audio for unattended operation
- 4 line 40 character LCD display with LED backlighting
- 20 key keypad to program unit, set modulation level, set input levels
- Will handshake with automation equipment jimg@gorman-redlich.com Web Site: www.gorman-redlich.com

◆ Also available: weather radios, antennas for weather radios, crystal controlled synthesized FM digitally tuned radios, remote signboards, cables for interconnection, character generators.

STANDARD BROADCAST FURNITURE

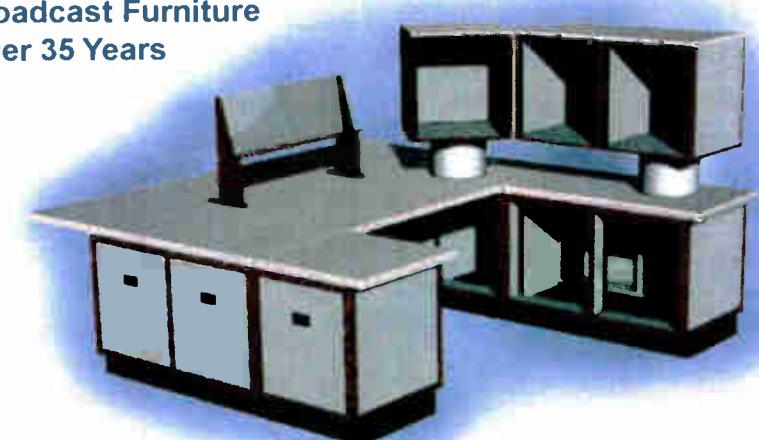


BROADCAST SYSTEMS, INC.

Building Broadcast Furniture
for over 35 Years

STARTING AT
\$2,484

PREWIRED
SYSTEMS
AVAILABLE



USA
(847) 487-7575

www.ramsyscom.com

- SOLID SURFACE OR LAMINATED TOP
- 10 YEAR WARRANTY ON SOLID SURFACES
- RICH STAINED OAK TRIM
- LAMINATED VERTICALS
- REVERSIBLE PUNCH BLOCK PANEL
- 4 3/8" KICK BASE
- 30 " HIGH TABLE TOP (38" OPTIONAL)
- 12 RACK UNIT UTILITY HOUSING
- 12 RACK UNIT PEDESTAL BAYS
- POP OUT REAR PANELS
- CABLE WIRE TRAYS
- ASSORTMENT OF COLORS
- GUEST WINGS AVAILABLE
- OVERBRIDGES AVAILABLE

CANADA
(705) 722-4425



USER REPORTS

WKSU On-Air With A-T Mics

by Ron Bartlebaugh
Director of Engineering
The WKSU Stations
Kent State University

KENT, Ohio WKSU(FM), owned and operated by Kent State University, is Ohio's most listened-to public radio station. The station's format is NPR, classical music and folk music on weekend evenings. WKSU's air sound signature is open and accurate. Pure audio reproduction and transmission are mandatory for WKSU and its network of three repeater stations.

When I became director of engineering for WKSU in 1990, there were two different microphones installed in our on-air studio. The announcers would use one microphone or the other dependent upon their personal perception of how they sounded over the air. We sampled various types of microphones over the next two years.

In 1992 WKSU moved to a new broadcast facility. At that time we became serious about establishing a microphone standard for our seven stu-

dios. Our goal was to find an affordable microphone that would provide us with accurate sound reproduction when miking vocals or instruments.

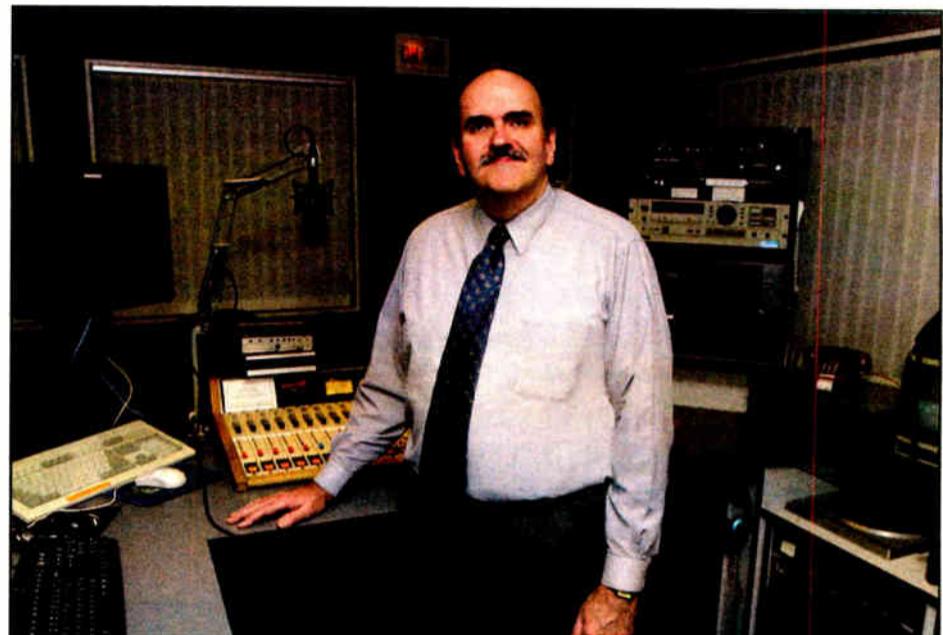
After testing microphones from various manufacturers in mid to upper price ranges, we selected the Audio-Technica AT4033 as our standard. At \$595, the microphone is an excellent performer for its cost.

Audio character

The AT4033 is a transformerless large-diaphragm side-address studio cardioid condenser microphone designed for use in the most demanding applications. It uses a gold-plated, specially contoured, aged diaphragm capacitor element with an internal baffle plate to place its signal-to-noise ratio at 77 dB (1 kHz at 1 Pa). The microphone's use of a nickel-plated brass acoustic element baffle contributes to its overall presence in audio character.

The published frequency response of the mic is 30-20,000 Hz and its open-circuit sensitivity is -32 dB (25.1mV), plus or minus 2 dB re 1V at 1 Pa. The

dynamic range of the AT4033 is 128 dB without the built-in 10 dB attenuator switched on and it accepts up to 145 dB SPL without capsule electronic-system distortion above 1 percent THD at 1 kHz.



Ron Bartlebaugh With an Audio Technica Mic in His WKSU Studio

Heil Sound Gives Bang for Buck

by Rick Volpatti
Production Manager
The Breeze 103.1, CIQX (FM)

CALGARY, Alberta After using the Heil Sound Goldline Pro microphone over the last few months, I can say the results are amazing.

I am the production manager at a new 100,000-watt FM radio station in Calgary, Alberta. Our format is called NAC or new adult contemporary, a blend of smooth jazz and soft AC. Our average listener is an upscale professional who appreciates the sound quality of our music and the voice quality of our announcers.

Anybody trying to put together a radio station on a streamlined budget knows about "bang for the buck." This is where the Heil Goldline Pro comes in. It is hundreds of dollars less than any other professional caliber microphone of its type, with results that are stunning.

The company targets it at commercial broadcast, recording and live sound reinforcement applications that require smooth, flat response over a wide frequency response. The Goldline Pro has low handling noise and lack of bass-boosting proximity effect.

A 1-1/8-inch quilted aluminum alloy low-mass voice coil assembly is suspended above the magnet; articulation is smooth across 40 to 18,000 Hz. The cardioid pattern offers the greatest rejection at 180 degrees off axis, directly behind the microphone, and creates nearly no off-axis coloration while providing the greatest possible rejection of unwanted audio.

The Heil Goldline Pro is a micro-

phone that is able to reproduce the voice naturally without any distortion or phasing problems.

The industry staple mic found in many other stations has always sounded "flat" to me, as if it could use more sparkle on the top end. When compared to that model, my Heil Goldline



Heil Sound's Goldline Pro

Pro has extended low-frequency response combined with a more present high end.

The Heil Goldline Pro delivers the richness of the famous brand's bottom end, complemented by a more brilliant and shiny top end — a combination I have never heard in any dynamic mic.

For more information, including pricing contact the company in Illinois at (618) 257-3000 or visit www.heilsound.com.

The microphone is designed for use with vocals as well as most instruments. The cardioid polar pattern of the microphone effectively minimizes off-axis audio, reducing room and ambient noise.

The 4033 is equipped with a switchable 80 Hz 12 dB per octave high-pass filter to reduce low-frequency hum and rumble. It requires 48 volts of phantom power. The floating construction of the 4033 element provides good isolation from noise and vibration. The AT8449 shock mount keeps mechanically transmitted noise from being sent to the mic element. The microphone weighs in at 13.4 ounces.

In addition to using the microphone for announcer vocals, we use multiple

AT4033s when hosting folk music entertainers live in our on-air studio. The mic accurately reproduces with clarity, tonal quality and warmth the sounds of an acoustic guitar as well as other instruments used in the performance of folk music. Our announcers enjoy using the 4033 microphone because proximity effect is not a factor. They can work the mic close or several inches away on axis and still count on its strong presence to provide a clear,

warm and authoritative sound.

The announcers enjoy the mobility provided to them by the microphone's 120-degree acceptance angle. Plosives are minimal when using the mic at close range and can be eliminated by the use of an optional accurately cut foam windscreens. We have found the microphone immune to noise pickup from computer monitors. All 20 of our AT4033 mics have remained stable performers over the past 10 years.

Two additional studios are planned for construction within the WKSU broadcast facility. Both will be equipped with Audio-Technica AT4033 microphones.

For more information contact the company in Ohio at (330) 686-2600 or visit www.audio-technica.com.

Try to control yourself...



Remote Facilities Controller

control transmitter from any telephone
 8-64 channels of telemetry and control
 programmable control by date and time
 optional printer and modem adapters
 programmable telemetry alarms
 full-featured, affordable, reliable
 integrated rack panel



Intelligent Rack Adapter

parallel printer interface
 internal modem for data
 front panel status indicators
 battery backed power supply
 rack mountable chassis (1U)



Dual Channel Audio Failsafe

provides contact closure on loss of audio
 adjustable from 7 seconds to 4.5 minutes
 monitors two audio channels
 integrated rack panel
 cost-effective, reliable

innovative solutions

nashville, tennessee • 615.228.3500 voice • 615.227.2393 fax-on-demand • www.sinesystems.com

 Sine Systems

model rfc-1/1

model rfc-2/2

model raf-1/1

model afs-2/2

Products & Services

SHOWCASE

The Power of Two Companies: Pristine Systems & CartWorks



- Automatic live website content
- Live-assist, satellite or full automation
- Complete remote control
- In-context voice tracks
- Supports all traffic & music software
- 24/7 product support
- Digital automation since 1988

See us at 2003 NAB
for conference specials.
Booth N3133

www.pristinesys.com 800-795-RADIO

Pristine Systems

WhisperRoom INC.

SOUND ISOLATION ENCLOSURES

Celebrating over 12 years of reducing
sound to a Whisper!

Recording, Broadcasting, Practicing



MDL 102126S
(8.5'X10.5')

19 Sizes and 2 Levels of Isolation Available
New! SoundWave Deflection System
(Change parallel walls to non-parallel)

Immediate Shipping!

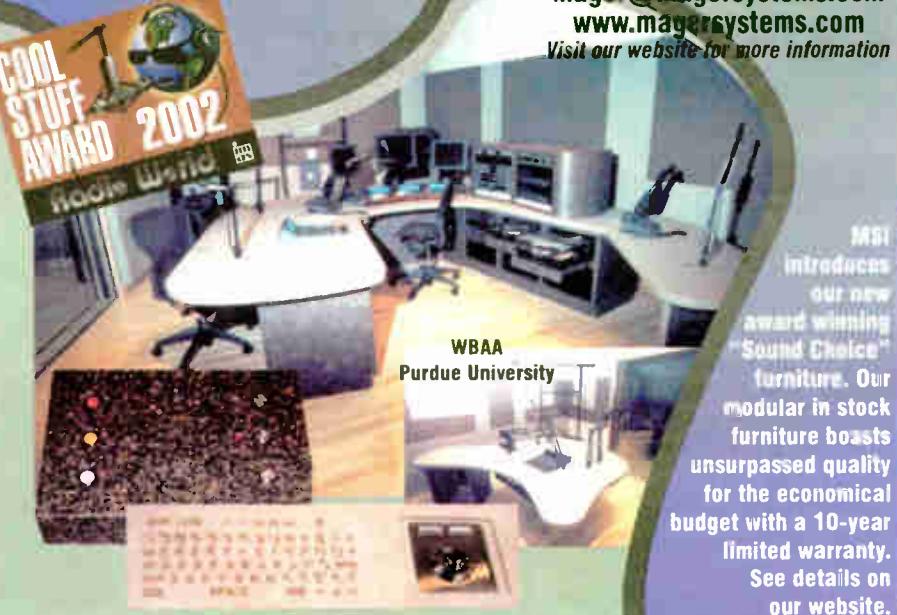
www.whisperroom.com

PH: 423-585-5827 FX: 423-585-5831

MAGER SYSTEMS INC.
The Best in Sound Furniture

Since 1979 Mager Systems, Inc. has been custom designing and fabricating award winning furniture for the broadcast industry nationwide. We are still the innovators and leaders in solid surface tops and applications which comes with a 10-year warranty. Our complete one-stop-shop includes installation, turnkey prewiring, switches and components, conference rooms, reception desks, and office furniture. Our blending of art form with cutting edge techniques, and a clear understanding of each client's application allows us to produce your showplace tailored to your budget.

Custom
Studio Furniture



TEL: 623-780-0045
FAX: 623-780-9860
mager@magersystems.com
www.magersystems.com

Visit our website for more information

MSI introduces our new award winning Sound Choice™ furniture. Our modular in stock furniture boasts unsurpassed quality for the economical budget with a 10-year limited warranty. See details on our website.

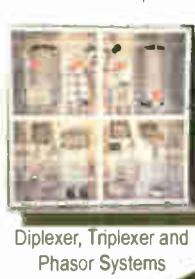
Touch Sensitive Switches & Keyboards

Come See Us At NAB Booth #N1934

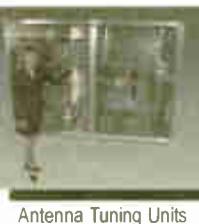
AM Antenna Solutions



LBA Tunipole™
Folded Unipole Systems



Diplexer, Triplexer and
Phasor Systems



Antenna Tuning Units

LBA Technology, Inc. is your proven supplier of innovative, digital-ready AM antenna systems.

Our products include tuning units, phasing systems, multiplexers, AM/wireless isolation systems and components for every power level. We help hundreds of broadcasters in the USA and worldwide to --

Reach further – sound better!

LBA Technology, Inc.

3400 Tupper Drive, Greenville, NC 27834



LBA

Since 1963

Satellite link at an
affordable price!

Would you like to deliver your programming via satellite but thought it was too expensive?

Thought about syndicating your morning show?

Do you currently use satellite and need a backup uplink?

From YOUR studios you can deliver programming anywhere in the continental USA via satellite!

\$19,500.00
complete! +

Comstream's DAC-00 Audio Encoder!
Comstream's D1-8000 Ku Earth Station!
(CM701 modem and 2-watt transmitter)
Channel Master's 2.4 M TX Rx satellite dish!

Downlink equipment is \$1,500 extra complete!
(Comstream ADR-202 RX, Starcom TS-1, LNB)

We sell the Modem, Comstream's DAC-00

Encoder, and the CM701 Modem.

For your local equipment, Ku-Band

River Communications Walden, NY 12586

800-65 RADIO (800-657-2346) e-mail: sales@river.com

TECH UPDATES

O.C. White Upgrades ProBoom

The O.C. White Series 61900 ProBoom Elite Mic Arm features several upgrades, including support with gold-plated, soft music wire springs and hidden compartments.

The mic boom arm is designed for quick wire integration by means of a zip-lock top. Users can lay the mic wire in and, with or without connectors attached, snap the top in place, resulting with an arm that exposes wire at each end and at the middle "elbow."

O.C. White's new riser incorporates an A3F, female XLR connector in its top and wire goes into the body of the riser, exiting straight down through the table or through a provided slot for side exit, nullifying the problem of what to do with mic wire from arm to base of riser.



The riser is 15 inches tall, so it can be placed adjacent to or just behind most VGAs and nearfield speakers. The riser is pre-wired with a three-foot extension from the base, which users can wire or connectorize as needed.

The Series 61900 retails for \$199 and is available in black or beige with gold springs.

For more information, contact the company in Massachusetts at (413) 289-1554.

2-in-1: Soundelux Offers ifet7 Mic

The Soundelux ifet7 has a dual-purpose application, combining those of its FET47 and 87FET.

The ifet is a phantom-powered FET condenser mic with two sets of different-sounding internal electronics. Changing the "Vocal/Instrument" switch, engineers can go from the 47 (I mode) to the 87 (V mode).

I mode incorporates the features of the FET 4, including hi-SPL characteristics and instrument applications; V mode has the sound and features of the 87FET.

Soundelux says it coupled a German capsule to two sets of internal mic electronics via a convenient switch. The ifet7 includes low-cut switch and attenuation pad and is available for \$2,100.

For more information, contact the company's distributor, Transamerica Audio Group, in Nevada at (702) 365-5155 or visit www.transaudiogroup.com.

BUYER'S GUIDE**QSC Has Varied Watts With Four Amps**

The PowerLight 2 Series from QSC is an amplifier line meant for permanent and live sound situations. Four models, ranging in power from 900 W to 1,850 W per channel, are in 2 RU chassis that are 14-inches deep and weigh 21 lbs.

Each of these models is available in two versions: a base model and an A version. QSC targets its base models to external signal processing and the A version with internal analog signal processing for users looking for integrated solutions.

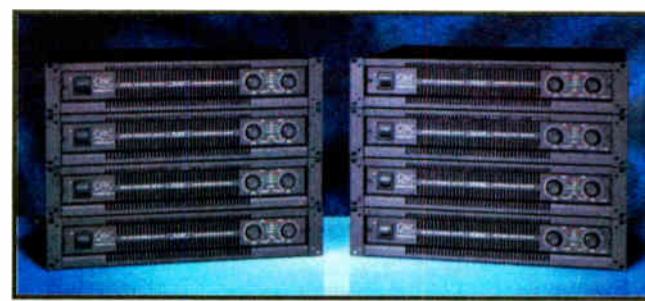
DSP capabilities may be added to any model with the addition of the DSP-3 or DSP-4 digital signal processing modules.

PowerWave technology provides current to the audio power circuitry by charging the supply rails 230,000 times a second through a low-impedance circuit. QSC says PowerLight

2 amplifiers cut waste heat, boost reliability and eliminate unwanted noise and hum.

Depending on the model, retail prices are \$713 to \$1,225.

For more information, contact the company in California at (800) 854-4079 or visit www.qscaudio.com.

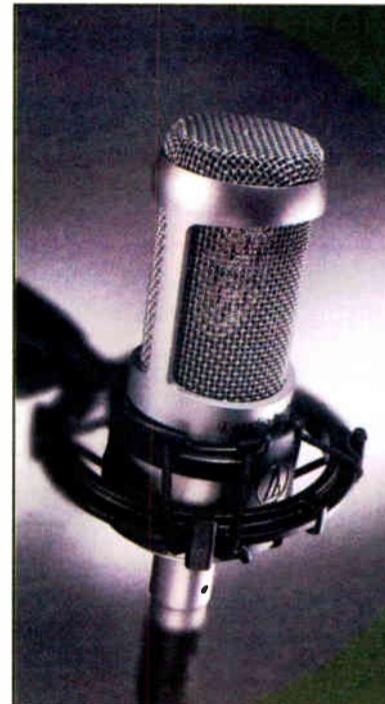
**AT3060 Tube Mic Runs On Phantom Power**

Audio-Technica says its AT3060 offers the tones of a tube and the flexibility of 48V DC phantom power. The mic has no dedicated power supply that requires reconfiguring the boom arm with special cables.

It has a cardioid condenser element and nickel-plated brass acoustic element baffle. The AT3060 is shock-mounted to dampen vibration. The company says it tailors the mic to minimize proximity effect and P-pop, and the low-profile shock mount makes copy reading easier.

A coupling transformer provides linearity at low frequencies. The AT3060 targets studio production, voice-overs, on-air and other broadcast applications. For isolation, users can mount the AT3060 to the included shock mount, and transport it in the included soft pouch to protect the silver satin finish. The AT3060 retails for \$599.

For more information, contact the company in Ohio at (330) 686-2600 or visit www.audio-technica.com.

**Sennheiser Mic Uses New Capsule System**

The Sennheiser MKH 418S M-S incorporates a mid capsule from the MKH 416 with a new figure-of-eight side capsule system. Mid-side stereo allows the adjustment of stereo imaging by an independent dual-capsule system.

The outputs support variable matrixing capabilities and multi-functional use in post-production. With Standard five-pin XLR male connector, the microphone is powered via 48-volt phantom supplied to each capsule.

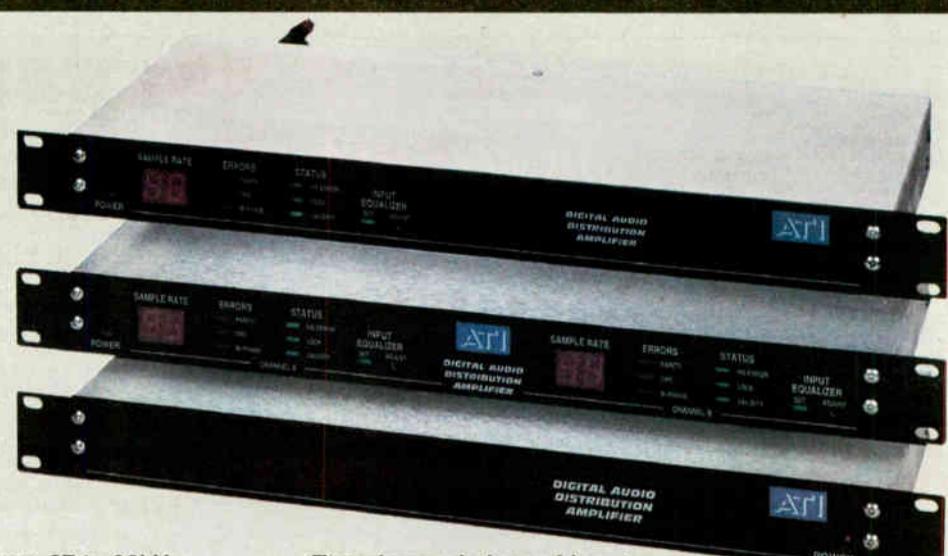
It retails for \$1,595.

For more information, contact the company in Connecticut at (860) 434-9190 or visit www.sennheiserusa.com.

**AES/EBU DIGITAL AUDIO DISTRIBUTION AMPLIFIERS**

**DDA106-XLR (1x6)
DDA112-XLR (1x12)
DDA206-XLR (Dual 1x6)
DXA112-XLR (1x12)**

**DDA112-BNC (1x12)
DDA124-BNC (1x24)
DDA212-BNC (Dual 1x12)
DXA124-BNC (1x24)**



- Accepts sample rates from 27 to 96kHz
- Data reclocking and regeneration
- Loop-thru inputs with switchable terminations
- Up to 12 XLR or 24 BNC outputs

- Transformer balanced inputs
- Adjustable Input cable equalization
- Sample rate, Status and Error indicators



AUDIO
TECHNOLOGIES
INCORPORATED

Dedicated to sound engineering
ATI • 328 W. Maple Avenue, Horsham, PA 19044
(800) 959-0307 • (215) 443-0330 • Fax: (215) 443-0394 • <http://www.atiguys.com>
Free Brochure Available Upon Request

Products & Services

SHOWCASE

raduga automation

Automate your station in minutes
...No Degree Required

- Great for Music Formats
- LPFM, NCE, Small & Medium Comms
- Live Assist or Full Blown Automation
- Schedule Spots, IDs, Build Rotations
- Plays mp3, wav, wma

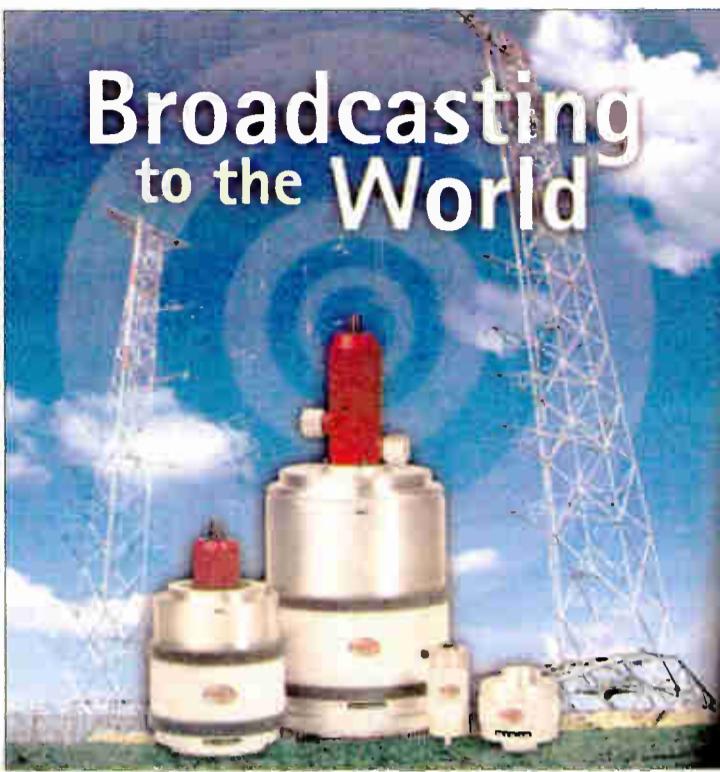
Did we mention...Free Support



www.raduga.net/rw.htm
Download your FREE Demo
(513) 887-0714

\$649 Buyout

Broadcasting to the World



COMET

COMET NORTH AMERICA

421 Wards Corner Road
Cincinnati, Ohio 45140
Ph: (513) 831-5000
Fx: (513) 831-7889
www.cometna.com

- A complete spectrum of products for broadcasters

- Fixed and Variable
• All & SW Coaxial

- Standard equipment to all major AM & SW transmitters

- Professional HV test equipment to regularly test spares

- Teamed in North America with Kintronic Labs to provide engineering expertise to broadcasters

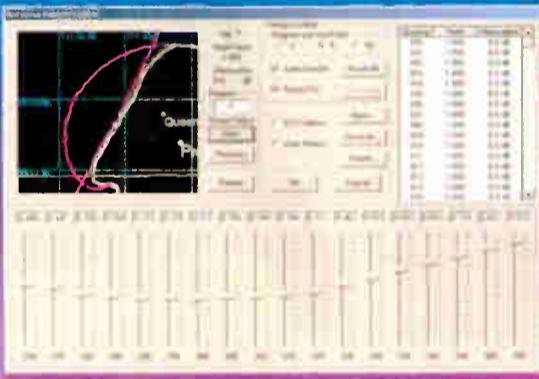


Kintronic Labs, Inc
144 Pleasant Grove Road
Bluff City, TN 37618
Ph. (423) 878-3141
Fx. (423) 878-4224
www.kintronic.com



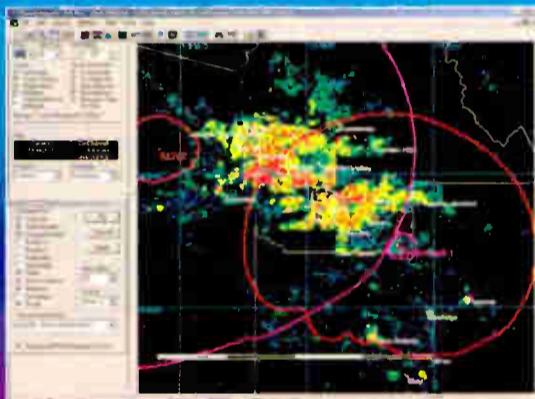
rfSoftware, Inc.
communications solutions
352-336-7223
www.rfsoftware.com

Visit our website for a complete list of products and features.



DA design is a snap!

Never buy another FCC database!



Recover your software investment quickly.

S.C.M.S., Inc.

Charlotte, N.C.

- ✓ 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

Mix and Match!

Henry Engineering's NEW rack-mountable "blue boxes" are now available in a compact 1/3 rack-width! Mount 3 units in only 1 RU of rack space!

- Mix and match...they're all the same size
- Built-in AC power supply...NO wall warts
- Desk top, wall mount, or rack mount
- Superb specs and performance

**We Build Solutions
(that mount in your rack!)**

626.355.3656
www.henryeng.com
Blueboxes, Inc.

HENRY
Engineering

In stock at all Henry Engineering dealers

Come See Us At NAB Booth #N3101

World Radio History

TECH UPDATES

Neumann Mic Has New Capsule Head

Neumann has developed a new capsule head, the KK 105-S, based on its KMS 105 handheld condenser microphone.

Developed for use with the Sennheiser SKM 5000 wireless microphone system, the KK 105-S true condenser head is backward-compatible with existing SKM 5000 transmitters and is available in black or nickel finish.

Like its predecessor, the KK 105-S Capsule has a multi-layered grille assembly that helps eliminate popping and breath noise. The KK 105-S Capsule retails for \$699.

The Neumann P2 Analog is a two-channel microphone preamplifier with selectable M-S decoder, active DIs with impedance modification capability, dual gain range selection and multi-frequency high pass filter. A new Stereo Phase Correlation display assists in optimizing microphone placement for stereo recording. The P2 Analog lists for \$1,750.

For more information, contact the company's distributor, Transamerica Audio Group, in Nevada at (702) 365-5155 or visit www.transaudiogroup.com.

AKG Mic Combats RF Interference

The C 4500 B-BC from **AKG Acoustics** is a large-diaphragm condenser microphone intended for on-air radio announcing. It has a front-end firing capsule position, electro-magnetic screening, internal pop-filter and, the company states, no need for outboard processing.

It is a condenser with transformerless output, making it suitable for use in electro-magnetic fields. The metal housing and double-screening of acoustically open sections provide greater shielding.

Several features make it suitable for on-air and production environments. The front-end firing capsule position for close-to-mouth placement allows announcers to perform other tasks while speaking. Proximity effect is reduced by a capsule design for a working distance of two to three inches.

A 120 Hz roll-off filter is integrated into the C 4500 B-BC; a 20 dB pre-attenuation pad allows users to replace dynamic microphones without changing the adjusted gain structure on associated equipment. AKG says the low self-noise and high overload point offer a dynamic range of more than 135 dB.

AKG also has developed a new multi-layer pop filter that provides internal screening between the front grille and microphone capsule. The standard H100 spider suspension eliminates low-frequency vibrations while serving as protection from the occasional temperamental air personality.

The microphone retails for \$665.

For more information contact the company in Tennessee at (615) 620-3800 or visit www.akgusa.com.

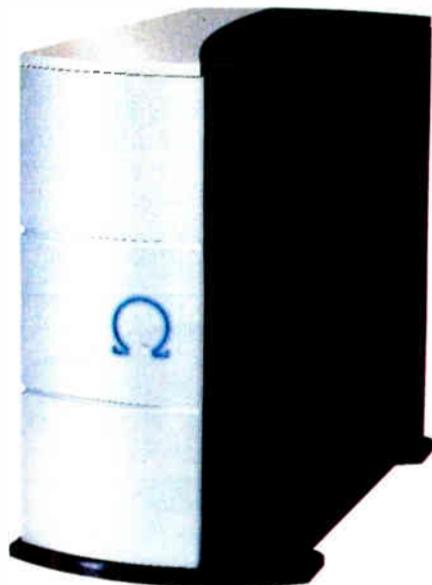
**Classé Audio Shrinks Reference Amp**

Classé Audio's says Omega Omicron Monoblock power amplifier is a smaller version of its reference amplifier, the design of which emphasizes current delivery and stability regardless of the low-impedance demands or reactive load presented by the loudspeaker.

The Omega Omicron Mono amplifier uses balanced circuit topology from input to output and both balanced and unbalanced inputs are provided. It is rated to deliver 300 watts to 8-ohm loads, and 600 and 1,200 watts to 4-ohm and 2-ohm loads.

Classe Audio says the Omega Omicron Mono will remain stable with loads below 1 ohm and produce in excess of 1,800 watts. The product retails for \$10,000 per unit.

For more information contact the company in Canada at (514) 636 6384 or visit www.classeaudio.com.

**Daking Mic Works at All Freqs**

Patterned after the EQ circuitry of the Trident A-range consoles, the **Daking** Mic Pre/EQ uses discrete transistor circuitry and transformer-balanced inputs and outputs. Five stepped frequencies and "out" choices per band are selectable.

Continuously variable boost or cut is available at all frequencies: high-frequency shelving can be cut/boost +/-15 dB at 8, 10, 12 and 15 kHz; the upper mid-frequency peaks are set at 3, 5, 7 and 9 kHz; the lower mid-frequency peaks at 250-500 Hz and 1 and 2 kHz; and the low-frequency shelving also offers +/-15dB cut/boost at 50, 80, 100 and 150Hz.

Daking says the Mic-Pre/EQ's high pass filter (at 25 Hz) cuts low-end by 12 dB per octave and its low pass filter at 15 kHz cuts the high end by 12 dB per octave. Retail price is \$1,995.

For more information, contact the company's distributor, Transamerica Audio Group, in Nevada at (702) 365-5155 or visit www.transaudiogroup.com.

Digigram Sound Cards Include Mic PreAmp

Digigram says its stereo sound cards, the VX222-Mic and PCX924-Mic, can help cut costs with their optional feature of phantom-powered microphone input with analog compressor-limiter-expander.

The company targets the sound cards to journalist workstations to enable direct mix of voice and another audio source without external devices such as preamps, limiters or compressors.

Due to onboard processing, the output stream offers a three-band equalizer and a "Maximizer" effect, said to increase the average output level without causing saturation. This Maximizer tool maximizes the signal played in real time, except when detecting peaks. Compared to traditional linear normalization, the Maximizer permits an average of 4 to 10 dB of gain without altering the overall sound quality.

The compressor-limiter-expander is simple to use with four parameters adjusting the entire system, controllable via the same software interface.

The PCX924-Mic is a duplex sound card presenting simultaneous and independent record and playback with onboard DSP. The card is meant for audio production and on-air applications.

The VX222-Mic is a versatile sound card designed to work with a wide choice of applications using Microsoft's WAV protocol. In addition to WAV, the VX222-Mic can be used with audio applications using Microsoft's DirectSound, Apple's SoundManager and CoreAudio, and Steinberg's ASIO.

The VX222-Mic and PCX924-Mic operate at 3.3 volts, making them compliant with the next-generation PCI bus.

For more information, including pricing, contact the company in Virginia at 703.875.9100 or visit www.digigram.com.

**Heil Sound Recreates 1930s Model 74B**

Heil Sound is targeting its Classic Pro at commercial broadcast, high-performance recording and live sound reinforcement applications.

It uses the Heil Proline dynamic element, with a magnet structure featuring a blend of neodymium, iron and boron. A large 1-1/8-inch low-mass quilted aluminum voice coil assembly is suspended above the magnet.

The location of the phasing plug assembly uses equally placed ports that reduce proximity effect while achieving articulation across its 40 Hz to 18 kHz frequency response with a 600-ohm balanced three-pin XLR output at -55dB. Heil Sound says a sorbothane shock mount assembly reduces handling noise and low-frequency mechanical transfer.

The Classic Pro is a reproduction of a 1930s model 74B, including with the stainless steel trim cast steel base, removable for inverted use. A roll-off switch can tailor the low-end response at the microphone. Special letters are furnished for a station's call letters on the aluminum cast name flag.

For more information, including pricing, contact the company in Illinois at 618-257-3000 or visit www.heilsound.com.



You
can measure...

with the best monitor and the most accurate test set.

The FMM-2/FMS-2 series monitors provide an even greater degree of precision measurement than ever before... You can measure S/N below 90 dB, You can measure crosstalk below 85 dB, You can measure separations of better than 70 dB, You can measure frequency response to better than 0.25 dB, You can measure distortions to lower than 0.01%, and much more... Our uncluttered panels and autoranging voltmeters make these measurements a dream.

BELAR www.belar.com (610) 687-5550
ELECTRONICS LABORATORY, INC.
LANCASTER AVENUE AT DORSET, DEVON, PENNSYLVANIA 19333
Call or write for more information on Belar AM, FM, Stereo, SCA and TV monitors.

See us at NAB2003 Booth #N2504

ENTER TO WIN

Here's your chance to unpack FREE GEAR in 2003.
Enter to win one of 26 New Technology prizes.

Over the past two years, Radio World and dozens of industry suppliers have joined forces to award more than \$115,000 worth of radio and pro audio gear — from microphones, master clocks and sound cards, to audio processors, routers, CD mastering machines and shopping sprees.

In 2003 you can expect a similar range of cool New Technology products from our great sponsors. It takes only seconds to sign up online. And best of all, there are 26 chances to win in 26 drawings — one for every issue of Radio World. This is our way of saying "thank you" for allowing us to bring you New Technology for the past 27 years.

To enter the sweepstakes you must complete these 3 easy steps:

- 1 Go to our website www.rwonline.com
- 2 Click on the New Technology Sweepstakes icon
- 3 Follow the instructions and fill out the electronic entry form — that's it, you're done!

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



APT
AUDIO PROCESSING
TECHNOLOGY

AT



audio-technica.

Audio TX
Computer Music & IP Cards



AUTOCRAM
CORPORATION

Audemat-Aztec

BRADLEY

BROADCAST
tools

BSW
BROADCAST SUPPLY WORLDWIDE

COMREX



ESE



JK Audio

KLOTZ
DIGITAL



MAYCOM

Moseley

NAGRA



RAM

SCMS, INC.
YOU KNOW WE KNOW

BONIFEX

Contest Rules: To enter the drawing, simply register online at www.rwonline.com/sweeps. 26 drawings will be held throughout the year. Contest registration expires Dec. 3, 2003. Final contest prize announcement on Jan. 1, 2004. 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/tariffs may apply to prizes and are the sole responsibility of the winner. Employees and affiliates of IMAS Publishing are not eligible.

TECH UPDATES

Brauner Offers Non-Tube Mic

Germany-based Dirk Brauner claims that its Phantom C mic is the first non-tube (FET) large-diaphragm mic. The Phantom C is a fixed cardioid phantom-powered FET.

With carry case and shock mount, the Phantom has 8 dBA self-noise, 28 mV/Pa cardioid sensitivity and 142 dB Max SPL at 0.5 percent THD.

The Phantom C is engineered for voiceover applications and lead vocals. Brauner says it tailored the mic's sound for "big" up-close with transparency at distance. The Phantom C retails for \$1,380.

For more information, contact the company's distributor Transamerica Audio Group in Nevada at (702) 365-5155 or visit www.transaudiogroup.com.



B&W Debuts High-End Sub

The U.K.-based Bowers & Wilkins' 15-inch ASW-850 uses 1,000 W audio power with a new transducer to produce more bass than preceding B&W subwoofers.

The ASW-850's driver design uses a Kevlar-resin-impregnated paper material. B&W says this yields a low-mass/high-strength diaphragm, which supports in-cabinet pressures and voice-coil impulses required of high-SPL deep bass. Combined with a long-throw driver structure, the ASW-850's response extends to 18 Hz and its useful output (-6 dB) to 14 Hz.

The ASW-850's sealed Matrix enclosure is designed to reduce cabinet movement. The amplifier/electronics module has a kilowatt of continuous power, with headroom for dynamic transients. This design's input circuitry offers "A" and "B" bass roll-off alignment settings that optimize reproduction for maximum extension or maximum

peak output, as required by the listener, room acoustics or program material. Filtered and unfiltered line outputs are included, the former delivering an active third-order high-pass characteristic at 80 Hz.

B&W's ASW850 active subwoofer is available in hand-finished, top-grade real wood veneers including black ash, cherrywood and red-stained cherrywood. The ASW-850 is available at a suggested retail price of \$3,000.

For more information, contact the company Massachusetts at (978) 664-2870 or visit www.bwspeakers.com.



T16 Monitor Includes Two-Way, Amps

ATC says its T16 Special Edition monitor offers unique voicing for live broadcast situations.

The monitor, set up for higher output levels and more bass output, targets clarity in the nearfield meter bridge application. The unit includes a 6.5-inch active two-way, with internal 200 W and 50 W amplifiers.

The T16 Special Edition monitor is priced at \$3,000 per pair.

For more information, contact the company's distributor, Transamerica Audio Group in Nevada at (702) 365-5155 or visit www.transaudiogroup.com.



BROADCAST ASTI

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



Full product line for sound control & noise elimination.

www.acousticsfirst.com

ANTENNAS/ TOWERS/CABLES

Want to Sell

Superior Broadcast Products
FM Antennas
All Power Levels.
Contact **Jimmie Joyst**
Phone 800/279-3326

USED RIGID COAXIAL LINE

3-1/8" air
20' sections, connectors over 1000', kept in storage
Price negotiable
Joe Maloney: 856-786-7200 x16

AM Ground Systems

Reliable, On-time Installation
Quality Workmanship
Ground System Evaluation and Repair
www.amgroundsystems.com
1-877-766-2999

S.W.R FM & Television Antennas

Contact **Jimmie Joyst**
Phone 800/279-3326



Want to Buy

FM station needs used antenna bays, 3 to 6 bays, power to radiate between 6.5KW to 20KW. Jack Le Duc, American Comm, 133 North Superior St, De Pere-Green Bay, WI 54115. 920-338-9022

AUDIO PRODUCTION

Want to Sell

Antex SC-23e digital audio cards, 8 available, record and play, \$495. Steve Scarborough, 877-722-1031.

Antex SC-9 digital cards, 9 available, play only, \$349. Steve Scarborough, 877-722-1031.

Beyerdynamic DT290, new in box, dual headset w/boom mic, \$200 +shpg. Paul Courson, RR 2, Box 73, W Friendship MD 21794. 202-898-7653.

Shure FP3r mixer, three mic/line inputs, mono output, good condition, with book, \$300 +shpg. Paul Courson, RR 2, Box 73, W Friendship MD 21794. 202-898-7653.

CART MACHINES

Want to Sell

Audicord DLPM cart playback unit, \$75. Mark Larsen, KBQR, POB 20335, Piedmont CA 94620. 510-465-6035.

COMPLETE FACILITIES



CONSOLES

Want to Sell

BE-10S-150, spare parts, good condition, we'll pay shipping, \$1000. Herman Gibbs, WCWS, The College of Wooster, Wooster OH 44691. 330-263-2212.

Shure M267 classic 4 channel mixer, \$100. Mark Larsen, KBQR, POB 20335, Piedmont CA 94620. 510-465-6035.

Ramko 8 channel console, 2 with multiple inputs. Aud/pgm circuits, good working condition, \$250 +shpg. Howard McDonald, Spokane Cable Radio, 2928 East Grace Ave, Spokane WA 99207. 509-536-6205, mstringtown@aol.com.

Want to Buy

Looking for studio on-air & production mixing consoles. Jack Le Duc, American Comm, 133 North Superior St, De Pere-Green Bay, WI 54115. 920-338-9022.

LIMITERS/ AUDIO PROCESSING

Want to Sell

Optimod 8100A processor. Fully restored, great working condition, \$2200. Rod Chambers, KSUE, 3015 Johnstonville Rd, Susanville CA 96130. 800-366-9162 or 530-257-2121.

Orban 8100A/ST studio chassis, \$395. Steve Scarborough, 877-722-1031.

Orban 8100A studio chassis in excellent condition. This is the studio only chassis, \$400. Steve Callahan, WRNI, Providence RI, 401-521-1290.

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

Audio Technica AT9400 unidirectional stereo condenser microphone, \$95. Mark Larsen, KBQR, POB 20335, Piedmont CA 94620. 510-465-6035.

Want to Buy

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.



MISCELLANEOUS

Want to Sell

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

Cart winder, AA4 tape hubs, Pressure pads, clean used carts ready to reload & more. Reasonable & negotiable. 319-653-6316.

API 0361 3.5" VU meters, A & B scales available, \$35 each; Assorted VTC audio transformers, A-20, LS-33, LS-30, some N.I.B. Barbara, Top Shelf Video. 39 Boston St, Middleton MA 01949. 978-774-4041 or email: tk41c@aol.com.

Cellcast RBS400 remote broadcast unit, complete with carry pack, analog, good condition, \$1500/BO. David Dovich, Admiral Bdctg Corp, 8229 Maryland Ave, St Louis MO 63105. 314-862-7800.

Zercom ZII phone line. Complete with carry pack, good condition, \$400/BO. David Dovich, Admiral Bdctg Corp, 8229 Maryland Ave, St Louis MO 63105, 314-862-7800.

BAY COUNTRY BROADCAST EQUIPMENT

BUY - SELL - TRADE
Your #1 Source For Quality Used Radio Broadcast Equipment
View The Latest List Or Line At: <http://www.baycountry.com>
Or Call And We Will Fax It To You
7117 Oliva Rd., Baltimore MD 21220
Toll Free: 877-722-1031 • FAX 786-513-0812 • Email: info@baycountry.com
Member of BBB

1990 Generac 100kW 30 generator, propane, good condition, \$10,000. Barry O'Connor, KDES, 2100 Tahquitz Canyon Way, Palm Springs CA 92262. 760-325-2582 x237.



For advertising info, call Simone Fewell @

703-998-7600, Ext. 154

Onan 7.5 KW generator, propane with transfer switch, \$3000. Barry O'Connor, KDES, 2100 Tahquitz Canyon Way, Palm Springs CA 92262. 760-325-2582 x237.

Vintage 45 rpm record collection.

Early 1950's, Big Band, Easy Listening, some Country. Write for list & prices. Howard McDonald, Spokane Cable Radio, 2928 East Grace Ave, Spokane WA 99207. 509-536-6205, mstringtown@aol.com.

Want to Buy

Records: 1950's, 1960's, 45's - Albums. Looking for 45s promos doo-wop groups & R&B's. Michael Cardillo, 401-942-8341.

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.

Potomac Instruments AM-19-5 antenna monitor, \$900. Steve Scarborough, 877-722-1031.

Belar FM mod monitors (2), \$900 +shpg. Curt Marker, Gospel Opportunities Inc, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

Belar FMS 7 stereo mod monitor, \$1000 +shpg. Curt Marker, Gospel Opportunities Inc, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

Potomac AM-19 3 tower, 2 pattern antenna monitor, working when removed, \$450. Steve Callahan, WRNI, Providence RI, 401-521-1290.

RECEIVERS/ TRANSCEIVERS

Want to Sell

REMOTE EQUIPMENT RENTAL
Silver Lake Audio
(516) 763-1776
silverlakeaudio.com

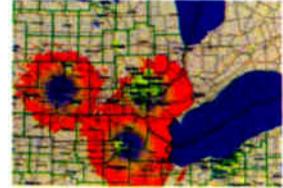
Inovonics FM relay receiver model 630, complete, frequency agile, \$800. Curt Marker, Gospel Opportunities Inc, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

Tascam 122B (2), rack mounted, \$300 each; Tascam DA-30 MKII DAT recorders (3), rack mounted, \$600 each; Yamaha C300 cassette recorders (2), rack mounted, \$100 each; Tascam DA-20 DAT recorder, rack mounted, \$500; Marantz PMD222 portable cassette recorders (6), some work, some don't, \$100/all; Sony JE520 mini disc recorders (2), \$400 each. Julie Cosen, Educational Media Corp, 830 Gunnery Hill Rd, Spotsylvania VA 22553. 540-582-5371 x2.

Tascam r-r, rack mounted, \$800/BO. Curt Marker, Gospel Opportunities Inc, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

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!



www.vsoft.com

Superior Broadcast Products

FM STL Transmitter &

Receivers 3,500 for both

Contact **Jimmie Joyst**

Phone 800/279-3326

SATELLITE EQUIPMENT

Want to Sell

Wegener 1806-014-003-001, 1806-012-000-002, Uniden VST-440 super video cyfer II plus, Zephyrus 304, Wegener D185 microphase MP 20305, BO. Robert Ladd, WCNZ, 8532 East Tamiami Trail, Naples FL 34112. 239-732-9369.

Zephirus 4 card #304 satellite main frame card holder, excellent condition, BO +shpg. Curt Marker, Gospel Opportunities Inc, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

Want to Buy

Will trade Starguide II for Starguide III or ABR200 for Starbuide III. Robert Ladd, WCNZ, 8532 East Tamiami Trail, Naples FL 34112. 239-732-9369.

STATIONS

Want to Sell

AM, fulltime, West Virginia. Home included. Joint venture. \$10,000 minimum. Cheap! 478-741-1710, wrecktech@yahoo.com.

Profitable California FM on beautiful Mendocino Coast. Popular tourist destination. \$350K. 707-367-1597.

Why not add a Low Power Television station to your radio operation? Check: www.thelptvstore.com. Jerry Proctor, 936-328-5960.

Want to Buy

AM station, 1000W...lost phone #! Very very interested in speaking with you again. Please call 401-942-8341 ASAP.

AM/FM, C.P., no station to small. Areas: RI, CT, MA or FL, money waiting. Michael Cardillo, 151 Morgan St, Cranston RI 02920. 401-942-8341.



WE RENT FOR LESS
Hotlines FM Exciters
Zephrys STL's
Nexsus 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"

BEE**POWER TUBES****REBUILT****1/2 THE COST
OF NEW!****ECONCO****ECONCO****COME SEE US AT NAB BOOTH #N2920****TEL: 800-532-6626****INTL: +1-530-662-7553****FAX: +1-530-666-7760****www.econco.com****SE HABLA ESPAÑOL****ECONCO****TEST EQUIPMENT****Want to Sell**

Delta Electronics OIB-2 operating impedance bridge, \$1750. Steve Scarborough, 877-722-1031.

TRANSMITTERS**Want to Sell**

Continental 831-G, 22.5kW FM. Continental Communications, 314-664-4497, email: contcomm@sbcglobal.net

Harris FM-3-H, 3kW FM. Continental Communications. 314-664-4497, email: contcomm@sbcglobal.net.



Harris MW-10-B, 10kW AM. Continental Communications. 314-664-4497, email: contcomm@sbcglobal.net.

McMartin BA-1K, 1kW AM. Continental Communications. 314-664-4497, email: contcomm@sbcglobal.net.

TRANSCOM CORP.*Serving the Broadcast Industry Since 1978***Fine Used AM & FM Transmitters and Also New Equipment****USED FM TRANSMITTERS**

250W	2003	New Exciters/Transmitters
600W		"NEW" Amplifier
2.5kW	1978	Collins 831D2
3.5 kW	1985	BE FM 3.5A
3.8kW	1991	Continental 814C
10kW	1980	Harris FM 10K
25kW	1986	Harris FM25K
25kW	1980	CSI T-25- Amplifier Only
50kW	1982	Harris Combiner w/auto exciter-transmitter switcher

USED AM TRANSMITTERS

1kW	1980	Harris MW1A
5/10kW	1982	Continental 316F
50kW	1982	Continental 317C2
*50kW	1997	Nautel ND50
*50kW	1986	Nautel AMPFET 50

NEW TV - VHF

10 watt	500 watt
100 watt	1,000 watt
250 watt	

NEW TV - UHF

10 watt	500 watt
100 watt	1,000 watt
250 watt	

USED EXCITERSBE FX 30
New 30 watt synthesized**USED MISC. EQUIPMENT**

Potomac Phase Monitor AM19, 2 Tower & 3 Tower
Potomac Phase Monitor AM1901, Digital
Kintronics DL50, 50kw Dummy Load
Dummy Load 80 kW air cooled, #DPTU-75K
Dielectric 4 Port Motorized Switch
Technics SH9010 Equalizer
Optimod 8100A (cards 3 thru 5 only)

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

McMartin BF-5K, 5kW FM. Factory rebuilt in perfect, like new condition, includes new tubes, tested & tuned on your frequency. Guaranteed, fully adjustable from 0 to 5.5 kW. Goodrich Enterprises Inc, 402-493-1886.

Superior Broadcast Products
FM Transmitters
20 watts to 30 Kw
Contact Jimmie Joynt
Phone 800/279-3326

COMET

Vacuum and Gas Capacitors

Standard equipment in all major AM and SW transmitters

513-831-5000

www.cometna.com

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

...country, top 40, news, urban, talk, jazz, the classics, mixed bag...

RADIO! The beat goes on!

CROUSE-KIMZEY OF ANNAPOLIS

tops in broadcast equipment

1-800-955-6800

ask for Kathleen

kkannapolis@worldnet.att.net**STUDIO FURNITURE?**

SPACEWISE® is home to the...

"BUDGET CRUNCHERS"

QUALITY RADIO STUDIOS FROM \$2450!

- ★ 1.5" PLYWOOD HARD LAMINATED TOPS!
- ★ WOOD BULLNOSING, KICKS AND TRIM!
- ★ STURDY BUILT MODULAR COMPONENTS!
- ★ VERY AFFORDABLE CUSTOMIZATION!
- ★ FAST AND EASY ASSEMBLY!

SPACEWISE®

800-775-3660 spacewise@qwest.net www.spacewise.com

"Quality Broadcast Furniture, For Every Budget"

CONSULTANTS

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

**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



Visit us on the web at www.radiosoft.com

108 West Knapp Ave. • Edgewater • FL • (386) 426-2521



Market Analysis
Engineering Software
Ethnic/Demographic Data
Custom Full-color Mapping
Sales Marketing Packages

info@dataworld.com
fax: 301-656-5341

www.dataworld.com
800-368-5754

GRAHAM BROCK, INC.
BROADCAST TECHNICAL CONSULTANTS
Full Service From Allocation to Operation AM/FM/TV/MX Services:
Field Work: Antenna and Facilities Design
Over 35 years engineering and consulting experience
912-638-8028
202-393-5133
www.grahambrock.com

Structural Analysis
ERI
Electronics Research, Inc.
7777 Gardner Road
Chandler, IN 47610
(812) 925-6000
www.ERIinc.com



CCA HELP

- Rotron Blowers • Rebuilt Plate Blockers • Tubes
- Tube sockets/parts • most all transmitter parts
- rebuilt tuning line assemblies

Goodrich Ent. Inc

402-493-1886

www.goodrichenterprises.com

TUBES**Want to Sell**

FOR THE BEST PRICE
 & 24 Hr service on transmitting tubes &
 sockets/parts, new & rebuilt coll Goodrich
 Ent. of 402-493-1886 day or night.
www.goodrichenterprises.com.

1975 Harris 20H-K in good condition
 with manual & spare parts, \$17,000.
 Barry O'Connor, KDES, 2100 Tahquitz
 Canyon Way, Palm Springs CA 92262.
 760-325-2582 x237.

CCA transmitter, FM 8000 G, CCA
 exciter 100W, excellent condition, has
 been in service for 4.5 yrs. Sherry,
 606-287-9924 or Dan, 606-965-3436.

Elcom Bauer 601 & 610 FM
 transmitter, 14kW and harmonic filter.
 Removed from service in May 2002,
 \$5000. Gene Michaels, WWUS,
 30336 Overseas Highway, Big Pine
 Key FL 33043. 305-872-9100.

OFF THE AIR?
Emergency Back-up Rentals
 FM Exciters - STLS -
 FM Pwr Amps - Antennas -
 Studio & Test Equipment
SCMS Inc (800) 438-6040
 "You Know We Know Radio"

Harris FM25K, 22 yrs old, includes
 transmitter, power supply and tube,
 no exciter, tuned to 104.5. Ran good
 until replace in 2/03, \$10,000. John
 Huffman, 541-298-5116.

QEI 675 FM exciter 5-20W, frequency
 agile, \$4500 +shpg. Curt Marker, Gospel
 Opportunities Inc, 130 Carmen Dr,
 Marquette MI 49855. 906-249-1423.

QEI Quantum "E" 300W transmitter
 & exciter combo, frequency agile,
 \$4000. Curt Marker, Gospel
 Opportunities Inc, 130 Carmen Dr,
 Marquette MI 49855. 906-249-1423.

Transmitter parts: Peter Dahl Collins
 21F modulation transformer, new in
 original crate, \$300. Steve Callahan,
 WRNI, Providence RI, 401-521-1290.

Want to Buy

10W (or more) used FM exciter needed,
 20W (or more) AM transmitter needed,
 must be in working order. Michael
 Cardillo, 401-942-8341.

Any low powered AM/FM exciter or
 transmitter in good working order or
 any radio station equipment.
 Michael Cardillo, 151 Morgan St,
 Cranston RI 02920. 401-942-8341.

Continental 816RA2 card
 extenders, 2 wanted. Bob Rivkin,
 KPLM, 441 S Calle Encilia #8, Palm
 Springs CA 92262. 760-320-4550.

FM station looking for transmitter 1
 to 20 KW, processor, coax cable,
 microwave equipment & dishes.
 Jack Le Duc, American Comm, 133
 North Superior St, De Pere-Green
 Bay, WI 54115. 920-338-9022.

RF PARTS COMPANY**Broadcast • Industrial Communications**

- EIMAC • TAYLOR
- ECONCO • SVETLANA
- Also
 Motorola • Toshiba • SGS-Thomson
 & Mitsubishi Semiconductors
- Catalog: www.rfparts.com
- Se Habla Espanol • We Export
 760-744-0700 • 800-737-2787
 Fax: 760-744-1943
 E-mail: rfp@rfparts.com

TUBES**Want to Sell**

FOR THE BEST PRICE
 & 24 Hr service on transmitting tubes &
 sockets/parts, new & rebuilt coll Goodrich
 Ent. of 402-493-1886 day or night.
www.goodrichenterprises.com.

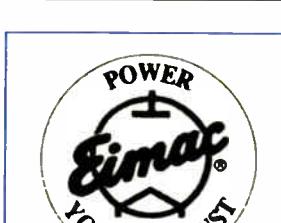
TUBES, Eimac, Svetlana
 Phone: 905-844-5772
 Fax: 905-844-6263
ams.hard-to-find.net
www.hard-to-find.net

D And C Electronics Co.

NEW TUBES

We have the alternatives
 for all your needs, at the
 lowest prices, direct from
 OUR STOCK!!!
 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

**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

**EMPLOYMENT POSITIONS WANTED**

American Broadcasting School
 graduate seeks rewarding employment
 in radio as vocal and production talent,
 board op, etc. James Rogers, 817-715-
 5138.

Broadcasting school graduate seeks
 on-air or production position in the
 greater DFW area. Literate in Cool Edit
 Pro and possess excellent vocal skills.
 Amanda 972-875-9174.

Chris Black: radio Picasso who paints
 pictures with digital production. Recent
 broadcasting school graduate, strong
 announcer and creative copywriter.
 Will relocate. 817-466-2594 or
bee1ee1chris2black@yahoo.com.

Creature of the night! Energetic &
 dependable, on the prowl for on-air
 opportunities. Rookie ready to travel
 to taste success. Sara, 405-606-
 8766, or starsoblivion@yahoo.com.

CE position wanted. Experienced
 with computers, transmitters,
 automations, DCS, UDS, digital
 studios. Robert King, 978-479-4855.

Engineer looking for position in
 Radio or TV, will relocate,
 multilingual. 609-294-9796.

SERVICES**R. MORGAN BURROW, P.E. & ASSOCIATES, P.C.**

ALLOCATION STUDIES
 (AM, FM, TV, LPTV, New facilities,
 site relocation, FM upgrade, diplex)

FIELD WORK A SPECIALTY
 • AM Directional antenna adjustment,
 measurement & prof
 • RADHAZ measure
 ments RADiation
 HAZard evaluation
 • FM & TV field intensity
 & other measurements
 measurement & prof
 • Facility inspections for
 purchase/insurance
 purposes
 • CATV Leakage Testing

ELECTROACOUSTICS
 OSHA measurements
 RMB & A 304-258-7921 • Fax 304-258-7927

5827 Columbia Pike, 3rd Floor
 Falls Church, VA 22041
 PHONE: 703-998-7600
 FAX: 703-671-7409

Call Simone Fewell,
 Ext. 154, Classified
 Ad Manager, to
 reserve space
 in the next issue.
 Use your credit card to
 pay, we now accept
 VISA, MASTERCARD
 and American Express.

www.rwonline.com

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: 703-998-7600 • 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
8	360 Systems	www.360systems.com
39	AEQ	www.aeqbroadcast.com
45	ATI	www.atiguys.com
35	AudioScience	www.audioscience.com
23	Audio-Technica	www.audio-technica.com
10	audioTX Communicator	www.profanitydelay.com
2	Auditronics/Wheatstone	www.auditronics.com
47	Belar	www.belar.com
14	Bext	www.bext.com
22	Broadcast Tools	www.broadcasttools.com
30	Broadcast Warehouse	www.broadcastwarehouse.com
28, 29	BSW	www.bswusa.com
42	Burk Technologies	www.burk.com
4	Burk Technology	www.burk.com
42	Circuit Werkes	www.circuitwerkes.com
46	Comet North America	www.cometna.com
7	Comrex	www.comrex.com
1	Continental Electronics	www.contelec.com
42	Cortana	www.cortanacorporation.com
15	Dielectric Communications	www.dielectric.com
3	Electronic Research Inc.	www.erinc.com
37	Full Compass	www.fullcompass.com
20	Gepco International	www.gepco.com
42	Gorman-Redlich Mfg. Co.	www.gorman-redlich.com
36	Grace Broadcast Sales	www.gracebroadcast.com
25	Harris	www.broadcast.harris.com
41	Heil Sound Ltd	www.heilsound.com/proline.htm
46	Henry Engineering	www.henryeng.com
17	Inovonics	www.inovon.com
44	LBA Technology	www.lbagroup.com
38	Logitek	www.logitekaudio.com
44	Mager Systems	www.magersystems.com
33	MediaTouch	www.omt.net
34	Mouser Electronics	www.mouser.com
40	Musicam USA	www.musicamusa.com
11	Neumann/USA	www.neumannusa.com/103RW
9	Omnia, a Telos Company	www.omniaaudio.com
44	Pristine Systems	www.pristinesys.com
19	Prophet Systems Innovations	www.prophetsys.com
18	Radio Design Labs (RDL)	www.rdlnet.com
5	Radio Systems	www.radiosystems.com
46	Raduga Automation	www.raduga.net
42	RAM Broadcast Systems, Inc.	www.ramsyscom.com
46	rfSoftware, Inc.	www.rfsoftware.com
27	S.C.M.S.	www.scmsinc.com
46	S.C.M.S.	www.scmsinc.com
43	Sine Systems	www.sinesystems.com
11	TEAC America	www.tascam.com/sx1
44	Technical Services Group	www.tsgcom.com
13	Telos Systems	www.telos-systems.com
55	Wheatstone	www.wheatstone.com
56	Wheatstone	www.wheatstone.com
44	Whisper Room	www.whisperroom.com

◆ READER'S FORUM ◆

The Net Is Much More Than Streaming

by James G. Withers

The Internet has changed how we do business in broadcasting. This is not a news flash. But it might be news to some that the Net has uses beyond streaming.

Take the FCC Rules. Every engineer, even the odd general manager, has had occasion to thumb through looking for that bit of information needed to confirm proper operation of the station.

Prior to the Internet, there were two choices: subscribe to a document provider service, which sent periodic updates on CD-ROM (or paper), or get a printed copy from the Government Printing Office.

These methods were time-consuming and cost a lot. Many chose the services, because dealing with the GPO was tedious and the rules volume usually was out-of-date by the time it was published.

But in the Internet world, simply log on to National Archives and Records Administration page of the GPO at www.access.gpo.gov/nara/index.html and click down to browse selected Code of Federal Regulations, or CFR, titles.

Title 47 of the Consolidated Federal Register deals with Federally Authorized Communications. Part 73 pertains to AM/FM/TV station rules. Part 74 pertains to auxiliary broadcast services such as STLs. There are other parts having to do with towers, consumer devices, amateur radio. The blueprint to government regulations of all stripes is in the CFRs here.

The cost of an Internet connection and PC can be more than justified by using this one site periodically. The regulations contained in the CFRs can be downloaded as text or PDF files.

Filing

It is also possible to file entire applications via the Net. The FCC has done a credible job of creating a system that is easy to use. The commission's goal ultimately is to require all applications be filed electronically. It is well on its way.

In the past it took reams of paper (including three copies of everything), maps (topo, aeronautical sectional) and a fair amount of time to file an application for a construction permit. Now by logging onto www.fcc.gov, clicking "e-filing" and then clicking "Consolidated Data Base System" (CDBS), almost any broadcast-related application can be completed in an hour or so.

Your engineering still must be valid, so adequate time must be spent researching any project that requires an application; but the filing has been streamlined to an amazing degree. It is possible to work on a file, save it and return to it later.

Also, the broadcaster applicant, consulting engineer and communications lawyer each can access, edit and add to the application if they know the CDBS account number and password of the applicant. So the e-filing system dramatically helps coordinate a complicated application.

Prior to filing, a Federal Registration Number must be obtained and an account number and password is needed to log in.

These numbers are assigned when an account is created on the CDBS page. The numbers are used for future filings and fee payments. Keep them and the password handy.

With regard to maps, the USGS site at <http://edcwww.cr.usgs.gov/doc/edchome/ndcdb/ndcdb.html> has all manner of USGS maps and information that can be accessed. Much of it can be downloaded using shareware available on the site and is useful when planning tower sites.

The Census Bureau offers downloadable Census Tract and Block Maps with an amazing depth of data, right down to how many refrigerators the average household owns on a particular census block. Check out www.census.gov. Be sure to look at the Topologically Integrated Geographic Encoding and Referencing, or TIGER, files for population and other data.

Minutes, not hours

Back at the FCC public access and e-filing pages you can obtain new or modified call letters and register or view existing antenna structures and, in general, accomplish most of what used to take hours at a typewriter and the local copier store.

The FCC has also made it simple to keep track of applications of competitors and the vast majority of commission actions. From the FCC home page, click on "Daily Digest" and get links to each day's compilation of released documents, including individual decisions, lists of new applications and granted applications. The Daily Digest page also has archives of all such documents.

You will end up wading through a lot of screens; but there is a lot of information here for the persistent user.

One area in which the Internet is useful is equipment and parts searches. I remember working at stations that kept thousands of dollars tied up in parts inventory because it took so much time and effort to get replacements. In fact, the FCC mandated that certain mission-critical components prone to catastrophic failure (power transmitting tubes) be kept in station inventory according to a formula of one spare for every so many tubes in service.

This all changed with the Net and overnight delivery. Every major parts supplier including factory OEMs can be searched in a few minutes. And with credit-card authorization, parts generally can be ordered online, with shipping confirmation e-mailed. If you need to find a radio broadcast vendor, visit www.rwonline.com and click on Industry Resources.

Also, used equipment and surplus parts are available on the Net. Search engines like Google make this easy. Log on and pick up some deals.

Mention the Net to most broadcasters and you get an immediate response about the pros and cons of streaming audio. Dig a little and you will find a versatile tool that makes any engineer's job easier.

The author is vice president of engineering for Pacific Broadcasting of Missouri.

◆ READER'S FORUM ◆

Radio, Closest to the People

by William O'Shaughnessy

The author is president of Whitney Radio, WVOX(AM) and WRTN(FM) in New Rochelle, N.Y. These are excerpts from his remarks to the International Radio-Television Society Foundation Faculty/Industry Seminar in March.

First, I'm hopeful that all the distinguished professors and academicians here assembled from all over the nation can agree that radio is like Lazarus in the Bible. You can't kill it. Television couldn't kill it. Cable couldn't do it in. Nor could the Internet.

The reason is simple and (well-known): radio, being free and "over the air," is still the medium closest to the people, even in this high-tech, speeded-up, electronic, cyber day and age.

My colleagues at the 93 other stations here in the New York area won't like me telling you this — (radio) is thus the medium, the companion and refuge of the poor, the disenfranchised, the misunderstood, the lonely and the forgotten of our society. That's not so good, I suppose, strictly from a "marketing" standpoint.

Now while you're engaged here today at this high council in Manhattan about the evils — or blessings — of consolidation, and with all the talk of caps, and strategies, and tactics and financial matters, I'm wondering if I could beg just a few minutes to suggest that we also have to decide how we should view the instruments of communication which reside in our care and keeping as fiduciaries and trustees of the public's airwaves.

And thus: what is a radio station?

Who are we?

Is it merely a device or appliance to convey information and hype about goods and products and services most of us don't need, and some can ill afford? Do we go to work each day only to preside over jukeboxes?

Most stations today are run out of airport lounges by paid-gun, itinerant, journeymen 'market specialists' trying to squeeze every last dime out of their 'properties.'

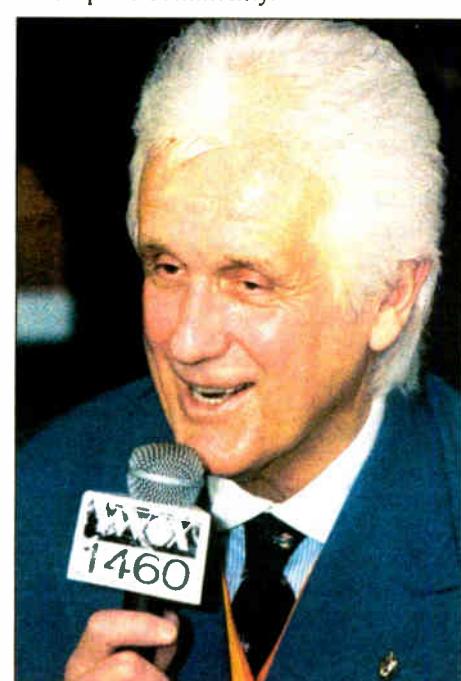
If that is so, we might as well be John Deere dealers, or holders of a Ford franchise, or stand behind the register at our local Tru-Value hardware store. So I think we need also to decide what it is we're about.

An industry? Or a profession? Who are we? Are we merely entertainers, or performers, or impresarios who seek only to entertain, distract and titillate?

For if it is only an industry, then it is only about commerce, and dollars and

cents, and "ratings," and formats, and "cumes," and profit and loss. And it's all right there in our palm pilots and laptops. And in our bottom lines. And what we do is lost in the air and gone forever. It is commemorated only on a balance sheet in some accountant's office.

I think it's a profession. A profession, which affords us, if we do it right, the opportunity to use our franchises to build up the community.



William O'Shaughnessy

We can even associate with that ancient Hebrew instruction, Tikun Olam: to build up the damn place, to improve the universe. To complete it. Or, as our gifted and brilliant former New York Governor Mario Cuomo constantly reminds broadcasters: we can make our communities "stronger, better, even sweeter" than they are. (You didn't think an Irishman could summon up Tikun Olam? Be careful, I'll also hit you with Tzedakah!)

A radio station achieves its highest calling when it resembles a platform, a

podium, a soapbox, a forum for the expression of many different viewpoints.

Consolidation

Now as for consolidation, there is no question that locally-owned and locally-operated hometown-community radio stations, operated in the public interest by broadcasters who speak the language of the neighborhoods, are fast disappearing.

Local, regional and community sta-

tions are succumbing to the siren song of the big group operators. They are selling out, and independent voices are being replaced by a cookie-cutter cacophony of the same-old, same-old music and often accompanied by vulgar, outrageous and tasteless stunts.

The old-time, working local broadcaster is being replaced by "asset managers" beholden to corporate masters a whole continent away.

"Clusters," presided over by "market managers," absentee owners and speculators (trying to cover their assets!) now control most major markets where once those many different, vibrant, worthy voices were heard in the land.

Jacob K. Javits.

Senator Javits, who was also the father of the War Powers Act (where are you when we really need you!) used to say, "You either believe in the genius of the free-enterprise system, or you do not." I like the sound of that.

Maybe consolidation is only a temporary circumstance, a temporary fact of life driven by those free-market forces I don't think we want the government to interfere with.

Someone once said radio is the last turf on which an entrepreneur can run. The turf is getting a little slippery. And maybe we are getting a little greedy about this privilege, which is ours. But I think radio is still the medium closest to the people, and possessed, still, of the greatest potential to do good things for our communities.

And so I would leave you only with

A radio station achieves its highest calling when it resembles a platform, a podium, a soapbox, a forum for the expression of many different viewpoints.

Most stations today are run out of airport lounges by paid-gun, itinerant, journeymen "market specialists" trying to squeeze every last dime out of their "properties."

And let me just warn you, don't ever sit next to one of these "market managers" on an airplane! For he or she will speak in a strange, foreign dialect comprised of wonderful business-speak phrases like "economies of scale" ... "win-win situations" ... "getting it done" ... "doin' what it takes" and that most dreadsome phrase of all: "make it happen!"

I'm afraid this dazzling jargon has replaced quaint old notions like "public trustee," who operates "for the public interest, convenience and necessity." It is an undeniable fact that most stations everywhere have fallen to absentee-owners and speculators.

All, however, may not be lost.

For as I suggested last month at Columbia Law School up at Morningside Heights: maybe when they realize they can't run a thousand or more stations out of San Antonio, they'll start to dismantle these behemoths themselves and sell off some of those "properties" to independent entrepreneurs who will once more consider that they have a fiduciary relationship to an instrument of communication and who will then steer them back to the service of the people in their communities.

And so, as you academicians consider the effects of consolidation, I would leave you only with a very clear instruction I received one day from the great, towering New York Senator

my plea that as you go back to your colleges and universities and to your classrooms, you'll divert some of your best and brightest to radio. It's a wonderful profession. We need them. And the people we serve need them.

We also need you to instruct us.

William O'Shaughnessy is a former chairman of public affairs for the NAB and served as president of the New York State Broadcasters Association. During his 18-year service at NAB, he specialized in free speech and First Amendment issues. He is as a director and member of the executive committee of the Broadcasters' Foundation of America.

How to Submit Letters

Radio World welcomes your point of view on any topic related to the U.S. radio broadcast industry.

Letters should be 100 to 300 words long; the shorter the letter, the better chance it will be published in full. We reserve the right to edit material for space. Longer commentaries are welcome but may not reach print as quickly.

Include your name, address and contact information, as well as your job title and company if appropriate.

Send letters via e-mail to radioworld@imaspub.com, with "Letter to the Editor" in the subject field; fax to (703) 820-3245; or mail to Reader's Forum, Radio World, P.O. Box 1214, Falls Church, VA 22041.

OPINION**◆ READER'S FORUM ◆****Bob Pratt**

Bob Pratt passed away Feb. 21 and took a piece of radio history with him.

In the 1940's, he worked his way through the radio ranks at KGGF(AM) in Coffeyville, Kan., as an announcer, play-by-play broadcaster, program director and salesman. Eventually, he became station manager and part-owner of KGGF.

Bob Pratt was a giant in the industry and represented everything good about radio from the 1940s through the 1980s.

— Bill Miller

He helped found the Kansas Association of Radio Broadcasters, now known as the Kansas Association of Broadcasters, and served on the board of directors and as president in the 1960s. He was a director of the NAB in the early 1970s and a member of the BMI Board of Directors for nearly 20 years.

Under his leadership, KGGF was the role model for small-market radio. Bob's program philosophy was diversity. From the Metropolitan Opera to Kansas City Royals to local sports to block programming music, Bob's KGGF was unique and, financially, a big-time winner.

He retired in 1988. Bob was a giant in the industry and represented everything good about radio from the 1940s through the 1980s.

I worked with Bob for a total of 16 years, and I know first-hand that he was truly one of the best broadcasters to ever come down the pike. Bob Pratt could have been just as successful in New York, Chicago or Los Angeles. He chose to be great in Coffeyville, Kansas.

*Bill Miller
"The Bill Miller Show"
Olathe, Kan.*

Replacing an old friend

I enjoyed Alan Peterson's musings in the March 1 issue. It's easy to see that he loves radio and writing. (Keep your column humming, Al.)

"Ending Those Console Cravings" triggered the memory that I have a stereo rotary-pot board, circa 1972, with blueprints and spare parts in storage. It's not a Gatesway 80, like Alan requested, but I think it's pretty good

because it still works.

This hefty board was one of about 15 custom-built by the Family Radio Network of Oakland. Until a couple of years ago, it was still in service here at We Kids Radio.

Our organization bought it from Simpson College, formerly in San Francisco. Simpson was able to get it in the early 1970s with the solder joints

still warm (almost) through an engineer who worked for both the college and the network.

In the early '80s I came across it in a little studio off a classroom at the college, powered up but idle. The thing silently cried for me to rescue it and put it into service. I did.



Ken Boone has not forgotten his 1972 console

By keeping the operating levels up, it was possible to mask the -70 dB noise floor and still produce listenable radio programs. I thanked God for that old board, because it turned into the primary production tool for launching We Kids into syndication on Christ-centered radio stations.

The apple-sized pots and walnut-sized keys made it possible to execute program

Rethink the Bomb-Shelter Mentality

Last month, when the word came that the United States was going to war with Iraq, radio ratcheted up. Many stations boosted emphasis on news or changed format to news/talk. Country stations dusted off the patriotic tunes or stopped playing songs by critics of the war. Some broadcasters patched in news networks for round-the-clock coverage.

But fewer stations, we believe, have thought about another urgent priority: planning to stay on the air.

Lest we forget, in addition to the terrible loss of life, the World Trade Center disaster involved the destruction of broadcast facilities. Terror can indeed affect us in radio directly. Is your own station safe?

On this page, we've urged stations to develop specific emergency plans, so employees know how to leave the building, where to gather, what to do if the unexpected happens.

Current events should motivate you to consider new emergency backup plans for your facility — not just where to put a replacement antenna and transmitter, but whether you have a second studio location and plans for routing your program feed. Indeed, such backup considerations were among the reasons NPR recently opened a new facility thousands of miles west of its Washington headquarters.

During the Cold War, it was not uncommon for major-market AM stations to have "fallout shelter" studios wired and ready for operation, in the event nuclear warfare were to affect operating procedures. Today those shelters are dumping grounds for old equipment and grim punch lines to '50s paranoia. But the idea is not obsolete.

For the same reasons, some stations still maintain working studio environments at their transmitter sites. Here in D.C., when news of the second Gulf War came, several stations and at least one newspaper were prepared to move to emergency facilities should circumstances force the issue.

Remember that our nation's own first-strike military strategies include knocking the enemy's radio and TV off the air. We take over their radio frequencies and replace them with our own programming, as occurred on the first day of the Iraqi conflict.

Such is the power of media. The notion that foreign opponents or terrorists could target *our* broadcast facilities is not at all far-fetched.

So be ready. Technology now practically allows you, as one wag on our staff put it, to climb a phone pole and go on the air with a tiny transmitter, a bent coat hanger and a disco mixer. You can create a functional "survival" station without huge expenses and get on the air quickly, if need be.

We do not suggest you empty and reactivate that old shelter or that you dig a trench for a new one. But if you are visiting NAB2003 for equipment this week, or doing station spring-cleaning, think about the wisdom of installing a modest, functional backup.

War or terror may never touch your station; but an emergency facility with a bare-bones low-power transmission system, uninterruptible power and functional studio may come in handy for any number of reasons in the future.

A concerned public turns to us for information and reassurance in times of uncertainty. They deserve better than EAS tones followed by "You're on your own."

— RW

events by feel, freeing my eyes to gaze on the big ballistically-bouncing meters. I liked to drum with a pen tip on the tops of the pots during happy tunes; it made a percussive crack/snap sound I've heard nowhere else.

Alas, the old friend finally was replaced a couple of years ago by a space-saving Mackie 1202 and a DAW that had been encroaching on its territory since 1995. But I can't bear the thought of just dumping this board. So now it's quietly covered with dust, time

and memories. In fact, I think the thing is crying again.

Get over it, you old monster! Technology sweeps us onward.

*Ken Boone
Family Programs Inc.
Paradise, Calif.*

More Opinions**On Pages 52-53****—EDITORIAL STAFF—**

Paul J. McLane	ext. 117	Editor
Sharon Rae Pettigrew	ext. 126	Managing & Business Editor
Leslie Stimson	ext. 129	News Editor/Wash. Bureau Chief
Michele Kramer Peterson	ext. 149	Studio Sessions Editor
Michael Hedrick	ext. 146	Associate Editor
Elizabeth Prevatt	ext. 136	Buyer's Guide Editor
Thomas R. McGinley	—	Technical Adviser
Alan Peterson	—	Technical Adviser
John Bisset	—	Contributing Editor
Skip Pizzi	—	Contributing Editor
T. Carter Ross	ext. 120	Editor-In-Chief (International)
Marguerite Clark	—	Editor (International), Milan
Rogelio Ocampo	ext. 121	Latin America Editor in Chief
Karina Gerardi	ext. 137	Latin America Editor
Terry Hanley	ext. 130	Editorial Assistant & Listings Coordinator
Peter Finch	—	Editorial Assistant, Milan

—EDITORIAL CONTRIBUTORS—

W.C. Alexander, Bruce Bartlett, Frank Beacham, Naina N. Chernoff, Harry Cole, Troy Conner, Vince Ditingo, Mark Durenberger, Charles Fitch, Ty Ford, Scott Fybusch, Harold Hallikainen, Jeff Johnson, Craig Johnston, Paul Kaminski, Peter King, Mel Lambert, Mark Lapidus, Michael LeClair, Carl Lindemann, Frank R. Montero, Ted Nahil, Tom Osenkowsky, Ken R. Rich Rarey, Randy Stine, Travis the V/O Guy, Barry Umansky, Tom Vernon.

—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
Melissa SE Robertson	Production Publication Coordinator
Kathy Jackson	Ad Traffic Manager
Sheryl Unangst	Circulation Director
Robert Green	Circulation Manager

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; (703) 998-7600; Fax: (703) 998-2966. Copyright 2003 by IMAS Publishing (USA), Inc. All rights reserved.

—Printed in the USA—

Radio World

Vol. 27, No. 8 April 7, 2003

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 East: John Casey	330-342-8361	Fax: 330-342-8362	e-mail: jcasey@imaspub.com
US West: Dale Tucker	916-721-3410	Fax: 815-352-1698	e-mail: dtucker@imaspub.com
Product Showcase & Classified Ads: Simone Fewell	703-998-7600 x154	Fax: 703-671-7409	e-mail: sfewell@imaspub.com
Germany, Austria, Switzerland: Charles Kingston	+49-69-4908-5785	Fax: +49-69-4908-5804	e-mail: chaskington@t-online.de
European Sales Mgr., Africa, Middle East: Raffaella Calabrese	+39-02-7030-0310	Fax: +39-02-7030-0211	e-mail: rcalabrese@imaspub@tin.it
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: Alan Carter	703-998-7600 x111	Fax: 703-671-7409	e-mail: acarter@imaspub.com

NEXT ISSUE OF RADIO WORLD APRIL 23, 2003

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.

D-8000

Digital Radio Console

ADVANCED TECHNOLOGY! WHEATSTONE'S fourth generation digital console has what you need: dual-domain input modules that accept both analog and digital sources; built-in router integration with eight character displays; a choice of features—like auxiliary sends, equalization, dynamics control and event memory/recall—all without the aid of an external computer. *The D-8000 is an all-modular design with no active components mounted inside.* And best of all, it uses Wheatstone's exclusive VDIP® setup software, letting you easily configure individual console modules, logic modes and automatic functions. **Choose Wheatstone—from the digital audio people!**



www.wheatstone.com

NOW AVAILABLE FROM



RF Specialties®
Kearny MO 800-467-7373

SCMS, INC.
YOU-KNOW-WE-KNOW-RADIO!
Pineville NC 800-438-6040



**Broadcasters
General Store**
Ocala FL 352-622-7700

THINK INSIDE THE BOX



ONE INTERCONNECT DOES IT ALL!

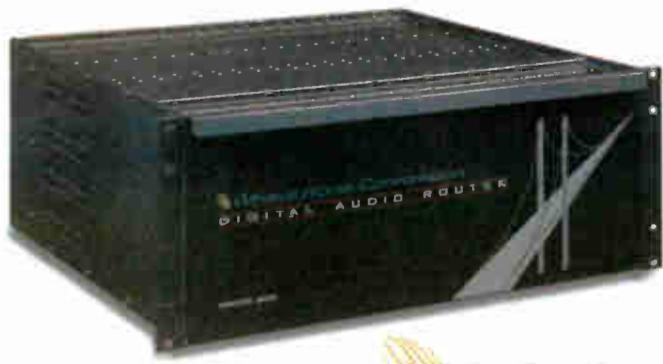
THAT'S RIGHT—ONE DUPLEX FIBEROPTIC LINK OR A SINGLE CAT-5 WIRE = 64 channels of simultaneous bi-directional digital audio, intercage communication, logic signals, X-Y controller commands, plus auxiliary RS-232 data streams. *This single interconnect between your studio and central rack room can save you thousands—if not TENS of thousands—of feet of wire in a typical installation!*

THE WHEATSTONE BRIDGE DIGITAL AUDIO NETWORK ROUTER can start small with a single cage and only a few cards, or fully populated units can be stacked to form larger systems. Wheatstone's STAR TOPOLOGY ARCHITECTURE lets you connect multiple locations to your central rack room, providing shared resources for all yet still permitting independently functioning studios, each with its own combination of plug-in modules specifically suited for a select set of gear.

SIGNALS ARE ROUTED entirely in the digital domain. sample rate converters on each input, freeing you from sample rates throughout your facility. A family of plug-in makes installation easy, letting you mix varied signal standards all within the same cage. WHEATSTONE's intuitive setup software handles system configuration, matrix selection sets. All systems interface directly with Wheatstone consoles source selection and display.



All AES cards have
worry about varying
connector modules
technologies and
graphic based
and salvo pre-
for seamless



THE BRIDGE
DIGITAL AUDIO
NETWORK ROUTER



Wheatstone

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

copyright © 2002 by Wheatstone Corporation (mini-technician not included)